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ON THE INFINITE.

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OUTLINES

OF

A PHILOSOPHICAL ARGUMENT

ON THE

INFINITE,

AND THE FINAL CAUSE OF CREATION;

AND ON THE INTERCOURSE BETWEEN THE SOUL AND THE BODY.

BY

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INTRODUCTORY REMARKS BY THE TRANSLATOR.

THE following Work was originally published by Swedenborg in Latin in 1734, at Dresden and Leipsic,* together, as it appears, with the *Opera Philosophica et Mineralia* of which the *Principia* forms the first volume. It seems to have been written after the *Principia*, at least if we may judge from the circumstance of the latter being referred to several times in these *Outlines*. Besides which, the Doctrine of the Soul is carried out in the latter into many more details than in the *Principia*.

In the *Acta Eruditorum* for 1735, pp. 556—559, the present Work is reviewed, but no positive opinion is expressed of its merits, although the critic hints that it has a materialistic tendency.

The *Outlines* was one of the first of the author's philosophical works which excited attention in England, and a translation of it was executed at Manchester, as early as 1795,† by two of the scholars of the Rev. W. Cowherd, at his Classical School; but which, as might be expected, was by no means a

* "Emanuel. Swedenborgii Sacræ Regiæ Maj. Svecicæ Collegii Metallici Assessoris Prodromus Philosophiæ Ratiocinantis de Infinito, et Causa Finali Creationis: deque Mechanismo Operationis Animæ et Corporis. Dresdæ et Lipsiæ, sumptibus Friderici Hekelii, Bibliopol. Regii MDCCXXXIV."

† "Prodromus, or the Forerunner of a Reasoning Philosophy: concerning the Infinite and the Final Cause of Creation: and concerning the Mechanism of the Soul and Body's Operation. In two parts. Designed principally as an Introduction to the Economy of the Animal Kingdom. Originally printed in Latin, at Dresden and Leipsic, A.D. 1734. By the Hon. E. Swedenborg, S.R.M.S.C.M.A. Manchester, 1795."

successful rendering of so difficult a work. There is, however, a brief Advertisement prefixed to the edition, which contains some observations by the Master so just and pertinent, that we need offer no excuse for inserting them here.

"To establish rationally," says he, "on solid grounds, some satisfactory knowledge respecting God, the soul, and eternal life, was indeed, professedly, the primary end, the ultimate scope, of all our author's philosophical disquisitions, as well as theological researches. And, directed towards objects in themselves so interesting, he will be found to have selected such means, in the guidance of his laudable pursuits, as necessarily carry him to discoveries and conclusions no less important than convincing. *Facts*, natural and revealed, were alone what he either could, or did, rely upon with security. From *visible* effects in nature, and in the human body, by retracing all things philosophically to their cause, he was led, and will lead others most fully, to acknowledge that there is a God of infinite love and wisdom, and that man hath an immortal soul. And from the *actual*, though divine and supernatural, manifestations recorded in the Sacred Scripture, he hath been enabled more immediately to ascertain *what* God is, and what the soul, as to form in particular. For do not the Scriptures positively declare, that *God* hath been *manifested* to the patriarchs of old, to Moses and the prophets, and finally to Christians in the person of Jesus Christ, ever in *Human Form?* And doth not John the Revelator say expressly, that when he was in spirit abstracted into heaven, he could equally as in the body, hear, see, converse, walk, and, in short, live and act as a man; and that he saw there, *as men*, 'the *souls* of them that were slain for the Word of God, and for the testimony which they held?'

"Let not those, therefore, who can accompany our author with pleasure in his philosophical excursions through the shady walks of inferior nature, neglect to rise with him, in the way to their highest edification and improvement, into that superior light which beams effulgent from the Word of God. Neither let such as have already read and received his Theological Works, look down upon his Philosophy as to them unnecessary, or comparatively below their notice; for without a rational idea of the soul, as scientifically given in his Philosophical Works, it may be doubted whether his scriptural doctrines, which apply so immediately to the spirit of man, can be rightly apprehended and fully understood."

The above particulars, we believe, nearly complete what can be said at present of the literary history of the *Outlines*.

The present work may be regarded as in some measure intermediate between the *Principia* and the *Economy of the Animal Kingdom,* which latter did not appear until seven years later. The reader of the *Outlines* will find himself continually in want of some sketch of the views of the *Principia,* and we shall therefore here transcribe from that work the author's own statement of his doctrine of the *simple,* and of *actives, finites* and *elements.* The following is from the Rev. Augustus Clissold's translation, Vol. I., pp. xciii—xcix.

"I am apprehensive lest, at the very outset of our philosophy, particularly its First Part, my readers should be deterred from proceeding further, when they meet with views which cannot but appear strange and foreign to those which are generally received; as also with such unusual phraseology as that of a *Finite,* an *Active,* an *Elementary,* &c.; terms which are unknown in any of our philosophical treatises; that is, which are not applied to the principles of mechanism, geometry, and the elementary world. For this reason it will be requisite, by way of preface, to present a general outline of our work, and thus a key to its contents.

"Every one from the light of reason may perceive, that nature, conforming to principles of geometry, is ever pursuing a most simple course; a course proper to herself, and truly mechanical. He may likewise perceive, that all things in the world originate from what is uncompounded; consequently from one single fountain-head and one primitive cause; that this primitive cause is derived into the various things which are caused (a truth which necessarily follows, if further products are to be derived from those which have already been brought into being); also that no other cause could possibly have had existence than the one which had proceeded by genealogical descent, as it were, from its first parent or simple. This cause, therefore, must be latent in the first simple; and into the first ens derived from it, or into the first finite there must be derived a similar cause. Now since the world deduces its origin and subsequent increments, by a connected and contiguous series, from the first or single end through intermediates to another end; and since there must be present a cause, and indeed an efficient and active cause, before anything can be produced in a series; it follows that there must be a passive, an active, and as a product from both, a compound, or elementary; if therefore there be anything composite, it must consist of two principles, namely, a passive and an active; without which nature herself would be as it were in a state of

celibacy or solitariness, destitute of progeny, without any new efficient, hence without effect, without series, without phenomena; in a word, without worlds. With this view of the subject then, I have endeavored to evince that *in the Finite, which is the first in successive derivation from the Simple, is contained each principle, both passive and active,* from which, by the accession of a contingent or physical cause, arose the Composite or Elementary; and further, that in every derivative, whether a Finite, Active, or Elementary, there always coexists a similar cause, and consequently a similar faculty of producing an effect, namely, from the one into the other; thus as it were from one power into another, from one degree into another, and so on farther and farther; that in the derivatives therefore there is latent a principle similar to that which exists in the primitives; in composites a principle similar to that which exists in simples; in effects a principle similar to that which exists in causes; consequently also that nature in her various kingdoms, especially the elementary, is in the cause and in the effect simultaneously; so that from well known principles of mechanism, under the guidance of geometry and the faculty of reasoning analytically, we may, from an effect visible and posterior, safely draw our conclusions not only with regard to effects invisible and prior, but with regard to the very entities which are active and passive; nay to the very cause which is latent in all.

"Let us then, in a few words, present the sum and substance of our philosophy; and in so doing begin from the first Simple. 1. We observe, that in a Simple there is an internal state tending to a spiral motion, and consequently that there is in it a like conatus or endeavor to produce it. 2. That in the first Finite thence resulting, there is a spiral motion of the parts. The same obtains in the other elementary Finites, in all which there is thus a like principle. 3. That from this single cause there arises in every Finite a progressive motion of the parts, an axillary motion of the whole, and, provided there be no obstacle, a local motion of the whole. 4. That if there be a local motion, there arises thence an Active, similar to the agent producing it, and differing only in degree and dimension. Hence that we admit of entities only of a threefold degree, namely, Finites, Actives, and those which are compounded of the two, namely, Composites or Elementaries. With respect to Finites we affirm, that one is generated by the other; and that all the Finites of the genus thus arising, have the greatest possible similitude one to the other; and differ only in degree and dimensions. Hence the fifth Finite is similar to the fourth; the fourth to the third; the third to the second; the second to the first; the first to its own proper Simple: so that he who knows the nature of one

knows the nature of all. In the same manner we affirm, that Actives have the greatest possible similitude the one to the other; that the fifth, fourth, third, second, and first Active are all of the same nature; differing only in dimension and degree, in the same way as Finites. That Elementaries also are similar one to the other, since they are compounded of the Finite and Active; the Finites occupying the superficies, the Actives occupying the interiors; that hence the first, second, third, fourth, and fifth Element are all similar one to the other; so that he who knows the nature of one knows the nature of all. We affirm, moreover, that in every Finite there are three motions, namely, a Progressive motion of the parts, an Axillary, and a Local motion, provided there be no obstacle; nor am I aware that in these extremely simple entities any other natural motions can be assigned, or, even if they could, that there are any other than such as I have mentioned; or whether granting the motions of these entities, which no rational person would I think deny, that any other could be assigned more convenient to nature. We observe again, that all these motions proceed from one fountain-head, or from one and the same cause, namely, from a spiral motion of the parts. This motion, inasmuch as it is the most highly mechanical, is also the most highly natural; being that in which, as is well known, the whole potency of nature and all mechanical force is inherent; and if it be granted that it is motion which is the cause of things, then no other motion can be admitted, in this case, than such as is most highly mechanical and most highly geometrical; for from its centre to its circumferences in space, a spiral is one perpetual ens, circular in all its dimensions; and as such it cannot possess in itself anything but what is most highly perfect, most highly mechanical and natural in its motion; being both as to the site of its parts and as to its motion most highly geometrical. In a Simple, however, in which there can be nothing substantial to be put in motion, nor any medium in which motion can exist, we must conceive that instead of a mechanical and geometrical motion, such as there is between parts and in a medium, there is as it were a total or pure motion, that is to say, a state and a conatus hence arising from a similar into a similar *quasi* motion; in which is latent the one only cause and primitive force that produced all the entities subsequently existing.

"Inasmuch as in all its kingdoms the visible world is of so diversified an aspect, and consists and subsists in the series of parts successively and simultaneously arising, it cannot possibly have its termination in the same point in which it had its beginning; thus it cannot possibly have its termination in its own first or mediate series or line of progression, or in its first or second part; for were this the case, there

would be no series in existence, neither would there be any ends; because there would be no distinctions into intermediates; consequently no element to constitute vortices; none to constitute ether or air; nothing to constitute fire; much less anything to constitute the innumerable parts of the mineral, vegetable, and animal kingdoms; in a word, there would be no world. Hence it is, that my first aim has been to demonstrate, that the first Finite derives its origin from the Simple; the second Finite from the first Finite; the third from the second; the fourth from the third; each being attended by a cause similar to that which exists in the primitive Simple, and which passes, by successive derivation, into the Finites. Hence I shew that a series of Finites thus springs from a Simple, or from the first Finite, in succession to the fifth Finite. These five Finites have a mutual relation to each other, and differ only in degree and dimension, or in their ratio to each other according as they are raised to successively higher powers or degrees. Again; inasmuch as all Finites are capable of becoming Actives, or of performing gyres from a like inhering and concomitant force or cause, that is to say, from a spiral motion of the parts; and inasmuch as they can pass also into a Local motion, provided there be space and nothing in it to present any obstacle; it follows of course, that there may be a fivefold series of Actives; an Active of the first, second, third, fourth, and fifth Finite points respectively; and hence that by means of the last or fifth Active, the fire of our system may pass into our atmosphere. The same law obtains in regard to the compounds or Elementary particles; which I hold to consist of two principles, namely, Actives and Finites; the Finites occupying the surface, the Actives occupying the interiors. And inasmuch as there is thus a series of Finites and of Actives, there will also be a series of Elements such as the first or most universal Element, the second or Magnetic or vortical Element, the third or Ethereal Element, the fourth or Aërial Element; before the elementary kingdom belonging to the world has yet been fully completed. And since every single particle of each Element is elastic, encloses Actives, and possesses the faculty [*vi*] of passivity and activity; hence the first Element encloses within it the Actives of the first Finite; the second, the Actives both of the first and second; the third, the first Elementary particles; the fourth, both the first and second Elementary particles; the two latter Elements participating in each principle, although they enclose not real Actives but Elementary particles. For the Elementary particles are not only passive but active; they are consequently elastic, and are moveable in particles and volumes; the motion and mechanism of their volume depending upon the motion and mechanism of their particles; although

they are not mobile and elastic in the same degree as the enclosed first and second Elementary particles from which they receive their elasticity. Thus we shew that the Elements also differ in degrees and dimension, progressing equally with the Finites, &c., in a certain order and succession.

"The series of these several subjects will be found in the work itself, as follows:—On the means of attaining to a true Philosophy. On the first simple or first natural Point. On the first Finite. On the second Finite. On the third Finite. On the fourth Finite. On the fifth Finite. On the pure material Finite, or water.

"With respect to the Actives, the series is as follows:—On the Active of the Point. On the Active of the first Finite. On the Actives of the second and third Finite. On the Actives of the fourth and fifth Finite, or on fire.

"With respect to the Elements, the series is as follows:—On the first or most universal Element. On the second or Magnetic Element. On the third Element, or the Ether. On the fourth Element, or the Air. On the fifth product similar to the Elements, or on Aqueous Vapour; where we finally shew, that in every drop of water is contained every single thing which had hitherto existed from the first Simple, as also the whole genus of Finites, Actives, and Elementaries; consequently that in a single drop of water is latent the whole Elementary world both visible and invisible.

"Now since causes and things caused are similar to each other, although they differ in degree and dimension, it follows that nature is similar to herself, and cannot be different in the larger system or elementary kingdom from what she is in the lesser; in the macrocosm from what she is in the microcosm; in a volume from what she is in a particle; hence in the elementary particle may be seen the quality of the volume, and in the volume the quality of the particle; from which we infer that the sun consists of the Actives which first originate, or those of the first and second Finite; particularly since it is the cause of all the subsequent mutations; the first motor of the things in its series; inasmuch as other things could not have successively existed except from the first Actives, or the solar space consisting of them. Consequently that the solar vortex and the vortex of the other stars consists of the first and second, hence of the most universal, Elements. That the sun itself, in the formation of its vortex, being surrounded with a crust of Finites of the fourth genus, was thus the original chaos of the earth and the planets; and inasmuch as this crust enclosed within it the sun, or the space consisting of the Actives of the first and second order, while the fourth Finites occasioned a pressure from without,

such a chaos could resemble no other than an elementary particle; in which, in like manner, the Actives exercise a pressure from within, while the Finites or Passives occupy the surface; so that it was by a process the most simple that nature produced a chaos, from which she afterwards brought forth the earths; being thus similar to herself in her greatest as well as her smallest productions. That consequently the earth, when just produced, and in proximity with the sun, consisted of the fourth Finites, and possessed in the larger system, like the Finite in the smaller, a motion of its parts, an axillary motion, and also a local motion; so that in itself it was the representation of a large Finite; and as to its local and annual motion, the representation of a large Active; that hence both in the earth and in the other planets we may see what is the quality of the Finite and what the quality of the Active in its minute boundaries; and also in the chaos what is the quality of the elementary particle."

This, we hope, will put the reader in possession of the preliminaries requisite for commencing the study of the present Work; and we now proceed to make one or two remarks which are rendered necessary by the difference between the modern tendencies of philosophy and those which were apparent when Swedenborg wrote. At the same time it is pretty evident, that Swedenborg received comparatively little impetus from his contemporaries, but that the greater part of what he has written, wears the impress of his own active mind. He, therefore, needs not to be accommodated to this age any more than to that which has passed away; but it is the modern reader for whom, on his own behalf, we feel it expedient to make the following observations.

When Swedenborg wrote his philosophical works, modern scepticism had not attained that predominance which it has since exercised in European philosophy; nor had Transcendentalism, under the pretext of answering scepticism, admitted its conclusions, changing the form of their enunciation from the sceptical to the dogmatical. This has since occurred on the continent of Europe, and the breath of the movement has not been unfelt even in England. Here, however, the national temperament forbids that Transcendentalism should be known and received as a system; although notwithstanding some important conclusions of the system have deeply infected the me-

taphysical faith of the country. This it is that makes it incumbent upon us briefly to notice that state of mind which the majority of learned readers will bring to bear upon the Work now before us; and to declare *in limine*, that so far as Transcendentalism in any of the forms under which we know it, is the medium through which these *Outlines*, or the other philosophical works of the author, are viewed, so far they will be misunderstood; so far they will be seen not directly, but through a medium; and that medium composed of falsities in words and notions, which must alter and distort whatever they surround.

Now what is Transcendentalism? It had been argued by Bishop Berkeley in his ingenious *Dialogues*, that what we term the world is after all but our own sensations, and that given the totality of these sensations, we have no need of an outward universe. His logic was accepted as irresistible by "thinkers" in all countries, and at all events no counter-statement having the neatness, portability and plausible character of the Bishop's scheme, was made at the time, or has been made up to this hour. If the principle of the *Dialogues* were true, the Irish metaphysician had demolished the validity of the external universe; and in so doing had achieved a triumph for scepticism which implied clearly enough those other victories that it was afterwards to gain in the hands of David Hume and his continental admirers and successors.

The Scotch metaphysician took the matter up where the Bishop left it, and, as it is supposed by learned philosophers, proved that the law of cause and effect was without foundation in the nature of things, and was but a prejudice, useful enough in common life, but not valid in philosophical argument. It was therefore the glory of this thinker, that he had repealed or rather disproved all real cohesion in man and nature, and made of the universe an incoherent nulliverse, a whirl of fleeting sequences, and a delirious "chase of Pan."

At this stage, his own countrymen, Reid and others, very properly rejected his whole theory, centre, antecedents, consequents, and all, as a useless and fruitless thing, one of the entities over the number requisite for mankind; and they betook

themselves to *common sense*, as an asylum from monstrous ratiocinations, and a heavy check to absurd principles and conclusions. Not so the continental philosophers. On the contrary, Germany produced a mind, in the person of Immanuel Kant, that thought it worth while to accept this progeny of scepticism, thus self-condemned by its fruits, and to give it grave consideration, a positive form, and a life-long education and development. It grew up into transcendentalism, a system worthy of its seed, and directly perpetuating the powers and qualities of its parent scepticism.

The point of Transcendentalism was this, that whereas the arguments against the possibility of our seeing an external world, are unanswerable, let our world be freely conceded to consist of our own sensations, valid for us, though not for itself; time and space being "forms of sense," true of man, though not of objects. Furthermore as the law of cause and effect, and several other fundamental notions, are found to have no abiding place in the surfaces of sensation, Transcendentalism says here again, These laws are the forms of thought, true for the understanding, though not for objects, and therefore you may fairly declare that they are valid within the circle of that faculty, but not to be predicated or defended beyond it. For instance, we have a right to say that the universe has a cause in God, if we thereby mean that such is the way in which our minds are obliged to think; but if we further mean that our proposition is an outward or objective fact, independent of our own minds, we become guilty of an inconsequence. It is true that we have the idea of God, but how do we prove that there is a real object existing out of us, corresponding to that idea; that there is a God as an outward or inward object of reason? May not God be only the *pruritus* of our own uneasy faculties?

In a word the upshot of Transcendentalism was, to regard all sensation, knowledge and thought as subjective, and to make the individual believe all the manifestations of God, nature or humanity which are made to his mind, as so many presentations of his own being. In this way each man becomes shut in the case of an opake and impenetrable selfhood, which not only absorbs and destroys all outward truth, but makes it impossible

to have any confidence in the existence of our brother man. To accept these consequences is the manner in which Transcendentalism has answered scepticism!

It will easily be seen that on the foregoing principles Transcendentalism utterly ignores all those reasonings which are based upon the truth of outward nature, and that it shews a long list of subjects of which the investigation is declared "impossible." Never in fact did any one man proclaim so many things "impossible" as Immanuel Kant: to limit the human faculties was his glory; to accumulate impossibilities was his science. Theology was impossible, and ontology especially was impossible; and indeed scarcely anything possible was left, saving nonentity and terminology.

Thus metaphysics, after dreaming a while in Berkeleyism, became rambling and delirious in Hume, and sank into confirmed idiocy or Cretinism in Kant, who, to the false movements and functions of past scepticism, gave a corresponding false organization or body, and endowed the monster with a power of propagating its kind, and filling the world with a lineage of abominable inventions.

We have spoken particularly of the Kantian Transcendentalism, and not of the manifold systems of Kant's successors, because it is the former which has had the greatest influence in England, into which it was slowly introduced by Coleridge and others, long after it ceased to animate any particular school in Germany. And we assert that the identical principles of Idealism, Scepticism and Transcendentalism, have so corrupted thought even in England, that scarcely any subject or problem can appeal to learned and thinking men with its direct natural force.

Thus as the world without is referred to the senses of man, and denied to exist except so far as it is perceived, so the inner world of which the mind is a part, is similarly referred to other faculties, and made to consist entirely of their perceptions. The consequence is, that both spiritual and natural experience are shaken to the base, and all scientific vision of the deeper parts of nature is set down as a dream, in which the figments of the mind are mistaken for the unattainable truth of "things in themselves." In this case sensualism with locust

wings advances over the earth, till there is not a green patch left to sustain animal life, or to cheer the traveller's eye, or soften his path. The legitimate end therefore of all this high-flying metaphysics, is no other than that old Epicureanism, "Let us eat and drink, for to-morrow we die."

To one who is deeply committed to this unhappy metaphysic, it is in vain to cite experience of any degree. To whatever sphere it professes to belong, it is the mere child of the mental faculties. If God manifests Himself, He is but an idea of the pure reason; if the spiritual world is represented, it is but the conceptions of the understanding; if nature lies outspread before the eye, both it, and the eye itself, are but sensations. The matter is not at all mended by the Kantian admission of that most immoral and absurd of "all possible worlds," viz., the world of "things in themselves;" for the cognizance of these things, according to Kant, their inventor, is impossible.

Now it may easily be seen what a bearing these principles must have, in indisposing the human mind to an attentive consideration of Swedenborg's writings, in which the questions of Idealism, Scepticism and Transcendentalism are unasked and unanswered, and the objects of reason are treated as outwardly true, and the outward spiritual world itself, independent of our perceptions like the natural world, becomes a direct object of human knowledge.

Among the least sincere parts of metaphysics, we may justly reckon its continual profession of the dangers of materialism. Not that materialism is other than a gross error and evil, but much has been wrongly classed as materialism which properly comes under the designation of *reality*. Many writers exhibit great sensibility on the score of materialism; and this, it may be feared sometimes, not with a view to curbing ill-directed sensuality, but in order to banish external and commanding truth from the mind. They allege the grossness of the mind to the score of the material body, much as improvident men blame the stars, and as sinners of all classes make circumstances the pack-horse of their sins. The truth, however, is, that moral wrong is wrong precisely because it is *not* material; the actions of the body are qualified by good and evil only in proportion as they are actions of the spirit. Automatic or purely organic

action, or the lower forms of mechanical action, cannot exhibit sensuality, or in any way call down blame or praise; although according to the above metaphysicians, the deadest of things, for example, a stone, ought also to be the most vicious. But it is plain that the belief in matter, and in the necessary embodiment of the human spirit, has no bearing whatever upon the question of materialism considered in its moral relations. The only subject worth a moment's consideration is, whether the persistent attribution of form, and body, and ultimately of mechanical and geometrical laws, to the human soul and spirit, does amount to materialism, or not. And here we at once answer that it does not. It is impossible to conceive matter without form,—impossible even for the most learned Aristotelian. Again, it is impossible to conceive form without substance,—impossible even to the Berkeleian and the Kantist. But materialism, as we understand it in the opprobious sense, does not imply a belief in the formal and substantial existence of the mind, *(e.g.* as a brain,) but rather a predication of low and unworthy forms of the human essence. Let us illustrate this by an example. If I ask you of the distinctive essence of Westminster Abbey, and you answer me that the stone of which it is built is that essence, I am in this case bound to accuse you *pro tanto* of materialism. For it is evidently the *form* of the Abbey, the architect's *plan,* which gives the building its individuality. The same stone might be ranged differently on other plans; but the same plan would continue the same in whatever latitude it was built, or with whatever materials. The very stone, it is true, has a form, and could you but see it in its intimate constitution, a stupendous form, but here its form is not made use of, excepting in so far as it lies at the root of the hardness, durability, &c., or the *general* properties, of the stone: consequently it is the stone considered as mere matter, not as form, which enters into the construction of the Abbey. In every orderly gradation in which aught worthy to exist is founded and upraised, the subsidiary forms count but as matter to those above them, and these again, in their turn, as matter to others higher still; or to consider the descending scale, the highest forms enter into those beneath them, and group them in their own manner; and the edifice or organ thus produced,

enters into a lower series, and arranges its parts or matters into new groups; which thus become fresh forms capable of exerting a corresponding operation upon other materials again; and so forth. Thus all things are indifferently matter, or form, according as they are circumstanced or viewed. And the only materialism for the understanding consists in attributing the operations of high forms to low and inadequate ones, *i.e.* to matter as a relative being. Thus when the operations of the mind are said to depend upon the *nervous pulp*, we are at once struck with the materialistic *animus* of the expression. And why?—simply because the construction of *a pulp* is felt to be lower than the form of the brain, which is the indubitable form and embodiment of the human faculties; and because the senses, to which the *pulp* is presented, are allowed to climb into that theoretical faculty by which the higher forms are discovered, and to insinuate that the *pulpy appearance* exhausts the reality, and that there is no wondrous order and mechanism penetrating the pulp, by which the brain is made receptive of its functions. In a word, it is not the bare annexation of form, quality, properties, space and time, real or analogical, or matter either, to any subject, that can degrade it, but the misplacing of the various degrees of which these predicates consist, so that vegetable effects are assigned to the mineral, or animal effects to the vegetable, or human effects to animal organization, or lastly, divinity to nature.

Thus much we feel it necessary to say to the reader of the *Outlines*, in rebuke of that exceedingly artful charge of materialism which the metaphysicians are so prone to make against all *real* views of the soul; in which views, as we said before, we fear it is the commanding reality that is repugnant, and not the materialism. For if the human mind is conversant with the gross bodies, forces, properties and things of sensation, as it undoubtedly is; and if there is nothing in the higher faculties corresponding in palpable reality to sensation; if the understanding and the reason have no real but only a formal validity in their ideas and conceptions; then how fearful the weight and preponderance of the five senses! They have all things on their side, with no counterbalance whatever. If, however, as we maintain, *all the intellectual faculties are likewise senses*, and if

their objects are real, outward, forcible and impressive, like those of the visible world, then there is some hope of an equilibrium between the inner and the outer man. In moral battles, reason may have sense with it as well as against it, and in hours of despondency, faith may find comfort in the endowment of sight.

En passant we may note it as curious, how readily the downright *nonsense* of the theologians, finds its counterpart in the cautious *non-sense* attributed to reason and understanding by the metaphysicians. The one appears to be the organ of which the other is the object: the one generates contradictions; the other adopts the negation which is the result. 1—1=Theological Mystery; 0=Philosophical Faculty. We observe that it is the same amount differently expressed.

The failures of philosophy in the above respect, have in truth a simple root, and one which it is not difficult to discover by the light furnished in the writings of Swedenborg. Neglect of facts, internal and external, as the basis of certain very ordinary inductions,—this neglect, which Bacon came to signalize in his own day, is the source and cause of the shortcomings of metaphysicians ever since. 1. As a principal error, man has not been steadily regarded as a finite being; and consequently the investigation of forms, which is a path of fruitfulness, has been superseded by a barren quest after unformed matter, and disembodied life; both of which are necessarily inappreciable, and finitely speaking indeed, are non-entities. 2. God has been regarded otherwise than as given in revelation and experience, and consequently philosophical theology has had no basis and has made no progress. 3. Nature has been limited to the phenomena presented to the senses, because its internal parts, like the human powers, have been considered divine and infinite, and consequently occult; in other words, nature has been emptied of series and degrees, and principles have consequently been deprived of their legitimate unbroken connexion by similar means with effects and ends. These are some of the reasons for which philosophy has remained a blank, with much pretension on its side, and small human usefulness.

This condition of metaphysics has undoubtedly arisen from great theological perversions, which in their turn are due to

moral causes; since "God appears to every man according to the state of each;" for philosophy ever has been, and ever will be, the servant of the reigning theology, to do its bidding, either tacit or confessed. Yet we may, without deeply investigating the moral estate of the church, observe one fact with respect to the intellectual constitution of philosophy, which will go far to account for its inertia and incapability; we mean the lymphatic temperament it manifests; the lazy attitude in which it performs its tasks; the easy-chair study of its own consciousness as the grand book and volume of instruction. The poor Hindoo, gazing into his navel for a resolution of difficulties and a comprehension of mysterious things, is worthily engaged in comparison with those who are occupied year after year in "probing their consciousness." The only *fact* of which they are thoroughly conscious in their introspections, and which might be usefully recorded and remembered, viz., their flat ignorance of themselves, is, alas! not written among their discoveries. But what profit is there in studying a consciousness which does not involve among its conscious elements the knowledge which they seek. Or if it does involve this information, then the information is already obtained, and there is no need to seek it. We must be sorely perplexed indeed when we do not know our own minds. But men have yet to learn that the consciousness and the *self* may be totally different things; that *Γνωθι σεαυτον* is a precept which enjoins anything but egotism.

The notion of eliminating a philosophy from the analysis of consciousness, is so profoundly, so intimately absurd, that it is extremely difficult to discuss it without falling into truisms which it seems ridiculous to enunciate. The office of man is far other than at any point of his life to bring himself to a stand-still, that he may examine his own wheels and mechanism. The fact of motion, of action, of will, is the grand human potency, and this fact is necessarily abrogated to the last degree, and as far as may be, unnoticed, during the pretended examination of consciousness. The business of life, and especially of philosophy, is to alter and enlarge and improve the human knowledge or consciousness; by no means to fix its limits at any given or any possible stage. A philosophy which seeks to rivet a particular consciousness as a boundary upon the human mind, is the

organon of a preposterous conceit, and would consistently nip childhood in the bud, prevent all improvement, and deny the possibility of education. Yet such a philosophy is the inevitable growth of that false view, that man is not finite but infinite, that he is a life, and not a recipient of life.

Had the latter point been thoroughly acknowledged, we should then have had before us a creation and a subject in which everything was knowable; a universe of forms generating qualities, and adapted to uses, which was the object of science and organic philosophy in all its departments, from Theology to Cosmogony. On the other hand, the denial of form to the mind and soul, and the consequent tacit predication of infinity of both, has made knowledge cease with the senses, and the surfaces thereof, and has, in point of power and intelligence, finited man's reason in many respects to a degree much below the instincts of animals. In theology the same cause has degraded the Christian below savage tribes, and made the consolations of that Gospel which brought life and immortality to light, incomparably inferior in reality and distinctness to the poor Indian's belief in the Great Spirit and the happy hunting fields.

Thus much it has seemed necessary to say, in order to vindicate the present volume from coming under the judgment of the philosophies of the day; and in order to warn its readers to put aside metaphysical notions and prejudices, such as the necessary infinity of spirit, the identification of form and mechanism with matter, the existence of "things in themselves," the assertion that sensations are unlike objects, and the possible subjectivity of any idea in an absolute sense. For these are but forms of that dense "intellectual cataract" which philosophy has drawn over the intellect, and which, binding down mankind to a groping sensualism, prevents all direct contact between man and his field of alteration and improvement, viz., the outward and inward creations of God, in which he is a part among parts, a body among bodies, a spiritual form among spiritual forms.

We had intended to give a brief account of the subject and scope of the *Outlines*, but this may be readily gathered from the Index of Subjects appended to the volume. In the meantime we beg to remind the reader, that the work was published

fourteen years before the first of the Author's theological treatises, and that during the interval his mind was undergoing continual and rapid progress; so that it is by the latter treatises alone that he is to be finally judged, although his philosophical works are indeed a considerable help to a correct appreciation of his labors as a whole. Nevertheless his theological works are so far superior to his early productions, that we are bound to put in a distinct *caveat* against a last opinion being formed from any others.

The reader will see at the first glance that the work before us has a mechanical tendency, and aims at a reality of knowledge on the deepest subjects, such as the moderns themselves, often accused as they are of a mechanical spirit, would scarcely venture to hope for even in the sciences of chemistry and physics. Yet on account of this very tendency, we augur that it has a function in the busy world, and will be acceptable to its true citizens. It tells us not to be ashamed that we "live in a mechanical age." The laws of mechanics—do not they, too, come from the infinite? May there not be superlative perfection in *them*, as well as in any other laws?* So long as the laws of the soul are unknown, how shall we be certain that the deeper analogies of mechanics are not those very laws? Let us then look for a moment at the privilege we enjoy, in that we are among the first to "live in a mechanical age."

Remark at the outset, that the question at present is not between the age of gold, and the age of mechanics. Were we still living, an undiseased generation, fresh from our Maker's hands, in his glorious primeval universe; at home in pure and most perfect love in the celestial warmth of creation; reading the Word only in the works; suckled by the maternal earth, or fed with nectared fruit, in quick anticipation, by the obsequious trees; brotherhood and sisterhood, wedded love, and family nearness, the unfailing promise of a heavenly society; space not putting asunder those whom God had united;—were we still enduring in this original estate, there can be no question how superfluous would be the officious ministrations of art;

* *Outlines*, p. 109.

and with what well-founded composure we should repugn for ourselves the influences or offers of a mechanical age. But this first estate has gone, and it is the laziness of philosophy to regret it. That sensuality which was once the fall, has become the floor of a new heaven, and henceforth the natural man is infinite in the infinite. The conditions are inverted. Natural truth has become the basis of all truth; the necessary foundation of society; and mechanical truth is the *ultima ratio* of natural truth. The question, then, lies between mechanics, and rude, unskilled adaptations: between the casual and ignorant gratification of animal wants, and the steady maintenance and healthy expansion of the body of the soul: between occult qualities in the sciences, abstractions in philosophy, and portentous mysteries in theology, on the one hand; and definite objects of all degrees on the other: between the affections reduced to blind instincts, and separated by the chasms of space and time; and the same affections intellectualized, and combined naturally, and hereafter morally, into an indissoluble society, which the laws of creation, equally with the influences of the spiritual world, tend to perpetuate for ever. In a word, the dispute is between mechanics as an exponent of the inward sphere, and an indication of the future time; and metaphysics, hanging in middle air over the fruitful earth, bewailing a supposititious past, dreaming of an unlikely future, and in the meantime leaving the present to the conduct of the abused spirit of mechanics. The issue is as certain as the triumph of capacity over incapacity, or as the preponderance of something over nothing.

In justification of a mechanical element in philosophy, we might fairly appeal to the important part which the mechanic sciences are performing in the advancement of the race; we might shew that they tend to the production of competence, to the spread of knowledge, to the mitigation of suffering, to the restraint of crime, and to the communion of mankind, with all that is implied in these prodigious qualifications. But fortunately it would be useless to dwell on a point which is never disputed. Dismissing then the innumerable services which the mechanical spirit performs in the groundwork of human society, let us retrace our steps to its first manifestation in the

writings of Swedenborg, and hint at one or two benefits which a true application of it promises to philosophy and theology.

Observe, however, that by mechanics we understand the whole doctrine of forms, as either analogically or really mechanical; and when we say, "analogically," we imply, that the world of the soul itself is such, that it is connected with nature without the intervention of any necessarily occult or mysterious laws; in a word, that all spirit and all nature is but One Creation with its parts rationally contiguous. But we do not limit mechanics, which, as Swedenborg says, "is conceived and born of the elemental kingdom," and indeed of the spiritual world, to material machinery, but comprize under it at present, for the behoof of the argument, all the possible states of animate machines, and of living finite beings.

The first grand fruit of the mechanical spirit, is the infusion of industry into the soul of philosophy. For what is now required of philosophy? Simply this, that it shall be the Science of sciences. The mechanical spirit insists that philosophical teachings shall be equally definite and real with the facts of the senses, and the texture of positive knowledge. No umbilical contemplations, no *non-sense*, have the slightest power with the student who has acquired positive knowledge in other departments. If philosophy has "no assets," it must work and acquire. It must till the ground of creation, to produce the noblest crop of all, which nature will acknowledge and claim as her own production. Its results must not be contrivances, or inventions, or wooden systems, but juicy fruits, which have absorbed the choicest dew of the sciences, and embodied it in forms of beauty, brilliantly real beyond competition, and big with utility. And whenever philosophy mutters "impossible," it must submit to be treated as a forward menial, usurping the dress and name and functions of another, and its education must recommence at the bench and in the workshop of the sciences. In short, philosophy must teach in learning; and discern the nature of man from his extended works, from the entire body as the physiognomy of the soul, from the great frame of nature as the means to an end, and the analogue of humanity, from revelation as a divine fact and enlargement of nature; from the highest powers which the human mind has

yet attained, considered as means to a further elevation. It will then have something tangible to present, which "a mechanical age" can handle, and the intellectual months will offer their yield of precious grains, each in his season. In this case the sciences themselves, uninterruptedly supplied from the fountains of doctrine, will be but philosophy in its lower derivations, and will carry its tone and its informing spirit to the humblest door, down to the very limits of the senses. Thenceforth philosophy can never fall; for to attempt to shake it, would call forth not gowned disputants, but human nature in its defence. For what, after all, *is* true philosophy, but the rational mean to an unbounded charity, the quick-eyed intelligence of brotherly love; a thing appreciable in one form or another by all the dwellers upon earth.

And if a philosophy is naturally indestructible that rests upon the basis of the sciences,—if a philosophy comprising real metaphysics, metamechanics, metacosmics, metachymics, metazoics, and the other powers of knowledge, be "absolutely safe from harm by aught that can befall in this sublunary region," who can doubt that theology also may be similarly exempt, when it, too, acquires a natural foundation, and is equally positive, and directly connected, with the truths of a mechanical age. Once for all God has come into nature; His truth is now entering into the natural sciences. To pass over the other fruits of this great Advent, and to instance perhaps one of the least, will not the corroboration of theology by the various spheres of nature and art, tend to remove controversy from the ground of principles which ought never to be questioned, to the outer courts of truth; and while perpetuating the intellectual labors of the world as a means of heavenly prolification, preserve unbroken the joyful sabbath of the inner man? And as that machinery which is inferior to the hand, has yet released the hand from many an unworthy toil, and will in the end enfranchise man from brute occupations, and leave his body free for its own peculiar works; so in like manner will the sciences, as the dead machine of theology, address themselves to the confutation of scepticism, to the settlement of disputation, and to the management of those insurrections of the mind, which though comparatively harmless in physics, are pests and heresies

in a church; and thus will leave Revelation at leisure, for its own high task, of the moral regeneration of mankind. We look upon it, therefore, that in the coming time, the religiously scientific mind will be the true Church Militant upon earth.

But be this as it may, one thing is certain, that the last of the non-mechanical ages has passed for ever. It remains then to make the best of mechanical things and mechanical views, or to connect them with spirituality, which is impossible without a certain *ratio,* or common organ partaking of both. Such an organ do we happily find in these wonderful writings of Swedenborg. They exist to give ends to science, the precision and flexibility of nature itself to philosophy, and to theology a conjoint natural and divine Realization. In place of the garden of Paradise, they formally point our vision to the City of the New Jerusalem, *in the midst of the street* of which, as in a second paradise, is there the tree of life. Different though the garden from the city, yet the one is reconcileable with the other; nay, the crown of the one, or the tree of life, is to exist within the other.

But perhaps we have dwelt at too great length on the seemingly mechanical tendency of a portion of Swedenborg's philosophy. We have, however, taken this course, from the experience that mechanical views have been alleged against him as a special disqualification. To remove which objection we have endeavoured to shew, that mechanics are the last exhibition of spiritual forces, and that so far as they correspond to those forces, and work for spiritual ends, they too, like the human form, are spiritual forms, and not material. It is true that we might have shewn, on the other hand, that mechanics is too gross a term to be adequate to the state of inner forms as opened by Swedenborg, but we preferred to meet the accusation on the very ground of the accusers. And we now, therefore, tell them, with great plainness, that *in an eminent sense* we admit their charge, but we further declare that they will find that Swedenborg, not of his own right alone, but by nature and Providence, furnishes also the just spiritual complement of the Mechanical Ages.

CHAPTER I.

THE

INFINITE,

AND

THE FINAL CAUSE OF CREATION.

To ERIC BENZELIUS, *Counsellor to his sacred Majesty the King of Sweden, Doctor of Theology and Bishop of East Gothland: from his loving Kinsman.*

WHEN in one and the same individual we venerate merit and acknowledge the source of personal kindness, especially if other and extrinsic ties be superadded, in such case, through the harmony of nature and circumstance subsisting between us, we embrace him with perfect love. In you, Right Reverend Bishop and beloved Kinsman, I venerate a wisdom equal to your exalted rank, and worthy of your sire; and the learned world with one accord confesses the same. In you I acknowledge the source of personal benefit, inasmuch as it was by your advice and wishes, that my mind, (then ripening and eager for study, though hesitating and ignorant nevertheless, as at that early age it is wont to be, to what pursuits to turn,) was directed to the present and similar subjects, which were auguries of a prosperous career in literature. Moreover there subsists between us the bond of relationship. From this threefold ground, that is to say, from veneration

for your merits, from acknowledgment of your kindness, and from family ties, springs sincere love, which I trust you will permit me here to put on record. And as it was at your instigation that I applied myself to these studies, so I hope you will in a measure acknowledge this offspring of my powers, poor though it be, as in some part your own; and therefore allow that of right it should be dedicated to no one but yourself: and I claim for it your favorable consideration, if not on its own account, yet because of the cause it pleads; if not for its merits, yet for the love you bear its author. That your life may be as long and happy as those desire who are your relations by love,—this, and more than this, as I love you more, is the heartfelt wish of,

Right Reverend Bishop,

Your most obedient Servant and dutiful Kinsman,

EMANUEL SWEDENBORG.

PREFACE.

You here see philosophy reasoning upon the infinite and the soul, yet using the most familiar words and a humble style, and endeavoring to divest herself of the aid of metaphysical terminology; and this, lest any obscurities or sublimities of expression should cause the mind to dwell upon words, and turn it aside from things and the subject. When any high theme is treated of, a vigilant care should be exercised to avoid the minutest expression that can make the reader pause. We have, therefore, been anxious to present our philosophy under the simplest aspect, and in a guise no way different from the familiar speech of the world.

Philosophy, if it be truly rational, can never be contrary to revelation: that is to say, if the rational principle partake of the soul more than of the body: or the reason arise from no gross corporeal instinct, whose end it tends to realize, forming the soul by use and exercise for perpetual obedience and consent thereto. Reason or understanding is a faculty partaking both of the soul and the body, whose end is, to enable the soul to be instructed through the body and its organs, that afterwards it may dispose all things in such an order and connexion, and call them forth with such distinctness, that a rational principle may be the result. The end of reason can be no other, than

that man may perceive what things are revealed, and what are created: thus the rational cannot be contrary to the Divine; since the end why reason is given us, is, that we may be empowered to perceive that there is a God, and to know that he is to be worshipped. If reason be the mean, endowed with the faculty and power of perceiving, and if the actual perception be the end, then the mean, in so far as it is correctly rational, cannot be repugnant to the end. The very mysteries that are above reason, cannot be contrary to reason, although reason is unable to explain their grounds. But of these subjects we speak in the following Work.

CHAPTER I.

THE INFINITE, AND THE FINAL CAUSE OF CREATION.

§ I.

In order that we may be favored and happy in our endeavors, they must begin from the Infinite or God, without whom no undertakings can attain a prosperous issue. He it is that bestows on all things their principles; from whom all things finite took their rise: from whom we have our souls, and by whom we live; by whom we are at once mortals and immortals; to whom, in fine, we owe everything. And as the soul was created by Him, and added to the body, and reason, to both, in order that the soul might be His: so our thoughts, whether we revolve them within, or utter them in words, or commit them to writing, must always be so directed, as to have their beginning and end from Him: whereby the Deity may be present with gracious favour, as the First and the Last, in either end, as well as in the means.

Rational philosophy—what.

Human philosophy and wisdom are for the most part anxious to be taken into company with theology. They glory in a manner in perceiving and scrutinizing divine and transcendent subjects. Often too they accompany theology to her very oracles and mysteries, and refuse to credit or embrace their responses, until after they have consulted the tribunal of reason, and endeavored to attain to some grounds of belief. It is the distinctive mark and character of the philosophical temper not to bestow unhesitating assent on matters of dubious, unrecognized, and obscure pretensions,

unless concurrently it be persuaded by a statement of causes, and by its own peculiar mode of philosophizing, and its own analysis; and unless its illustrious companion, theology, vanquish it in fair, even argument. This, I say, is the mark of the philosophical temper, and a disposition of this kind will not be withheld from sacred subjects by the dictum that they are revealed. It holds that it is living in a state of nature and in the utmost freedom, and is bound to acknowledge no superior but him that can command its reason, who alone has the force to tie its hands. I am now speaking of things as they are, not as they ought to be; *de factis*, not *de jure*. And although there be little that the mind can perceive in the natural sphere, and infinitely little in the Divine, still our philosopher thinks that he can and ought to perceive; and whenever he does not perceive, he either declares the matter to be inexplicable, or denies it altogether, or wraps it up in the darkest words, to prevent all possibility of convicting him of ignorance. So ambitious is the mind, that it endeavors to philosophize to the utterly unknown, where it fixes the boundary, not of its own knowledge merely, but of the knowledge of the whole philosophical world besides.

The infinite is the difficulty of philosophy.

As the mind, in the course of philosophizing, peers into and courses over finite nature, its parts and its whole, it cannot but at last arrive at the utterly unknown and inexplicable, *i.e.* at the infinite, and the essence of the infinite; and as the infinite is identical with the non-finite, the mind there stops,—there finds an insurmountable and impenetrable difficulty, and remains involved in its Gordian knot. And when by a thousand curious efforts the philosopher labors to know what the Infinite may be, what the infinite God is like, and what can be the nature of an essence that requires to be conceived as without end or boundary: what that something is of the qualities of which philosophy is doomed to perpetual ignorance; he then considers and enquires whether such infinite be identical with the Divine; whether there be aught in nature that can be said to be infinite; whether the infinite is beyond nature, or the contrary; and whether its qualities are investigable by means of nature, or not. For where the human mind is not hindered by circumstances, or oppressed

with cares, it ever loves to rise and mount; and the steeper the difficulty, the more heartily the mind engages with it; for it burns to possess denied knowledge, and to tread forbidden ground; longs also to know secret things, and glories in grappling with difficulty: and the longer it sticks in the knotty point, provided there is hope that aught approaching to perfection of knowledge be attainable, the more earnest and burning do its efforts become. The pleasure of the pursuit lives and feeds upon itself, and dallies with the laboring soul, winning it over to its side; and this continues until the mind has found what it sought, or else in sheer weariness is forced to leave it as hopelessly inexplicable; although even in this case it is not without reluctance that the philosopher can consent to forego his emprize.

Speaking generally, there is no relation between the infinite and the finite.

The more deeply human wisdom commits itself to the investigation of the divine or infinite essence, the more deeply is it involved in a labyrinth. For example, let THE INFINITE be the difficulty that the philosopher is impatient to solve. As soon as he arrives at the point where he begins to enquire into the qualities of the infinite, he at once whets his mind, consults all the oracles of reason, and collects a thousand arguments from whatever particulars are fixed scientifically in his memory. These arguments, however, be it observed, are taken in the first instance from the finite sphere; for in consulting the oracle of reason, they can come from no other source. Besides, the reasoning mind knows none other than the finite, consequently can produce none other: for it is informed and developed by finite things, and through finite senses; and seeks the unknown by the analysis of the known: and moreover, being finite itself, none but finite things can be known to it. In the first place therefore the philosopher institutes a comparison of a general kind between the finite and the infinite; or between a living, intelligent and active finite, and a living, intelligent and active infinite. But rational philosophy at last rejoins, that no comparison or relation can subsist between the finite and the infinite: that if the philosopher must enquire, by relation and proportion, into the essence of the infinite from the essence of the finite, the infinite will necessarily appear null in relation to the finite; or else

the finite, null in relation to the infinite. For the infinitely small becomes proportionately as nothing in relation to the greatest or least finite, if we may so express ourselves. On the other hand, the greatest or least finite becomes nothing relatively to the infinitely great. Whence if we postulate either the infinite or the finite, the other perishes in the comparison.

Specifically, with regard to extension and space, there is no relation between the infinite and the finite.

The human mind, however, does not rest satisfied with even the above answer, but in the course of its enquiries into things, descends to one detail after another, and distinctly proposes to solve the difficulty, by scrutinizing in the first place every hole and corner of the subject. As yet indeed it does not thoroughly doubt, neither deny or reject, nor yet affirm, but cherishes the hope of still solving the question, so long as anything whatever remains untried. It therefore now goes into details for the enquiry, to enable it the better to see, whether what at first appears impenetrable and inexplicable, may not somewhere, or somehow, be explained. And for this purpose it directs its attention to magnitude, space, extension, form, or to quantity and quality, or other similar geometrical conditions. And as it knows that there is an infinite in the least sphere, and an infinite in the greatest, so it compares the substances, quantities or qualities of the finite with the infinite; and in the first instance probably supposes, for the supposition is extremely natural, that God is the least or simple element of quantity and space, and likewise the greatest. Yet as the reasoning goes deeper, the inference comes, that if God be the least, then he cannot be infinite; for the least or minimum of quantity or quality still retains somewhat of the finite; according to which, God is not infinite: and so the mind plunges deeper into the knotty labyrinth, and can hardly emerge from it again. For what is that minimum which is infinitely little? What is the infinitely little, or the infinitely least? Such an entity is impossible, and therefore there is no escape in this direction. There is no quantity infinitely small. All quantity must be either finitely least, or it must be a simple of some kind; or the subject must be infinite without predication of quantity, magnitude, space, extension, form, quality, or smallness. Further-

more, as there can be no proportion between the infinite and the finite, there is therefore the same between the least finite and the infinite as between the greatest finite and the infinite. The difference between the two finites, or between the greatest and the least of nature, is itself finite; and therefore makes nothing relatively to the infinite; so that no possible ratio exists. Here then the mind is again at fault, and this time is deeper plunged than ever in the formidable maze.

In respect of motion and celerity, there is no relation between the infinite and the finite.

As then the infinite is not the least of substantials, the least of extension, the least of quantity, or the least of form, that is to say, is not the least of geometrical entities, the human mind goes onwards, turns over the subject in every way, and asks whether the infinite may not be the pure and least actuality; at once the least and the greatest in motion, in celerity, in motive force; in short, whether it may not be at once the least and the greatest of mechanical entities? The mind is aware that no finite can exist without a cause; that nothing can result or happen from causes without a mode; that modification can never take place without a change or variation of limits, either of those of the parts or the whole: that nothing can experience such variation of limits, or of the parts and the whole, without motion: that motion cannot exist without a substance that is moved: and that no substance can undergo motion without assuming reference to degrees and moments, which give birth to succession in celerity, or what is the same thing, in time; and hence to motive powers in mechanics. As then motion or mode supposes the finite and substantial; or as the mechanical always immediately supposes the geometrical; and as the infinite cannot admit of modification, the mind concludes again that the infinite cannot be the greatest mechanical entity in the sphere of leasts; more especially as it is not the least geometrical entity; the former being a causate and effect, while the cause and efficient lies in the latter.

Is the infinite the pure and simple?

Still, however, the mind is dissatisfied and perplexed, and to enable it to investigate the essence of its infinite and its divinity, it passes analytically from geometrical and mechanical grounds, to a something analogous to the geometrical or mechanical; to something conceived as

pure; to an entity that is not finite; that is indivisible, not extended, not consisting of parts, and therefore neither formal, nor modified; in a word, to the pure simple. And in this it recognizes a kind of primitive, causant, and agent, preceding the state in which finites can exist from it, and finite existences subsist. For extended entities must originate and subsist ultimately from non-extended: entities possessing magnitude, dimension, space and form, must come from entities destitute of these categories: limited beings from non-limited: geometrical entities from geometrical points: in a word, all compounds from relative simples; and these latter from positive or pure simples. But if the pure simple be the primitive, from which compounds could exist by succession, as the limited exists from the unlimited, the extended from the non-extended, the geometrical from geometrical points, or as numbers from simple units; still they could not have existed without a mode, or some analogue of a mode; nor without reference to some sort of limit in the simple, although it may be only a single limit, the simple therefore being not finite; for the finite must consist at least of two terms, or of two ends; and therefore must originate out of the multiplication of simples in a simple mode or analogue of a mode. The result is, that still the mind does not see that it has approached the essence of the infinite, because the infinite is devoid of all parts, terms and modes; and moreover involves nothing that can be said to resemble geometrical and mechanical entities.

Is the infinite eternal?

Still finding himself here entangled in an inextricable difficulty, the philosopher turns to other sides of the question, and considers whether God be infinite, or not; or whether there be any infinity in respect of time; or what amounts to the same thing, whether there be any eternity, or not? Generally speaking the conclusion is, that there is nothing but has had an origin. When anything is presented as existing, there must be a commencement, time and source from which it began to exist. No entity or actuality can possibly be, without having an origin, if not within myriads of years, at least within myriads of myriads; or if not within these, the mind only multiplies and multiplies again innumerable myriads by innumerable other myriads, until it supposes that

it hits the origin by this process. Now therefore it occurs to the philosopher, that there was a time when God took his rise, according to which he cannot be eternal. Yet He is styled eternal, and eternity is time without end, or is, in respect to time, the infinite we seek. And time itself is no more than a peculiar relation to modes proceeding from finite and substantial beings; like celerity in motion, namely, its successiveness; and denotes only the degrees and moments thereof; and thus is like to, and almost identical with, celerity; and consequently is mechanical, and therefore similar to the geometrical; for where there is no substance there is no celerity, and where there is no celerity there is no time. Pondering these considerations, the mind doubts and hesitates respecting the existence of eternity, and whether there is aught from eternity; aught that has never at any time had an origin, however far back such origin might be in multiplied series of myriads of years. It falls then again into precisely the same difficulty, and stumbles over this identical and inexplicable first question: particularly as quantity, space, motion, time, and all things, conspire and consent naturally and rationally in declaring, that there is no infinity in any one of them.

If the philosopher be determined of purpose, he does not cut the knot, or reject the difficulty, until he has wandered over the whole of rational philosophy, both in general and in particular, and at one time diffused, at another concentrated his attention, and divided, and again divided, and multiplied by degrees and powers, and gone from one deep part of the question to another, and this repeatedly; and until he finds that although in his calculus he can apparently approach the indefinite, yet that nevertheless he is coming no nearer to the infinite, or to anything like it, or to anything without end. At last, when he sees all these impenetrable mazes, when he has had such repeated experience of their difficulties, and has found that they all combine to form one and the same unfathomable problem, viz., this, that by all the reasons of the case no infinite can possibly exist, because it does not exist for any rational, natural, or geometrical analysis,—after this result, he secretly concludes that the divine essence is probably not infinite, but indefinite, and the least and the greatest in all things: and as he sees in the greatest too a

natural and geometrical condition, or an analogue of the least in quantity, space and time; he guesses that the Divine is the prime being of nature; and consequently that nature and God are in a manner one and the same. And thus occasionally the philosopher may at length, by his own imperfect investigations and analyses, become a worshipper, not of God, but of nature.

§ II.

The subject taken up, and concluded in the affirmative.

We have hitherto shewn how the human mind, in philosophizing concerning God and the infinite, at last may incline to the wrong side, and no longer see how an infinite or eternal being is possible: or how anything can exist that is absolutely devoid of extension, space and matter; devoid of all attributes or essentials that have any similarity to geometrical, mechanical, and finite things; or to anything whatever that can possibly be perceived by the imagination. I will however make common cause with the philosophers, so far as to admit that by no comparison with finite and perceivable things, and by no similitude, and by no force or faculty of the soul and the understanding, can we penetrate into anything that is in God, or in his infinity. I will also go further, and grant that not angels,—if the reader believe in angels, but whether or not, suppose for the present that they exist, and suppose that their souls are similar to ours, or even not similar, but more sensitive, perfect, pure and wise,—I grant, I say, that not even such beings can penetrate into the essence of the infinity of God. I will further add, that from reasoning of this kind, there is no help against our falling into doubt respecting infinity. For we cannot perceive it by analogy with what we know already; on the contrary, the object is in a manner nothing in relation to all our knowledge; and consequently, all respect of the infinite by the finite is inevitably lost.

Ought we to reason about infinity?

But perhaps the reader thinks he has cause to object, that philosophy has no right at all to reason upon the essence and infinity of God, since such a procedure is vain, and leads direct to errors; but that we ought rather

at once to comprehend and embrace it in faith, as a sacred, revealed, and indubitable truth; for whatever is proved by Holy Scripture, stands in no need of proof by reason, by rational philosophy, or by geometry: and whatever is proved by the infinite is proved in all these ways quite sufficiently. I confess that this is in all justice the preferable view, and that reason may properly be banished from mysteries and holy ground; and moreover, that those persons are the happiest to whom it is given by grace to do thus. Nevertheless it is impossible to deny, that there are vast numbers in the philosophical world who have no choice left in this particular, but who fall into deep thought on the divine essence. For the law of humanity is, that if the mind begins to reason, it cannot help going deeper and deeper. Not only is the pleasure of the pursuit heightened and increased by the exercise, but it strongly tends to fix the mind upon the object, and makes it descend into particulars and specialities one after another, leaving it no longer free to curb its ratiocinations. There cannot be the shadow of a doubt, that the human mind has an innate desire to philosophize on the unknown, and all the more if God, the soul, or human salvation, are in discussion, or any other subjects that our thoughts and minds are ordered constantly to keep before them. Every one, however, has not the power to dictate the manner in which he shall think, and to adhere to that alone. Thus, as we said before, the persistency of the philosopher is natural and human. As then it is human for the mind, when thinking, to choose to think philosophically, we are forced to say, I see that it is so, although it ought not to be so: I see that on these subjects it is wrong to philosophize, and yet that men do notwithstanding reason philosophically; although they are unable to conceive, still they desire to conceive; and their reasonings actually hinder them from comprehending by faith the objects of faith: that without the peculiar grace of God, a secure, certain, and undoubting confession of infinity can never be expected from free reason; although the error here comes not from reason, but from the mode of reasoning on the infinite by comparison with things in the finite sphere.

§ III.

Assuredly pains and labor are needed to enable us to convince the mind when in error. Thus, if we hear any one speaking philosophically, as above described, we cannot possibly acquiesce in all he says, or be silent before his arguments. On the contrary, we are bound to talk with him, to take up his discourse, and to convince or vanquish him by reason. Without the assistance of reason, it would be useless to expect success. If then, we wish to shake him in his opinion, we must use reason, and not prayers alone. We must indeed be scrupulously careful to conquer him mediately, or by the use of means; that is to say, by words, and by arguments, and in short by his own philosophy. If we leave him without using means, we shall always be in doubt whether or no he has the power to conceive the contrary and the better opinion, and whether he will not argue otherwise at another time. Duty requires us to discuss reasons by reasons, particularly in matters and points of faith, which affect the human mind so powerfully, that when once the individual is convinced of them by reason, there is nothing whatever, not even the loss of human delights, no, nor death itself, that can afterwards make him swerve from them: so greatly does the mind respect itself. To convince reason, reason must inevitably be made use of, and persist in the even tenor and series of argumentations and inductions. Were we to seek causes and reasons from any other source than reason, the mind might be turned away in a false direction, the conclusion be foreign to our aim, and the reasoning faculty be established in its errors. And as we are treating of God, the soul, the salvation of man, and his happiness after death, it is worth our while to put forth all the powers, and strain every nerve, of reason. Still it is easy to foresee, (if we persist in the same series of arguments, with the intention of searching out the infinite essence of God, and of deducing his infinity as a result of our exploration, or if we question whether the infinite be the origin and cause of nature,) it is easy, I say, to foresee, that we can never vanquish the philosopher with arguments like the above, which are in fact his own, but more likely we ourselves will fall into his maze, and be unable to find

Reason is to be used.

an outlet without undergoing another and more considerable labor.

Is there an infinite, or not? is the first question.

The essential question at present is, whether there be an infinite, or not, or whether there be a God of such a nature that he can be called infinite? This is made a question, and this therefore must in the first instance be canvassed and demonstrated by reason. Until it is settled, we have nothing to do with the other question which respects the quality or character of the Divine Essence, or its infinity, or non-infinity. The essential question is of existence first, not of character or quality. The question of AN *sit* precedes; that of QUALIS *sit* must follow. If we would enquire into the QUALITY of the infinite, (in other words, the QUALE *sit,)* we must antecedently be certain of its EXISTENCE, (or the AN *sit).* The same applies to our enquiries into nature. If we desired to know what angels are, or the soul, or man, the question of whether they are anything at all—of whether they exist, or not,—must preface our enquiries. Although if we have attained to a knowledge of the QUALE—of the character of the thing—it will be impossible any longer to entertain the question of AN, or of its existence. In whatever mode, whether philosophically or geometrically, we attempt to explore the unknown, we are bound to certify ourselves whether the subject exists, or not, or whether a QUALITY lies in it, or the contrary. As soon as it is our fortune to be assured of its existence, we have then permission and right to enquire into its quality. Let us then be true to the series of reasons, and postponing all arguments derivable from the nature of the infinite, or the essence and quality, let us simply moot the question of existence; *i.e.* IS THERE AN INFINITE, OR IS THERE NOT?

For the purpose of prosecuting our inquiry, let us accept the very conclusion with which reason presents us, viz., that naturally, or in nature, the infinite is impossible; that that which is the first or least of things, is a natural something, or similar to a natural; the infinite being as nothing in proportion. Granting then a first or least natural something, or any analogue thereof, the question occurs, WHENCE, and BY VIRTUE OF WHAT CAUSE could such an entity exist? This of itself incites our reason to en-

What can be the cause of the existence of the first natural principle?

deavor to ascertain its cause. If we suppose that it existed from itself, or was its own cause, we at once have a consequence which is flatly repugnant to reason. If it be finite, if natural, or if similar to a finite or natural, that which is finite in it, or which is natural, or analogous to natural, must have a cause or origin. If it admits in it aught that is similar to the finite, whence comes this similar? How can it admit anything in it without a cause? Thus the philosopher straightway sees that his mind is toiled anew in the old difficulty; and he finds that he now doubts what he had before concluded on the ground of his own reason respecting the origin of nature. For he wishes at all events to give a competent answer to the question of the source and cause, whereby this first natural could exist, and exist in the manner that it does. Reason dictates clearly, that it could not originate itself, because it is finite, or similar to finite, and must in the first instance be finited, or made similar to the finite. The philosopher therefore now revolves in his mind whether it can exist from itself: he affirms, denies, doubts; he sees that it cannot be, but that there must have been a cause for it. If it did exist from itself, it could not even do this by accident; because one sees, that where no cause is present, neither is any case or accident: casualty itself demands not a simple or single but a multiple causation. Furthermore, if the natural primitive arose by accident, and were such as accident could make it, how could all its derivatives and subsequent issues be of such distinguished harmony, that not only the elements, worlds and planets, but the vast and beautiful kingdoms founded upon them, should exist in an order and tenor at once so stupendous and so delightful. Nothing of the kind could come by accident; for if it did, then all the productions subsequent upon it, would be similar to the accident, and destitute of order: in short, the supposition of accident is unsuited to the occasion. If we say that the above natural did not indeed proceed from accident, but from something remotely like it, the same *nodus*, the same inextricable difficulty still remains. WHENCE this something? If again we say, from itself; pray then whence this precise finite with its distinctive *qualities?* And here the mind again suggests, that if finite it be, there must have been a time when it was finited: therefore time must

enter into the case, and origin also. If it came from itself, or by accident, why did it not come sooner; since it might as easily have arisen before as when it did? Therefore one does not see in this way either, how primitive nature could have existed from itself. The end is, that we conclude with reason, as nothing finite or similar thereto can arise without a cause, that primitive nature had a cause.

The mind is bound to acknowledge the infinite, as an answer to the question of cause.

If then primitive nature existed from a cause, the cause could not be finite, either in itself, or in its origin; for if it were, *it* also would desiderate a cause, to finite it. We conclude therefore again with reason, that the infinite is the cause of the finite, albeit we do not know the nature or *quale* of the infinite. Thus, though we are so far ignorant, yet are we bound to acknowledge the infinite as a cause; and consequently to acknowledge the first and least natural entity as a causate. Thus by the question of WHENCE, of cause, or of UNDE, we may be brought to a confession of the infinite, but not by the question of QUALITY, distinctive nature, or QUALE.

— In answer to the question of the cause of the least or first principle of nature.

Let us revert once more to the arguments brought forward previously, and prosecute them *seriatim*, and persistently enquire into the WHENCE of things, and we shall see that the mind and reason will answer us that all things came from the infinite. For example, if we enquire first into quantity, extension or space, in which the mind had acknowledged that there was a least dimension; and if we divide and subdivide them into lesser and least, still we shall never arrive at the first or the infinitely least portion of them; although we may think that we come at the indefinitely least. For the world cannot exist without a first principle. Therefore this least extension or quantity must be either the least of nature, or like the least, or else the simple. If we press onwards (and onwards we are forced to go, since we perceive that nothing can exist from itself, but that all things have causes), we endeavor of necessity to proceed in mind from the finite to something that can be called indefinite; nor can we rest in the indefinite, and make an end there without reference to a cause, or suppose the indefinite the first cause. On the contrary, we are forced to terminate our view with a

being that involves no quantity, no extension, and no relation to quantity or extension; no relations or proportions whatever, no likeness, *i.e.* no finite; in short, a being identical with THE INFINITE. If we would pass from this primitive or simple to the first mode or motion, it must either be simple or pure, or merely an effort or internal state tending to motion. But whence? Granting that it is a state or conatus to motion, it again cannot originate itself, but must certainly have its source from something else: if from another finite, then whence its motion, effort, or state? As there is finiteness in its motion, so there is the same, or something similar to motion, in the effort or the internal tendency to motion. Thus ultimately by this way also we arrive at the infinite, and are enabled to make confession thereof.

Whence the infinite?

Seeing then that the cause of the Simple, by the joint confession of reason and the soul, is not otherwise derivable than immediately from the infinite, our philosopher may choose to persist in asking for the cause of the infinite itself. The answer to this from his own reason, as from the lips of Themis, or from behind the veil of the Temple, is to the effect that the infinite cannot possibly admit of a foreign cause, but must have its cause in itself, or be the cause of itself. Every finite must be finited by a cause. The indefinite is only so called in relation to the finite; and has a *quale* or distinctive nature that obtains its very distinctness by a cause, or from some other being. But what is infinite, cannot be finited or rendered finite: it cannot be made to have a distinctive quality, it cannot be affected in one way or another, or in one time or another, because it is not finitable, or finite, but infinite. Prior and posterior, great and small, are not to be predicated of the one infinite. As then it cannot be finited, so, being infinite, it is involved in its own cause.

When did the infinite originate?

And if again it be asked, When the Infinite originated? the same answer must be given, viz., that the infinite is infinite in point of time also. If infinite in one thing, it cannot be finite in another. In time, as well as in space and extension, there is a greatest and a least; in time, as well as in motion or celerity, there are succession, degrees, and moments. Indeed, finites cannot be called finite unless

under the relations of time and succession. Of the pure simple, as not being finite, neither time nor succession can be predicated; but with respect to origin it is regarded as instantaneous; yet still not eternal, but in a manner, before time. And as the infinite has no cause in anything, so it can have no origin in anything; for origin involves cause, as being in relation to time considered as finited by moments: and as the infinite is the cause of itself, or more adequately speaking, is *in* the cause of itself, so also it is *in* the origin of itself. In a word, where there is no substantial or finite, there is no mode, motion or celerity: where there is no celerity, there are no degrees and moments, and consequently no time. The infinite is therefore identical with the eternal, and is in truth eternal in all time; time being only a peculiar relation of the finite sphere; whence nothing past, future, or successive can be predicated of the infinite, in which all is present and sempiternal, both with respect to the past and the future.

By this line of reasoning I think that the human mind acknowledges God as infinite, and as the cause of the finite, and consequently of nature; and that it no longer rests in the primitive substance of nature, so as to make God and primitive nature one and the same; or to attribute all things to nature; but, on the contrary, sees that all are due to the Infinite, or in other words, to God.

§ IV.

Having thus at last attained to confession of the infinite, so that, *nolens volens,* reason is obliged to admit a something that is utterly unknown, and can never be resolved by the known, a being who is properly termed Infinite,—let us now take this confession and tacit admission, and proceed onwards, and see whether we can, by reason, attain to a still more distinct acknowledgment, that there is an infinite, or that God is infinite, and that God is the author and producer of nature. Reasoning *a priori* we have found in the foregoing pages that this unknown being exists, or that there is an infinite: we will now enquire experimentally whether the same conclusion becomes irresistible when we reason *a posteriori.*

What is the distinctive quale *of the primitive entity of nature?*

Let us confine our attention still to the first and smallest natural principle, so that we may not disturb the worshipers of nature in their circles and spheres, but may keep them constantly attentive to their own principles, and allow no foreign considerations to interfere between their minds and the conclusion. It is granted then that the least natural entity derived its origin from the infinite, for we have already seen that no other origin of it was possible: the question now is, What are the distinctive qualities of this least natural or primitive entity? Is it the first seed of nature? Does it involve any natural predicate, like what we find in nature? Or is it only an analogue or simile of the substances, essentials, attributes, modes, &c., that we observe in nature? Here I will answer agreeably and in conformity to the principles of those I am reasoning with, that it has in it every primitive quality that there is in nature, and every simple also; that consequently it is the seed of all natural things; that it is their principle; that it is that out of which, by degrees and moments, ultimate nature is unfolded: in a word, that there is in it, as primitive entity, everything whatever that we can possibly conceive as existing in nature; and that thus in this prime, or in an indefinite number of these primes or leasts, nature exists in her very seed; out of which, whether considered as one or many, she ultimately issues forth in all her diversity, in all her manifoldness, with all her distinct and abundant series, mighty in the heavens, in the worlds, in the planets, in the kingdoms of each peculiar planet, elemental, mineral, vegetable, in the parts of all these kingdoms, and in the parts of the parts; in short, with whatever can be predicated of her as nature, in her least or her greatest sphere. But as to what the *Simple* seems to have been, we have treated of this subject at some length in our *Principia*,* in the Chapter on the Elements.

Be it then according to the opinion of those who hold that all things issued in natural order from the first entity, simple, seed, least, or primitive. I am now anxious not to disturb

* *The Principia; or, the First Principles of Natural Things, being new Attempts toward a Philosophical Explanation of the Elementary World. (Translated from the Latin by the* Rev. Augustus Clissold, M.A., 2 *Vols.* 8vo., *London.* 1846; *and published by the* Swedenborg Association).—*(Tr.)*

them in their new-born acknowledgment of infinity and God, and therefore I shall not attribute anything to God immediately that they themselves think, or can think, should in right reason be attributed to nature. For I am willing to make concessions, in order to secure a kindlier and more cordial unanimity between us in our arguments. Nor is there any harm in taking their side of the question, inasmuch as they now acknowledge nature to be not the first cause of the world, but the second, and the second cause to be not self-active, save in so far as it has received, and perpetually receives, its activity from the first cause, that is, from the Infinite. Moreover they now grant that nature was produced by the Infinite, or God, for they acknowledge it as a causate, and the Infinite as a cause. Let us then see whether the Infinite may not be still better acknowledged from this ground, namely, if we concede these points; and whether it does not necessarily follow, and indeed shine forth with fresh distinctness, that nature cannot be its own cause, but that the Infinite is the cause of nature.

We grant that all things issued naturally from this primitive entity.

Let it be granted then that all things whatever in both the visible and invisible worlds are derived from the least natural primitives; moreover that they issued successively therefrom by a natural, mechanical, geometrical, physical, or any other necessity you please. What is the consequence? Plainly this: that in these primitives lay the peculiar nature and power to produce all things thus by natural necessity; and that all things inhered in this power or nature, either as analogues, or as causes; under which forms they would be similar to their natural effects, both in attributes, essence and modes. In whatever numbers and of whatever character they may be conceived to exist, either philosophically or rationally, still it will follow, that a power, aptitude and faculty of producing all things, as ultimately they were produced, lay in them. I am unwilling to deny the principles of those I am reasoning with; for by no possibility can I frame so many details in this involution of causes in primitives, as I am ready and willing to grant: for the more I grant, the more surely my reader must acknowledge the conclusion.

Let us now repeat our first deduction, viz., that the infinite is the cause of the first or least finite. On this point we are already agreed. Then I just now granted that the whole world,

including its series, appendages, and parts, came forth in natural order, and by any necessities you please, from the same least and primary finite. What is the result but this, that the quality of producing these consequents lay in the primitives or leasts? For nothing can be produced from a seed, unless the seed contain an aptitude for, and a quality of, producing it, or developing itself. And though this quality may seem to exist in the sequences or derivatives as well, yet still they must have received their share of it from their first principle; shewing therefore that in the latter lay cause, and quality, and the whole scope and power of the primitive. Let us then consider it certain that there was in it everything whatever, be its characteristics what they may, that one can naturally dream of or imagine. Now comes the question, WHENCE all this in the primitive entity? It is no longer denied that it derived its origin from the infinite; and that its origin was answerable to its distinctive nature. It follows therefore that all that one can suppose to have lain in the state of primitive entity in the first principle, derived its origin from the infinite,—from God who alone is infinite.

In the primitives lay the quality of producing the consequences.

We will here illustrate the foregoing subject by a few comparative instances. We see that man has numerous members, numerous senses, and a large faculty of reasoning; also numerous internal parts. If we fix upon any of the parts, as for instance the cerebrum, it again has numerous parts of its own, both membranes, substances, nerves, marrows, and other appendages, besides fluids. And the rest of the body the same. When we examine its parts, we find them severally furnished with manifold arteries, fibres, tendons and tunics, and possessing a fine mechanical adaptation for every movement they are intended to perform. If we consider the parts one by one, in every nerve we see numbers of membranes, numbers of branches, and infinite details; and if we take any part of these again, we find numbers of vessels of different classes; and the same if we take parts of parts, and repeat the observation. Then if we choose to exalt our vision by the microscope, how much more still shall we bring to light! Yet all these objects and details have arisen out of one seed,—out of one primitive substance. If therefore we now direct our attention to the human body, and its parts,

We admire all natural things in their cause.

and their parts, and at the same time to its first substance in the ovum, and submit both to the operation of the mind, we shall in that case more greatly wonder at the ovum, least, or natural primitive of the body, than at the body itself. The greater case of admiration puts out the lesser. What we wonder at on a great scale, in large objects, we wonder at still more as able to exist on the minutest scale, in the least of things. Admiration and astonishment are concentrated on that least sphere, wondering how it could involve the power to produce the whole system; and such a system! When we say that in this least lies the cause of the whole, we are struck with admiration of the cause. If I say that this has its cause, admiration rises to higher powers in contemplating that cause. If I say that this lay in that least first principle, and not this alone, but an indefinite number of similar things, and of other things besides, then our amazement is increased almost to infinity; and we ask ourselves how such a power, or anything like it, could lie in the primitive, as to enable the whole to exist as it does with all its distinctness. The closing wonder is felt when we declare that the first cause of this distinct least principle lies in the infinite. Then if the mind were capable of the state, it would be infinitely wrapt in amazement, at finding that in the least first principle there lay a distinct ground and cause for the production of so grand a result or system. Did we choose at the same time to consider other individual objects of nature, which exist in indefinite number in the visible world, we should but see the same fact, and be presented by every object with the same conclusion; to wit, that in the first entity or principle we must wonder at the infinite most; and that that which is visible, allures us to admire it in the first instance, because it plays before our senses; but that afterwards it leads us onwards to a greater admiration of its origin or cause, not merely as a cause, but as involving in its single self a power of producing modification in all its derivatives: and that ultimately it forces us to sheer astonishment at the quality in the first principle: and as wonder cannot possibly end there, so it must end of necessity in the very first cause, that is, in the Infinite, in whom lies all that we wonder at; in whom we wonder at the Infinite only, and by no means at the natural on its own account, but in its

cause. In instruments and machines, such as clocks or watches of exquisite and elaborate workmanship, we admire the motion, the wheels, and the fine mechanism, yet these are not objects of wonder, since wheels, powers and mechanism are familiar to us: what we really though unconsciously wonder at is the first cause; not the first cause considered as organic or mechanical, for this may be of the simplest construction; but the cause in the person of the inventor; and not the inventor as he who made, but as he who invented; that is, foresaw that this consequence would flow from that; and that an instrument of such a make would produce such or such an effect, and no other.

Was all nature once in these leasts?

We will now admit further, that all things proceeded in natural order from these least first principles to the greatest effects, in series, by causes, by necessity of causes, by motions manifold in derivation, and by the powers and forces of the same. Still it follows, that the characterizing power of this distinct procession, lay in the first principle or least entity, and that this least obtained it from its own cause, that is, from the infinite. The more then we choose to send the mind abroad over the details of the subject and the series; the more we wonder at in nature; the more we heap causes upon causes; the more we multiply, divide, and reckon up motive powers; the more must we wonder at the first and the least of nature, and the more at the Infinite, its cause. Amazement cannot stop short in the causate, or end but in the cause; nor in the cause, as a cause, but as an infinitely intelligent cause: in this it must necessarily increase to the dimensions of the cause, in short, it must become as infinite as its object.

The greater worshipers of nature we are, the greater worshipers of Deity we may become.

It may now be concluded, that the more highly we think of nature, the more we attribute to it, the more we worship it, the more we explore and wonder at it; and the more numerous the causes, mechanical, geometrical, and natural, that we make necessary, the more must we wonder at the Infinite, who is the cause of all things. For the greater adorers and worshipers of nature we are, the more we go back to the causes and primitives of nature; the more also we come to simple principles, and the more we acknowledge that all the others origin-

ated successively from the natural primitive; and the more again we are led to wonder at the state of this natural primitive; and how all things that we see, and can possibly imagine, nay, how not only mechanical but even physical causes themselves, can have lain involved in it. I am anxious therefore that the reasoner should centre all his admiration in that first or least principle with which he supplies me; for by this means will it not all end in the cause of that principle? that is, in the infinite, as having produced the principle? Therefore in proportion as we worship nature, and believe in her as the origin of natural things, in the same proportion we may become worshipers of the Deity; because, out of the entirely perfect succession of things, modes, causes, contingents, we may experience deeper wonder over primitives, than others can do in contemplating the whole field of derivatives.

From the perfection of the primitive.

Moreover in the philosophical primitive or least, or in the simple principle of nature, we may in a measure contemplate infinity in another way; we mean, by regarding the perfection of the primitive. For if it be so perfect as to result in the production, by multitudinous causes, necessities, motive powers, and all-pervading series, of the entire universe,—of a universe, in which there is no part but conspires most perfectly from one end to the other, through an unbroken chain of means,—can we not contemplate infinity in this; or at any rate an attribution that we are unable to conceive analogically or finitely, and yet which must have been present in a manner in the primitive; in short, a superlative perfection of nature which can come from the infinite alone. In this way then again we must acknowledge the infinite.

§ V.

Were there contingencies in the primitive?

Before the world could have attained its present completeness and desirable beauty, before all series could have arrived so harmonically at the actual end; innumerable contingencies, and contingencies of contingencies must have been present, and innumerable modes and modifications also. Granting that all things proceeded with the greatest unanimity, by mechanical and phy-

sical necessity, from the least first principles, to the ultimate compounds of the world,—though I am unwilling yet to state that it was so, before it is proved by arguments and reasons,—but granting it for the present; it follows, that nature could not cause contingencies, and give causes to causes, so that all things should conspire and proceed in combination in the wonderful manner that they do, to a single end, unless the essential and absolute cause were present in the primitive entity, and by its derivation through a succession of compounds, completed the world in a continuous chain in one distinctive manner. If then the contingencies also were in the primitive entity, it follows as a matter of course, that that could be nothing less than infinite wisdom from which only the most perfect principles and order immediately proceeded. It follows also, that in this way, all things that as regards time were future, were present, and intrinsically existent in act, in the primitive entity. It follows also, that we have an indefinite perfection to consider in the primitive; and that the existence of the infinite takes new plainness from this ground. Nor does this seem to be so far from the truth as perhaps on a first consideration might appear. For it is not denied that all things were present with God at the beginning of creation; or that he foresaw all things, and at once exerted his providence in all things; and consequently formed them in such wise as to tend spontaneously to the truest end. What God produced immediately could not fail to be superlatively perfect. Consequently nothing but what was equally perfect could lie in the first principle; for nothing of imperfection can issue from the infinite. If then it were the very pinnacle of possible perfection, all things must have existed in it in potency that would ever exist from it in act; which leads to the further inference, that all the causes also, physical as well as mechanical, that were destined in succession to perfect the world, must have existed by implication in the same. These premises, however, by no means involve fatalism in the series of nature: or that God is remotely the cause of imperfection, which began to exist, in the world and in man, by reason of the existence of evil. Imperfection, as the result of evil, must have its cause in the finite, and not in the infinite. If the primitive, as it arose immediately

[*God is not the cause of imperfection*].

from the infinite, were superlatively perfect, and the other derivative existences were less and less so, it is a plain proof, that the latter had their origin from finites successively and immediately, which would account for a successive or graduated series of imperfections. It is a proof, moreover, that in the origin of these other things which are comparatively imperfect, there was more and more of the natural principle involved,—more and more of that which was divine only mediately, or after the intervention of nature. Nature, then, or the finite, and not the infinite, is the cause of all imperfection.

Nevertheless all things are from God. Furthermore it may be argued with good reason, that all things whatever, whether compound or simple, the whole or the parts, the heavens or the worlds, were created and produced by God alone, and not by nature. To nature nothing can be attributed, because all things are so made as to conspire and proceed together, spontaneously and necessarily, from the first end, through the means, to the second or last end; that thus the cause of one thing may come from the cause directly preceding it; and all the causes be therefore centred in the first cause: so that to attribute anything to a natural cause, is the same ultimately as attributing it to the first cause, or to God alone. Nature is then but a mechanism, which is bound to keep certain sequences because the first cause has so willed, or what amounts to the same thing, because He so wills now. Therefore all that there is in the world is the work of God, and none of it is the work of nature. So likewise whatever we wonder at in nature—whatever we think wise, exact, harmonic, whether below or above our senses—we wonder at, not as natural, but as divine. There is nothing natural but is divine; and so in every portion of the world, to whatever corner we turn our eyes, there is nothing existing wherein we ought not to wonder at the Creator and the cause. Hence it follows, that the more we wonder at nature's play, the more do we wonder at the infinite in nature: because the natural is nothing but obedience; and not even obedience, inasmuch as nature is forced by necessity to obey.

We may attribute [causation] to nature. Since then there is nothing natural that we can wonder at, still less worship, on its own account, but only as divine, we may now, acknowledging this,

nominally attribute to nature, or make use of her name, although nature is not the infinite, but the finite. Much in the same manner as when we frame an artificial machine with our hands and fingers; after which, we have a right to call it a machine, and to say that force or power resides in it; in which case, although the force is now in the machine, yet we do not wonder at the machine, but at him who made it. For it was put together by the hands and fingers, and in this way may be called their work; and so we wonder at the maker's hand as the real machine: though even this improperly; for the hand cannot claim to be more a machine, or to have more the force of one, than as it was the means or instrument of construction. We may therefore go further, and declare that the ultimate machine was the work of the human body, and so wonder at the workman in a gross sense; but even then the object is not worth the wonder, because, in so far as the machine was the work of the hand, it was already the work of the body. We may then again extend our inferences, to the consideration that the machine was the work of this or that individual; and further, to the conclusion, that it was the work of man considered exclusively as a rational being, and therefore the produce of his imagination and scientific skill. Nor is even this true, unless we add, that it was the work of his soul too, that is to say, in so far as it is a work of reason, by whose instrumentality it was invented, and indeed by whose command it was ultimately constructed. And in the work therefore we admire the wisdom and intellect of the inventor, but not the actual machine, except for its abstract mechanism; nor do we admire the hand, the body, or any of the other instruments whose obedience to the soul is a mere matter of necessity.

To lead us then to acknowledge in the work and machine the Builder and the Infinite, and to see not only his greatness, but his infinity, and that nature and the finite can have no claim to be more than means or instruments, which are bound by necessity to do what they do:—to lead us demonstrably to this issue, there are no better arguments than are furnished by the contemplation of His very works themselves. For the objects of nature touch the senses, which ultimately move the soul, and mediately create a profound astonishment; which can-

not so livelily be done by reasons, without the survey and contemplation of some actual work of which the whole, as well as the parts, are brought before the mind.

By the contemplation of nature, we are led to an acknowledgment of God.

Having premised so much, let us turn our eyes to the heavens, and contemplate the universe. How wonderful to us are the heavens! filled with stars innumerable! enriched perhaps with innumerable worlds like our own! their very vastness in our conception, sufficiently wonderful! although it is probably little that we see, and all of it not a point to the Infinite. If we regard the stars as so many suns, each having its planets about it, and forming with them a separate world* or mundane system; then what a ground of wonder we have in the multitude of worlds! What a special wonder in the indefinitely finite! And if we continue and extend the contemplation, we find that a world, a single world, which appears so boundlessly vast to us, is but one and a small part of the universe. If we consider the parts, stars, or suns, or the worlds, severally, we find them unitedly constitute one system, which cannot subsist without the parts. Perchance every part is so necessary to the system, that it could not be absent without breaking a link in the chain. If we use our eyes and minds together in no greater field than our own world, small as it is in relation to the universe, how innumerable are the objects that greet us! that move our amazement! The sun, a planet, a satellite, our own specific earth, any part of any one of them, would more than exhaust our space and time. Nay, there is not a part but is necessary to the rest as well as to the whole, and all together constitute a system with the parts so harmoniously combined, that there is nothing therein that could be absent with impunity; nothing but has its peculiar use, both for the subsistence of the other parts, and for the perfection of the whole: to realize which, in anticipation of the end, indefinite series and causes were required, mechanical as well as physical or contingent, and coexistent as well as successive. If these things were as perfect at once in the first momentum and potency as they are perfect now in act and fact,—if all things

By the heavens.

* By a world, *mundus*, Swedenborg means a sun with its planets, or a single solar system.—*(Tr.)*

were present in the first entities,—what wonder should not overcome us in considering the causes of the whole and of the parts.

By the structure of the human body.

As we are upon this subject, we will also contemplate the structure of the human body, and shew therefrom, that there is nothing throughout it but is necessary to the parts and the whole, or but is of use to the subsistence of the whole: likewise that all things therein conspire to a common end. But can nature by itself produce such a combination of parts? Can any machinery without an infinite intelligence? Without a cause in God? Without a Providence most wise, reigning in contingent, physical, and mechanical causes; which, had they not conspired in the wisest manner, could never by possibility have originally come together of themselves or by accident? But as we are about to treat specifically on these subjects in our Theory of the Intercourse between the Soul and the Body, we will here confine ourselves to a general account of the use which the several parts appear to perform for the whole.

Man, as we all know well, was created to enjoy the delights of the world, and to possess the earth for himself and his posterity. Wisdom and reason were given him, to venerate and worship the infinite Deity, that he might better make use of worldly delights, and have a finer or more delicious sense of them, to lead him to associate them with heavenly: also to carry the world to a new perfection, which it could not attain without a material being and human means; lastly, to commence a life and existence which should thenceforth be sempiternal and immortal, that he might increase the number of the angels. And that man might accomplish these ends, a body was given him, and parts and members were added to the body, all conspiring to the same end: a head was given him, with a brain therein, and this brain endowed with senses, and the senses with a soul.

Passing the bones of the skull,* (which are meant to defend

* The *anatomical* particulars in this work are taken almost word for word from Heister's *Compendium Anatomicum*, to which reference has been made by the Translator, for the purpose of correcting numerous errors, and of supplying what was necessary to complete the sense.—*(Tr.)*

and preserve the machinery of the brain,) and passing also the coverings or integuments of the bones, namely, the cuticle, cutis, pericranium and hair; let us proceed at once to the inner parts. And here the first structure that occurs is the dura mater, a membrane consisting of tendinous fibres, lining the skull, and united to it in numerous places; whereby it defends the underlying membranes and the substance of the cerebrum; strengthens both the brains, maintains their figure, and preserves their respective boundaries; so that all the parts are kept immoveably in the genuine and natural position, and the cerebrum is not injured by immediate contact with the bones; besides which, this membrane serves as a means to bring certain sensations inwards [to the soul]. Underneath it lies the pia mater, between which and the dura mater, according to some anatomists, there is a third membrane, viz., the arachnoid: but for the present let us keep to the pia mater, which dips down deep into the cerebrum, and besides investing its parts, also sheathes the spinal marrow and the nerves. This membrane is beset with innumerable blood-vessels, seeming to consist of hardly anything else. The end or purpose of it is, not only to envelop the cerebrum, but also to invest its intimate convolutions and folds; to distribute blood to it; partly to bring heat, partly to supply liquid, for nourishing, irrigating, and giving substance and combination to the parts: also not only to receive a fine sense, but to derive it inwards along the subtler membranes, that those which are subtler still may be able to receive the tremble of the delicate sensations; which exquisite membranes are brought into communication with all sorts of nerves by the pia mater; for the latter invests these nerves, and is their grand constituent, because it is their common covering.*

We pass over the division of the cerebrum into hemispheres, and of the hemispheres into lobes, also the division of the brain into cerebrum and cerebellum, and into cortical or cineritious and medullary substances; each of which subdivisions, both generically and specifically, has its own particular use in conveying more and more inwards not only the rude sensations of the body, but the sensations of all the senses, till they arrive at the

* Respecting the integuments of the cranium, and the dura mater, arachnoid membrane and pia mater, see Heister, *Op. Cit.*, n. 266—269.—*(Tr.)*

very soul or subtlest parts; likewise in nourishing, and keeping in their places, the neighboring and the hard parts; of all which not only the parts, but their parts again, contribute all their endowments to ensure the nourishment, subsistence, action and passion of the general system; in a word, to enable man to live, to feel; and so to live and feel, that his subtlest part shall live in a sense above all others. And in order that all things may tend to this end, there are, besides other provisions, certain remarkable cavities in the cerebrum, two of which are in front; and when these are exposed by the knife, other parts again come in view, as the septum lucidum, a transparent partition of medullary substance covered with pia mater, and dividing the above cavities or ventriclês from each other. Also the fornix [under the septum lucidum], likewise composed of medullary substance. The choroid plexus, a membrane replete with blood-vessels. The corpora striata, two bodies [cineritious on the outside, and] through which the cortical or cineritious substances run in stripes and rays from one end to the other, to enter and originate the noblest of the marrows, *i.e.* the medulla oblongata, which is the source of nerves of all descriptions. The thalami nervorum opticorum, a pair of bodies, white [on the outside], and cineritious [internally]. On opening the third ventricle again, we find several parts deserving of notice; as the pineal gland, the nates, the testes, under these the great valve of the brain, and [the aqueduct of Sylvius], at the posterior orifice of the latter, the anus, and the iter ad infundibulum, through which all the four ventricles communicate with each other. We will not now dwell upon the fourth ventricle, which is situated between the cerebellum and the medulla oblongata, but will content ourselves with observing, that all these organs minister to keeping the parts of the cerebrum in the most distinct order of mutual subdivision, so that each is not only nourished, but enjoys communion with its fellows, and what is of main importance, superfluous matters are excreted from it, and prevented from embarrassing its functions.*

We now come to the cerebellum, which is separate from the cerebrum, and only one-sixth its size, and lies in the occipital

* Respecting this paragraph see Heister, *Op. Cit.*, n. 270.—*(Tr.)*

region, to be nearer to the involuntary actions of the body, and consequently nearer to the heart and lungs. The cerebellum claims our especial regard for its singular lamellated composition of parallel and circular portions, which terminate in the vermiform processes, anterior and posterior. It is composed, however, of the same cortical and medullary substances as the cerebrum, although these constituents are varied in their proportions in the cerebellum, and their relative situation is different. The spectator may also justly be amazed when he views its lobules separately, and contemplates the position of the medullary portions in their interior; likewise when he sees the peduncles of the cerebellum, one of which forms the great valve of the brain; a second, the annular protuberance [of Willis, or the pons Varolii], while the third descends to the medulla of the nerves, or as it is commonly termed, the spinal marrow. And his amazement may be the more when he considers, that whatever is effected in the body by the ministration of the cerebellum, its near neighbor the cerebrum knows hardly anything about; and yet that the cerebellum knows all that the cerebrum does. For which reason, whatever the former accomplishes in the body, is termed involuntary, implying that there was no antecedent perception of the object before it was realized in act. We have instances of this in the motion of the heart, in that of several muscles and nerves in the body, as well as in innumerable other effects.*

But let us revert to the cerebrum, and note the medulla oblongata. This arises from the corpora striata, and running back towards the occiput, joins in contiguous relations with the medulla spinalis, whereby it becomes the common parent and nurse of all the nerves wheresoever situate in the body; likewise of all the nerves of the senses; that is to say, of sight, hearing, taste, and smell; on which account indeed all the sensorial nerves enter it and end in it. Moreover it is of medullary substance externally, and contains [some little] cortical [or cineritious] substance within, in which respects it is the inverse of other parts in the cerebrum.† But how all the sensations, and

* Respecting the cerebellum, see *Op. Cit.*, n. 271.—*(Tr.)*

† Respecting the medulla oblongata, see *Ibid.*, n. 272.—*(Tr.)*

likewise all the ideas and operations of the soul, are concentrated in this organ, and how it is the fountain-head of all the senses, however fine or gross,—these are points that we have to shew in another place. And as the spinal marrow is connected by contiguity to the medulla oblongata, we have also to consider how the former runs down the back in the bony canal formed by the vertebræ; how it is invested by tunics and membranes; how it has communication within and without with those of the cerebrum; whereby whatever is done in the body is at once conveyed to the cerebrum, and by it felt, and then referred to the soul, and expanded into will. And as the spinal marrow performs this grand office for the body, it is protected by a chine of bones consisting of twenty-four vertebræ [and the sacrum]; by a most robust ligamentary membrane, which binds the vertebræ together; by the dura mater, the arachnoid membrane, and the pia mater, which follows the nerves through all their subdivisions: and it sends forth transversely into the body, for the performance of various functions, from thirty to thirty-two pairs of nerves, which thereafter split into branches and twigs the most diverse, and are ultimately expended in exquisitely small corpuscules of lamellar structure, or else in the tunics of the body.*

Let us also briefly review the points in the anatomy of the eye,† and see the wonders of nature working in combination with a thousand parts, for the single end of producing sight. We will here say little of the eyelids, eyelashes, palpebral muscles, sebaceous glands, caruncula lacrymalis, membrana semilunaris, puncta lacrymalia, lacrymal gland, [the muscles of the eyes], the fat, and many other parts, which contribute to the motion, nutrition and support of the organ, and hold and keep it *in situ*, to ensure the uninterrupted performance of its functions. In dwelling, however, on the other point, viz., the mechanism of vision or the sense of sight, and not of its instrument, the eye, we have to consider the various tunics of the eye; the tunica albuginea or adnata, which is freely supplied with vessels; the transparent cornea, which is [convex, and] divisible

* Respecting the spinal marrow, see *Op. Cit.*, n. 274.—*(Tr.)*

† Respecting the eye, see *Ibid.*, n. 276.—*(Tr.)*

into various layers; the sclerotica, which is a hard and opaque coat, extending from the cornea to the optic nerve; the choroid coat, which abounds in distinct vessels, and is black in color; the uvea, or anterior portion of the choroid, which may be seen through the cornea, is of a convex shape, and presents again several points for observation; as for example, an anterior colored surface, named the iris; also the pupil situated nearly in the middle of the iris, and which admits of contraction and dilatation: again, the posterior surface, black; on which, when the black portion is cleared away, we see the sphincter of the pupil, the ciliary fibres or processes, and the ciliary ligament, the circulus arteriosus and venosus; and certain black lines running between the ciliary processes and the ciliary ligament. Then we have the retina, a very delicate, glistening tunic, of a peculiar mucous texture, whither in the first instance all vision, or all the organs of vision, centre or tend, thither inclining and conveying the rays, which are afterwards carried on by the optic nerve towards the anterior and inner parts of the cerebrum; the retina seeming to be the receiving chamber for the rays, as being the expansion of the optic nerve. In all these details we perceive a peculiar mechanism, analogous to that of the motions in the particles of ether; and an admirable harmony of all the parts, whereby the several motions received are variously concentrated in, or conveyed to, the retina, which expands upon the optic nerves, that in their turn run through the cerebrum towards the medulla oblongata, and plunge thereinto, in consequence of which the remaining stages of the progress lie beyond our senses. And in order that the eye, as an organ, and the parts of the eye, may maintain the natural and mechanical position that will constantly fit them for receiving the modulations of the ether, humors or liquids are supplied which provide for the expansion of the tunics, and at the same time are pervious to the rays, and in no way hinder the transmission of light. Thus we have the aqueous or albugineous humor, in which the uvea floats freely; also vessels by which this humor is continually renewed, and provided in just quantity and of proper quality. Then there is the vitreous humor, extremely pellucid, filling the posterior portion of the eye as far as the retina, to which it is contiguous throughout on the back part; and with-

out which the retina would get too dry, and neither be duly expanded, nor have any power of receiving the motions that are passing inwards. Furthermore, there is the crystalline humor or lens, of a denser structure than the other humors, and enclosed by a tunic within a depression in the vitreous humor; this lens is suspended freely [by the ciliary ligament] between the aqueous and vitreous humors, [just behind the pupil]; its mobility being thus secured; and it is composed of a number of pellucid, vascular lamellæ, [after the manner of an onion with its skins]. The crystalline and vitreous substances are surrounded by a fine vascular tunic, which by enclosing the lens in the bosom of the vitreous humor, tends to protect and preserve it. We shall not now dwell upon the minute arteries and veins that enter into the organization of the eye in so wonderful a manner; or upon the nerves; as for instance the optics, which running back from the retina plunge into the medulla oblongata; and those other nerves whose office it is to preside over the motions of the whole organ, both in general, and in particular; or upon the muscles. The result of our considerations is, that we now see how all the parts one by one conspire to make the whole, *i.e.* the eye, a fit organ and instrument for receiving the modifications of ether or light, and a means of sensation; which exists not at all in the eye, but in the cerebrum, and in those little membranes where the true representation of the object takes place; of all which subjects we shall treat in detail on another occasion. The eye of itself is an organ destitute of sense, for sense consists in the inner parts; in the other end; that is to say, above all, in the soul.

But let us confine our attention to a single organ; for there is not an organ in the animal body but if examined specifically and particularly will afford infinite grounds of amazement; at the manner, for example, in which one part joins with another, in which one part moves another; one part determines the shape of another; holds another in its place, preserves and nourishes it; the least in this way ministering to the greatest, the invisible to the visible; and all conspiring to one end, to enable man either to see, or hear, or enjoy some other sense; and all collectively, or the whole, to empower him to lead an active bodily life, and to be a rational creature; which results

themselves conspire to the primary end of creation. Let us dwell then, as we before said, upon the anatomy of a single organ, which shall be the Ear, and let us see whether it alone be not sufficient to transport us with astonishment; and afterwards let us conclude what our astonishment would be if we entered upon the anatomy and examination of the remaining structures. Hearing is the principal organ or instrument of the soul; for by hearing we are educated, and taught to perceive; by hearing the sciences are formed and imprinted on the memory, after which the soul can call them forth distinctly one by one as it requires them, and make the human being rational. And this being the end, therefore the principal parts of the organ of hearing, as the semicircular canals, the cochlea, and the ossicula auditus, are nearly of the same dimension and size in the infant as in the adult, and neither grow, nor undergo adaptation and remodelling by habit and exercise, like other organs. The auricle or external ear, including the concha and meatus auditorius [externus], is so shapen, that every vibration of the air is collected from all sides, and nicely directed to the membrana tympani. Hence the auricle is cartilaginous; for were it osseous, or too hard, it would reflect the vibrations; and were it fleshy, or too soft, it would yield to, and absorb them; while as it is, it can always regain its form and position, however bent it may have been, and always assume that figure which best accommodates it for catching sounds. To ensure this result, it has two or three muscles; one lying upon the temporal muscle; a second, consisting of five or six fleshy fibres, arising from the upper and anterior part of the mastoid process, and terminating about the middle of the concha. And though these muscles are very small and not very active in man, yet they keep the ear *in situ* in a state of tension; for indeed it is not necessary that man should have the power which animals have of pricking up the ears. The human ear is kept in that position which enables it to take up and drink in most fully all vibrations, from whatever corner and direction they come, whether from above, or below, or with whatever degree of obliquity. This would be impossible if the ear were not reflected as it is, and if it did not lie back on the temporal bones, but were conical, like the ears of animals. At present we need say little of the nervous mem-

brane of the auricle, which is immediately adherent to the cartilage, and helps to keep it in its place; or of the thin cuticle on the squamous portion, which serves as an integument to the ear in common with the rest of the body, and on account of its superior delicacy in this part is eminently adapted to receive the vibrations of the air. Nor need we dwell at any length on the blood-vessels; *i.e.* the arteries, arising from the external carotid, and the veins, from the jugular, which the ear receives both on its outer and inner parts. It may however be mentioned, that the branches of the carotid, after having supplied the face, ascend to the internal and external ear; and that corresponding veins accompany them: in consequence of which, a contiguity reigns, in respect to heat and fluid, both through the ear, and throughout the face, as well as through the inner membranes and meninges of the brain. The blood-vessels keep all the tunics warm and tense, adapted for whatever motions arise, and presently nourished, and perpetually capable of being nourished, by the blood. The external ear is insulcate, and folded upon itself, and we notice in it the pinna, or upper part, the helix and antihelix, tragus and antitragus; also the lobulus, which hangs at the bottom, and is softer than the rest of the auricle. Then we have the [scapha and] concha; to which, according to some anatomists [*i.e.* Valsalva], are to be added certain sebaceous glands or cutaneous follicles. All these parts are formed with the intention, that whatever vibration reaches the ear, may be carried distinctly towards the concha in the stream of a peculiar spiral curve, and so, by an uninterrupted succession of moments and degrees, along the meatus auditorius externus, towards the tympanum; whither all the spiral cavities and passages without exception tend. And if any superfluous accompaniment arises in the course of the vibration, it has a means of passing off between the tragus and the antitragus. Or if the sound should reach the concha immediately, and be reflected, yet even in this case, being reflected upon parts which serve as so many reverberating tongues, it will all be taken up, and conveyed mediately towards the meatus auditorius, and thus none of it will be lost; but its course will be determined by the sides of the ear, following which it will creep and skirt, and be guided to the membrana tympani by all the walls and borders of the

organ. We will not now dwell upon the various points that we find in the meatus, all of which have their uses; thus the meatus is partly cartilaginous and partly osseous; its course is tortuous and oblique, in a forward direction; it is made up of as it were broken cartilages, covered with an elastic tunic; on the convex part of the membrane lining it internally, and which is continuous with the cutis, there are innumerable small yellowish glands, that secrete a cerumen of the same color, and of a bitter taste; besides which there are hairs in the meatus, and several other contrivances. Let us, however, address ourselves to the membrana tympani, which we find to be [elliptical]; not completely expanded or flat, but convex;* not placed perpendicularly, but very obliquely [inwards]; not isolated and free, but united to the malleus; not tense, but rather loose or lax, so as the better to enable it to receive articulate sounds, and transmit them onwards. The handle or manubrium of the malleus is attached to the membrana tympani from the upper border to the centre, and so governs the membrane as to capacitate and adapt it for receiving every variety of vibrations and tones; which it could not do with any distinctness unless the manubrium were affixed to it in the way of a radius or semidiameter. But by this arrangement, no tone can set the membrane vibrating anywhere but correspondently to some distance from the manubrium or radius; so that as many distances are formed in the membrane by the instrumentality of the manubrium, as there can be possible varieties in sound. On the other hand, were the membrana tympani hung in its place without this provision, without the crus of the malleus giving it relations of distinction, it would scarcely be capable of any distinct vibration at all. The membrane has also a [nervous] cord [the chorda tympani] subtending† it, whereby the soul, as the directive power, is able to tell whether or not the membrane is properly tense all round; and as soon as ever it is too lax or too tense on any side, this little cord or nerve, (after being duly educated or

* Heister says, *Op. Cit.*, n. 287, "Not flat, but concave." The truth, however, is, that the membrana tympani is concave towards the external ear, and convex towards the internal: see the next page, line 13.—*(Tr.)*

† Swedenborg says, "running through it," but Heister has "subtending it," which latter we have followed in the text.—*(Tr.)*

informed by use and exercise, and in the end spontaneously, by habit, without its possessor being aware of the fact,) advises the soul that so it is, and that a different tension is required. For this reason the malleus has two muscles; one that can twist and more or less bend round the manubrium; by which action, if the membrane is more lax or tense on one side than on the other, a slight flexure at once suffices to equalize the discrepancy. The other muscle exerts a different action upon the malleus, and raises the membrane when the tension requires to be restored below, that is to say, in the lower part of the circle. In a word, by the action of these muscles, the tympanum may be evenly tightened or relaxed in all directions, just as the delicate nervous cord gives intimation. Of the concave figure of the tympanum we need say little. Thus much, however, is obvious, namely, that all vibrations have a natural tendency to run in circles and curves, as the forms peculiarly suited to forward their dissipation. We come now to the three ossicles or little bones of the ear, viz., the malleus, incus, and stapes. The first of these, or the malleus, has its articulation, like other bones; and this, with the incus; it also has tendinous attachments to other parts, whereby it not merely obeys its own muscles, but every vibration of the membrana tympani besides. The incus in its turn is connected to the stapes by what some consider a fourth ossicle, and term the os orbiculare; this is situated at the end of the long crus of the incus; and is received in a minute depression in the head of the stapes, to which it is connected by a ligament or tendon.* The stapes has two equal crura, which are not only grooved or excavated, but naturally flexible and elastic; and leans by a circular and similarly excavated base or border on the fenestra ovalis. By this admirable arrangement, each vibration is transmitted from the membrana tympani to the fenestra ovalis: nay, such is the connexion of the little bones with each other, that in an instant the identical effect that was received by the membrane is present in the fenestra. The stapes moves with every twinkle of motion in the manubrium of the tympanum; and the flexibility of its

* I have been obliged to modify this sentence, as it seems not intelligible in the original.—*(Tr.)*

claws or hooks nicely adapts it for setting the fenestra ovalis in corresponding motion. The cavity in the neck or head, and in the crura and borders of the stapes, whether containing air or ether, causes the vibration to be felt inwardly likewise; and in this way also the vibration admits of being communicated to the fenestra, and at almost the same instant to the labyrinth. The fenestra again is tightened, or relaxed, by these modulations, just according as the stapes is raised or depressed, which enables it to receive the vibration of the enclosed air, which is ever present in the grooves of the stapes. And by these means the vibration is transmitted in many ways from the membrana tympani to the fenestra, and all the parts conspire unanimously to promote its reception. Moreover, a peculiar muscle is attached to the stapes, to maintain them all in the proper state, and ensure their equilibrium; and this muscle has the faculty of adapting itself to the requirements of the muscles already mentioned as belonging to the malleus. In the labyrinth again we find innumerable parts well deserving our regard. Thus there are the semicircular canals, three trumpet or cornet-shaped tubes, which open by five orifices, (for two of them have a common aperture); and are filled and in a manner distended by the same elemental fluid as the labyrinth. They are lined internally with a fine membrane, which is connected in all directions to the bone.* Thus the vibration transmitted thither from the fenestra ovalis through the membranous parietes of the labyrinth, and the intermediate air, is in a moment present in each of the canals, and is fixed and commences in each case at the appropriate distance from the orifices, and creeps in both directions towards the same. Moreover, to communicate to the soul a knowledge of the progress of the vibration, nervous twigs from the portio mollis of the auditory nerve run through all the canals; and conscious of the sound articulated, as well as of the distance that it moves through, and the velocity of the motion, they carry it through the whole of the auditory nerve, until it reaches the cerebrum and medulla oblongata, and in the last instance, the soul itself. But to give still nicer articulateness

* The same remark applies to this sentence also.—*(Tr.)*

to the perception of sound, the cochlea, an organ embracing the whole mechanism of harmony, is added to the other structures. [This consists of a lamina] winding in a spiral around a central nucleus or axis [called the modiolus], and which spiral gradually tapers from the base to the apex. Thus there is no possible sound but may have its proper distance or centre, from which to begin, and go on to the extremity: for an integral scale of dimensions is provided. The gradual exaltation of the sound is also secured, so that in passing from one end to the other, it is heightened in proportion as it approaches the fenestra rotunda. With this view, the canal of the cochlea is of different thickness in different parts, and very thin about the nucleus; which capacitates it for receiving all degrees of vibrations. Furthermore, it is divided from the top to the bottom by a thin bony and membranous lamella of a hard and brittle texture; and by the attachment of its membranous portion thereto from the base to the apex, it is the better enabled to vibrate, and the vibration arrives at the end with greater distinctness. For the same reasons the cochlea has an aperture leading to the vestibule, which ensures community of effect between it and the semicircular canals. And as hardly any two tones are alike, but the variety is indefinite, so the cochlea itself presents every variety, of form, thickness, calibre, and other conditions. Vibrations moreover love spiral, circular and hyperbolic curves: and hence whatever is possible in sound can find its place in this spiral organ. There are nerves also which pass through the nucleus and lamina in numberless parts, and which receive all the various sounds; for there is no sense without nerves, and no mean to sense in nerves but motion. Hence every vibration in the cochlea and its membranes, is at once correspondingly felt in the nerves, which for this reason are spread over the inside of this organ in so many different situations. And every motion is the more sensible, since the nervous filaments traverse the cochlea longitudinally, and run towards the fenestra rotunda, near which the nerve itself enters. Which seems to indicate, that as the vibration courses along the filaments, it passes gradually from the thinner to the thicker portions, so as to be ultimately taken up and conveyed with all the distinctness pos-

sible, and with the greatest amount of sensation, by the whole auditory nerve.*

We see from the foregoing description what a peculiar mechanism of nature there is for the simple purpose of conveying inwards the vibrations of the air, and of proffering them to the soul when aught that is rational is involved in the sound; such involution being effected by the articulation and vocal expressions of speech, and the higher forms of rationality being produced or expressed by new combinations of the same. We see, I repeat, not only the mechanism itself, but all its numerous parts tending to one and the same end, to enable man to hear, to perceive the delights of this world in a reasonable manner, so as to teach him that his soul is his living part, that he may have the wisdom to mingle the delights of the world with the delights of the soul; and the delights of the soul with other delights from a purer, finer or subtler world; and at last, with God, in whom, as the one only end, all must therefore terminate. But on these subjects we shall treat more properly in a subsequent part of the work.

All parts of the body tend to their own proper ends.

If we were anxious at present to extend this subject further, we might describe all parts of the body, following up the organ of hearing with those of smell and taste, and proceeding afterwards to the heart, the lungs, and a thousand other parts, and parts of parts. For the reader will here observe that they all conspire to one end; *i.e.* the lesser parts to their end, that the larger may obtain theirs; the lesser still to theirs, and the least, to theirs: therefore all these least parts conspire through the larger and larger; in other words, they all conspire separately and jointly, to the common end, which is that of the whole. In this way

* The anatomical facts mentioned in this paragraph are for the most part not borrowed from Heister's work, but probably from some other anatomist. Among the author's manuscripts there are two treatises on the Ear and the Sense of Hearing; one in 29 pages folio, the other in 24. There is also a third MS. on the Ear, but which consists only of certain excerpts from J. S. Cassebohm's work, *Tractatus VI. de Aure Humana*, Halæ, 1735.

There are also two treatises on the Eye and the Sense of Sight; one in 40 pages folio, the other in 39.

For further particulars respecting all these MSS., the reader is referred to Dr. Svedbom's Memoir inserted in the *Animal Kingdom*, Vol. II., p. 653—658.—*(Tr.)*

there is nothing in the human body but conspires to the end for which man was created; which is, the enjoyment of worldly delights; and thereby the reference of human delights to the soul and its reason, and their unison with the delights of the soul; the making of mundane delights rational; the qualification of rational delights until they derive their essence,—their delights,—from a higher source; finally, their termination in divine delights, in which the absolute, genuine and finest sense of all delights consists; for the centre and the end of them is not included in the centre or end wherein the soul abides. Thus if delights are to be true, they can only terminate in the infinite, in doing which there is pleasure the most perfect. All the members of the body, all their parts, and parts of parts, all their very least forms, conspire, I say, to this end; all therefore tend, as means, and means to means, to no other than that total and general end for which man was created and introduced into the world.

Now all these provisions could not exist by accident, although they may have existed, and may exist, naturally. For we have ocular demonstration of means tending to one end; of a consent and harmony of all things and parts, and mainly of the least parts, whereby they tend in a manner to their proper centre; and we see also that they simply look on themselves as means to the common end. And could we penetrate deeper, and perceive the finer parts,—those we mean that influence the least and first constituents of the man,—conspiring to their end, we should recognize in them a still purer and more perfect aspiration to the same common end; and in the very least of all we should find the primary ground and principle of power, whereby all the parts tend thereto. In this way then we may reckon all the rest as effects and consequences conspiring to a certain end, which begins in the least or minimum, and in which, of necessity, all these things must be involved; proving that all the means reaching to the end, were concentrated, included, and consequently present in the natural minimum. We also see that the means cannot by possibility attain this end, unless causes, contingencies and necessities, innumerable and innumerable, both mechanical and physical, concurred to their combination in this distinctive manner, to the exclusion of all others.

Should the reader wish then to recognize nature as the author of the universe and of man, he will at all events agree with me, that all those things which afterwards existed in actuality, were [in potency] in the minimum itself; and this, both in order that contingencies might thus exist, and that all intermediate causes might conspire to the precise end in view. It is clear they could not conspire by accident. Accident recognizes causes, although causes apart from intelligence, whereby such combination takes place; whereby parts or causes conspire simultaneously and successively to one end; particularly where the conspiring causes are indefinite in number. To bring the matter home let us suppose that there are only a thousand causes. If chance or accident governed them all, and the whole thousand arrived at the end, and this end was of such a character, that all, in a way truly stupendous, stood related to the first and last cause, and to the Infinite,—the first and last relations of ends thereby involving somewhat of infinity;—then, I say, there would be a thousand chances; and for these thousand chances to eventuate thus, would be against all reason to suppose; that is to say, if chance be chance, and if chances arise from causes.

We will still assume the same argument, and suppose that there are chances, and also innumerable circumstances to produce them; there being therefore an adequate number of circumstances to account for the existence of all the chances. Yet review the lineage and series of chances; review their direction to a single end. Are we not forced to acknowledge here an immensity over and above them? Are we not forced to admit a directing, an applying agent,—a power by which all the elements of the series proceed from the beginning and arrive at the end in a given order? Are we not bound to admit what amounts to infinity? A somewhat whose existence and nature alike we are at once unable to understand and bound to acknowledge.

If therefore all things in nature be means to this end, and if there be mechanical and physical necessities conspiring to it, then the philosopher cannot do less than wonder at the central cause of such necessities and causes with their manifoldly successive degrees of efficiency: he cannot but see all things concentrated in his philosophical minimum; whence he may natu-

rally conclude from real effects, by way of the senses, imagination, perception, and the soul, that there lay something in the first entity that could proceed from no other ground than a cause in the infinite. Thus by effects and the senses, and by visible or sensible nature, we are better and more clearly led to the acknowledgment of the infinite, than by the other reasons or methods of the soul. And indeed senses were given us, and a rational soul superadded to them, precisely that, in the natural state, we might be conducted sensually to an acknowledgment of deity in the infinite.

§ VI.

We have now to shew in conclusion, that the infinite is the cause of the finite, and the infinite God, the builder of the universe. This comes in the last place, because it appeals partly on self-evidence, or springs from the human soul, and comes partly as a consequence from the arguments adduced above. There is in fact a tacit consent, or a tacit conclusion of the soul, to the being as well as to the infinity of God. This is dictated, I say, partly by the soul in its own free essence, partly by the soul as instructed and advised by the diverse innumerable effects presented in the world. Not unlike reason in the soul, which comes partly from the soul and partly from the body, although we do not know whence it comes, because we do not know the state of the soul. Nor unlike the involuntary and congenital actions that take place in the body, which proceed spontaneously without the body being aware of them; such for instance as the innumerable internal motions of the frame, of the senses, the muscles, the heart, the fluids; or such as the issue or procession of the efficient causes designed to set the muscles in motion at the will of the soul, or in obedience to predetermined conclusions. The body is indeed unaware of the ground from which these and similar actions come, and whether they are determined to motion by any cause, or none; (although the senses see that the motion exists, and perceive that it is constant;) and hence they appear to originate spontaneously, and without the participation of the body. And there are numberless other pheno-

There is a tacit consent of human souls as to the existence of an infinite God.

mena whose effects we know, but cannot explain the cause; for example, harmonies of many kinds, where natural perfection is almost attained, which arrest us at once, surprize us into praise, raise smiles of delight whenever we see or hear them; and yet of their cause we may be said to be ignorant; although they have a cause, at least in a perfection and harmony either truly natural, or that corresponds with the perfection and harmony of our individual nature. We give these illustrations simply in the way of comparison, to shew that there are many things in our own organization that we derive from a source different from either the soul or its harmonic connexion with the body; many things, therefore, which seem to happen spontaneously. And so also it may be with that tacit consent and feeling of our souls, which dictates to us the existence and infinity of God.

But it is scarcely philosophical to derive from the soul a spontaneity corresponding in character with the involuntary power in the body, or with the harmony or perfection existing in things and proportions. And yet it cannot be denied, that there is that in man as man, provided he enjoy the use of reason, which acknowledges an omnipotent God, an omnipresent and all-provident Deity; it seems therefore to be innate, and to be a power or action of reason, when not on the one hand troubled too much by its own ideas, nor on the other hand too destitute of all cultivation and development. But we care not whether it be spontaneous, or the contrary, if it be admitted, that there is no one living, provided he be not over or under rational, but acknowledges the existence of a deity, however ignorant he may be of the divine nature. Hence it is that after man has exerted his powers and whetted his reason to find out this nature, he falls into strange darkness and ideal conclusions. He knows indeed that there is a Deity; that there is an omnipotence; but he has been unsuccessful in eliciting the nature of either from any dictates of reason. Much as the philosophers themselves, who after probing the subject with unceasing perseverance, have still been unable to approach by reasonings to the τo *quale* in God; and therefore they have fancied a τo *quale* coincident in qualities with nature. And thus the source of error among the idolatrous vulgar is identical with its source among those philosophers who make an idol of nature: the

only difference being what there is between the gross and the subtle, between the more and less plausible, between reason little developed and reason over developed.

However that we may not state for certain what is not perhaps very clearly accordant with reason and philosophy, nor prematurely take up conclusions without previous demonstration, we will for a time relinquish the point, and agree with those who declare that the acknowledgment of God is not spontaneous, but is an effect of the soul admiring the universe, or amazed at the wonders of nature; or perhaps ignorant of the source from which they spring. Still the end is the same; for still we admit a tacit consent of human souls to the existence of God. At the least this feeling and consent of our souls arises from visible nature, in which divine effects exist, wherein every part summons us to admire, and to acknowledge that it issues from an infinite fountain. From our admiration of the parts and the whole, and from our amazement at everything that sense perceives, and that reason, knowing not the cause, yet unknowing admires, the soul deduces and concludes, whether by its own action, and tacitly, or by reasoning, and not tacitly, that a divinity exists. After which it follows spontaneously, if we conclude in favor of this divine principle, that at least it has the power to bring this, as well as that, to pass; and thus worship exists.

§ VII.

Objection: Was the Divine in the primitives only, and not in the derivatives?

But here it is probable that some will interrupt our argument, by declaring that we have no right to reason about God in any such *a priori* manner, or from any principles of the kind, but that all we have to do is simply to proclaim, without any ratiocination, that God is the provider of all contingent circumstances; that now and ever he is as provident as he was at the very creation of the world; that he did not exhaust the whole of his wisdom, or spend the entire force of his providence, in his original creation; but that these remain still infinite in the provision and government of causes and worldly things according as he pleases, in conformity with what he sees ought to be;

shewing that he always expects the issue before he wills it into existence. Likewise that God is present to every contingent circumstance in succession, as at the day when the machine of the world, and the bodily machine of the soul, or the human frame, were first constructed: and that now, as ever, his state is, that at his good pleasure, he can either change, or not change, all things, agreeably to the causes and effects that he sees in operation. There are, we know, great numbers of persons who think this line of reasoning preferable, because thereby we have the divine omnipotence manifest in time, and know that at all times it will provide for human affairs, accompanying them through all their windings and changes. And especially do those appear anxious to urge this view of the subject, who cherish a finite conception of God, and cannot refrain from likening his power and will to those of some earthly potentate, who can issue his mandates either in obedience to causes and laws, or the contrary; or frame new laws at will, and impose them on human action; and afterwards either modify or reverse them. Such sentiments are peculiarly grateful to all who fancy themselves to be the near objects of regard to the Infinite, and his favored friends; and deem therefore that they can win him to their side, to work their will, and to enable them to govern human souls and societies under a pretext of divine authority.

But even this opinion is in no way contrary to mine, provided its abettors are not so gross as to think that it pleases God to be changing daily, and constantly framing new designs for every new conjuncture of circumstances; that is to say, to be continually modifying his plan at the bidding of events; so that what he would do to-day, he would not do to-morrow, because of the altered condition of things; or so that his will and decision would depend upon a succession of mutable causes, as is the case in finite man. In these respects I grant whatever can be granted with reason, if on the other hand you will grant me this,—that God is infinite. And surely you neither can nor dare deny it. If he is infinite, then all things were present to him that are future to us. For can anything be predicated of the infinite in a finite sense? Is not that then present in him which is successive or future in time? If in his infinity he has foreseen all things, has he not also provided all things? In the

Infinite, providence cannot be distinguished from previdence. If the providence followed the previdence, what would become of the infinity? If he, the Infinite, operated and provided successively and in time, with a constant substitution of new acts according to events, and if he must wait for the events before he knew what they would be, or whether they would happen, or not,—if this were the case, we again say, what would become of his infinity? If providence is successive, like time, where is the infinite? Succession itself is an implied condition of the finite? Seeing therefore that God is infinite, why should we seek to limit him by time, chance, or any other predicament whatever that would necessarily involve the existence of finiteness in his essence? If all things are realized simultaneously that will ever be realized in time, is not the infinite manifested here? If we admit that his foresight and providence are instantaneous and coincident, is not this identical with declaring that he foresaw and provided in time? In respect to us it is assuredly so; for all things appear finite and successive to those who are finite, and live in time. Therefore what happens after a finite manner, and in time, is relative to us; but is not similarly relative to the Infinite. We agree then thus far, that previdence and providence do exist; but we differ here, that in my opinion these are infinite; while according to the other opinion, somewhat of the finite is involved in the infinite. Therefore perhaps the whole discrepancy is a matter of words and not of understanding. But if there are any who think they have something to lose in the decision, because according to our principles they will not be enabled to bend the infinite to their own particular interests, or to claim from the common people that obedience which is due to God—if there are any such, it is not our intention to reason with them. It is too probable that worldly things, and not divine, are uppermost in their thoughts. Perhaps they would have the vulgar believe, that God by his own immediate agency, interposes the clouds between our eyes and the sun; that he successively rouses the tempest, sends down the rain, and paints the rainbow in the sky: that at one time he frames our members in the womb; at another, breathes the soul into the body; and so forth. Perhaps in a word they mean to teach, that God is justly represented

under the image of a finite man, who would operate immediately, or by modes immediately proceeding from himself, on the grosser circumstances, and lowest parts, of the sphere of nature. And so they would see in God the proximate cause of all things. However, as all things are the effects of his divine providence, the only question at present is of time; whether one after another they are created immediately; or whether they were all foreseen and provided at once? The latter predication involves the infinite; the former, the finite. Choose then whichever of these opinions seems most consistent with the Divine Essence. We leave the matter entirely to the decision of the reader.

§ VIII.

The reasonings of some philosophers concerning God.

We are now in a condition for understanding how it is that the philosophers, ever since the time of Aristotle, have racked their ingenuity in the attempt to express and represent to themselves and the philosophical world the nature and qualities of God. They all, as we said before, have begun by investigating these. In truth, mankind is always desirous to imagine the qualities of God; to bring him within the bounds of reason and rational ideas; and to finite and fix him in something, by something, or to something. For this reason the above investigation has all along been the issue and offspring of reason and philosophy. And though the philosophers have heard that he is infinite, yet on behalf of poor reason, which is always bounded by finite limits, they imagine the infinite as finite; being unable to perceive at all apart from the finite. We now therefore see why reason has failed, and that the cause is the same in the vulgar as in the learned. For the greatest master of learning can no better imagine what the infinite is, than the merest vulgar or the least informed of the community. Thus if we say that God is like an idol, or a man; or if we say that he is like the least or the greatest finite, it all amounts to the same thing; since there is no proportion between the infinite and the finite: wherefore it is as gross to say, that God is like the least or greatest finite, or that the least or greatest finite is God, as to say that the idol

or image is like God, or that God dwells in the idol: or with the ancients, that this or that man is, or will be, a God. Finitely speaking the one simile is grosser than the other; but before God, as being infinite, both are equally gross. No finite difference makes any difference at all in the infinite, in proportion to which all finite differences are permanently the same; because there is no ratio, either of likeness, or unlikeness, between infinite and finite. The root and cause of all such perceptions as the above, is one and the same; viz., the very inquiry into the quality of the infinite, and the fact that when the mind could advance no further, it admired its last result, and accordingly took it for God; seeking its God from the ground of mere admiration, at the point where reason ceases, and thought itself is forced to stop. And hence it was that in former ages, when the simple-minded multitude greatly honored a leader, they at once deified him, and erected altars at which they paid him divine worship as their tutelar god. And when they saw any idol, to which they thought they could ascribe events that excited their wonder; particularly if miracles were alleged, and the admiration of the miracle prevented the perception of the cause; in this case they were lost in amazement; and consequently the idol or image became their god. Some have fancied the universe to be God, from seeing and conceiving in it such great and vast resources, which seem to transcend both sense and perception; or else from the circumstance, that the more they thought, the less did it seem possible to assign any limits in this sphere. On these grounds they deified the universe in its largest sense; and the more readily as their admiration for the whole was filled and illustrated by their knowledge of the astounding marvels and harmonies, of situation, figure and motion, which are extant in our own particular world. Others again deified the minimal or atomic world; from the same cause as before; viz., from admiration or ignorance of its properties; especially as under the operation of reason the minimum seems more and more to approach the indefinite, or to exceed the limits of conception. Others indeed believed in the infinity of God, and yet for the sake of representing his qualities to their own imaginations, they at the same time thought that he had finited himself, or had made himself finite, and so had

created the world. And if these had held that all which there is in the natural sphere proceeds from an infinite cause, or from the infinite, and consequently in this respect is a divine work, they would not have been far from the truth: but the reverse if they concluded that the finite or nature is God, and that all things stand in nature's disposal; which becomes identical with the worship of nature. Others again thought that God is in such sense all in all, that the actual all of the finite universe is God; that we men likewise, as parts of the universe, are parts of God; according to which, whatever there is in the world is God: which amounts precisely to the same as the belief that universal nature is God; for it is like the former opinion, and springs from a similar ground. Others, to avoid all dissension, say that God is a spirit, but an infinite one, and that angels and human souls are spirits, but finite. Yet it must be confessed that even this is an incompetent statement. For probably when they talk of an infinite spirit, and a finite spirit, some likeness is implied between these spirits, or between the finite and the infinite, although the latter in itself admits of no such likeness. Or perhaps, as we do not know what finite spirits are, and as we do not know what the infinite is, it is from ignorance of both, and from admiration, the offspring of ignorance, that they wish to institute a parallel, and to call one the infinite spirit, the other the finite. Yet on account of the epithet infinite, it is all the same whether they choose to call it a spirit, or an angel, or this, or that, so long as it is not repugnant to the predication of infinity; for the conjunction of the infinite with any of these substantives absorbs whatever is finite, in short the whole of the other term. It is therefore all the same whether we say infinite spirit, or simply infinite. For if aught of finite is involved in the conception of spirit, it becomes intrinsically nothing in respect to its adjective, the infinite. Thus if you would illustrate the qualities of the infinite by likening them to those of finite spirits, and on this ground would speak of the infinite spirit, you would fall into the same error with the rest. For you admit that there is nothing infinite in angels, who are created beings. Therefore the illustration is not available in this sense, although it is not without meaning in a different sense, of which we shall speak presently. And from this ground

it is that some have tried, in their way, to reduce the infinite to particular shapes or forms, likening it to a circle, to a triangle, or to this or the other geometrical figure; all which springs from the root we have already indicated; to wit, that men have chosen to reason of the quality of the infinite from the analogies of the finite sphere. They liken the infinite to a circle, because a circle has no end; or to a triangle enclosed in a circle, because it has a trinity of angles. In a word, they have attempted to perceive the *quale* or properties of the infinite by ideas framed upon a geometrical model; not seeing that quality is supposed in all geometrical entities, and that form cannot exist without extension. If we take the circle, this has necessarily a centre, and an area; which again imply angles, parts, and succession from point to point, constituting a line; or to say the least we have a conception of all these attributes in the circle; and in consequence we regard it as a natural entity, because it is analogous to a geometrical one: and the same remarks apply to the triangle. All enquirers then of all descriptions who have suffered their reason to seduce them, have tried to search out God by comparisons derived from the finite sphere, and so have fallen into error, and formed one idol or another to represent their Deity; and have all in this way become idolaters.

But as some have seen by the light of reason that God is not finite: that neither the universe, nor the maximum or minimum thereof is God, inasmuch as it is natural and finite, so they carried reason to a new height, and attempted to make out that the natural universe is not finite but infinite; that the heavens are illimitable and unending; that the world is eternal and everlasting; which was the belief of Aristotle and certain of his followers, who fancied that in this way they had found a God who was both infinite and finite. For example, they saw that the universe was natural, and to human senses, finite; but they thought that if they took away from it all its limits and boundaries, or supposed it to be circular, or could in any way ideally imagine it to be without end, they would thereby attain a knowledge of the infinite; which, in short, they regarded as nature without end, and as time without beginning. When they perceived that time involves succession, and is finited or distinguished by moments, to reduce it to the conception of the

infinite, they declared the world to be eternal, time to be eternal. But had they chosen to reason deeper, they would have perceived that the one of these terms is contradictory to the other. If they recognize parts in the universe, they thereby recognize mere finites as composing it. If they recognize moments in time, they thereby recognize mere finites. How can this finite thing be infinite? How can it be without end? without beginning? How in any way can it have been produced without a cause? How without a beginning? How can so vast a universe be without boundaries? Each part has limits; why not the whole? However desirous you may be to conceive the finite without boundaries, you must answer these questions, after whatever anxious thought you will, by admitting that the universe cannot but have boundaries. Yea we add, that though you proceed on and on, through myriads of myriads of worlds, you still must come to an end: and as the world is finite in its parts, we may conclude that it is also finite in the whole: wherefore it cannot be infinite, or without end. Therefore these philosophers also are deceived, though not so grossly as the others; for notwithstanding their hallucination, they continue to affirm the intrinsic infinity of God; which they attempt to explain by finite things, making time eternal, the universe without end, and the finite infinite; not aware that the conjunction of the finite with the infinite causes the finite term utterly to disappear, and be reduced to nothing; the infinite alone remaining, and becoming all. And however they choose to add or multiply, subtract or divide; *i.e.* to perform analogical operations between the infinite and the finite, still the finite becomes a nonentity, and the infinite alone is left: so that it is all the same whether they make use of the finite in their calculus, or not; for here the finite has no value, no significance, may be either present or absent indifferently: and thus the infinite is infinite, and God is infinite: we cannot express him otherwise.

The infinite is not to be reckoned as nothing, although compared with finites it is quasi *nothing.*

But as we have spoken of the infinite and its qualities as if almost nothing could be predicated or conceived of it in a finite sense; as we have shewn that the reader is entitled to say that God is infinite in the least sphere, and infinite in the great-

est, and that the finite is relatively nothing; or on the other hand, that the infinite, to our conceptions, is as nothing to the least of natural entities, or the natural minimum: so perhaps he may now be inclined to argue from this, that it is indeed necessary to assume the infinite, but nevertheless that it is equal to nothing. For when we multiply, or divide, a finite number by (0), the former becomes nothing. If we add or subtract (0), the finite number remains, and (0) can be wanting. Shewing that according to the previous conception, the infinite is nothing, because it is in a manner nothing relatively to finite numbers; and all the more as there is no likeness between the two. A number indeed may be so small, so indefinitely little, as in some sense to equal nothing, and although not really equivalent to this, yet it has a likeness thereto, and consequently it is not infinite. We see this in the calculation of indefinites, where the differences are so small, that they cannot be multiplied by constant finites without being annihilated; and their differences, and differences of differences, cannot even be conceived. Yet even these are by no means infinite, inasmuch as they involve a likeness or analogy to finites; by which as a proportional we may come to the investigation of quality in figures and spaces: while on the contrary no such analogy is supposed in the infinite. The mind, therefore, cannot help concluding by this process that the infinite and nothing are one and the same. But, friend, here too you are thinking after a finite manner. What do you say to the maximum Infinite? If you choose to state that God is infinite in the greatest sphere, is not all proportion with the finite lost thereby? The whole universe, with all its possible qualities, is yet not a point to the infinitely great. But can you then conclude that your finite is nothing, when your very senses and reason dictate that it is something; and relatively to those senses, vast enough to be indefinite, especially in the case of the finite universe? We may therefore logically argue, that the finite is not nothing, although it be nothing in relation to the infinitely great. Take the finite universe, and let thought go forth and expatiate over it, far and wide to the verge of possibility; then let thought extend beyond it, and conceive to yourself not only this universe, vast as imagination can compass, but an indefinite amount

of similar universes: surely you cannot conclude, simply because you can conceive a repetition of universes *ad infinitum*, that therefore the universe, or any part of it, is nothing, although it is nothing relatively to the infinitely great. In the same way I would have you not confuse yourself, or conceive the infinite as nothing, merely because when it is represented to you in the minimal sphere, with relation to the finite, and the analogues of the finite, it is *quasi* nothing: for you may say the same of your finite relatively to the infinite represented in the maximum sphere. Whence you may conclude, but by no means finitely, that there does exist an infinite. Moreover the infinite is the cause of the finite, which it could not be if it did not exist. No cause can produce an effect, unless the power to produce lie in it: but that the infinite produced the primordial seeds of nature, and consequently the world, has been already stated. Actual NOTHING can furnish us with no cause: nothing comes of nothing. It follows that the infinite was the cause, and that whatever is in the cause is infinite. The circumstance of all contingencies in the finite sphere conspiring so marvellously to a single end, can proceed from no other ground than a cause involving an infinitely intelligent being; whence it follows that there is a preëminent being in the cause, and an infinite intelligence in the being. It is clear also that there is a link or nexus between the primitive and the cause, because whatever is most perfect in the primitive, is infinite in the cause; the nexus or link, however, is infinite, as we shall explain presently. Hence we may conclude demonstratively, that such nexus is possible, but as to its nature or quality, this can never be discerned by analogy in ever so remote a degree. Thus we may be certain that there are infinite things in the infinite, the nature and quality of which can never be conceived by the finite. The conclusion is, that beyond our finite sphere there are verily infinities, to the knowledge of which it is useless to aspire; and which in the infinite are infinitely many, and can be known to no one but the infinite. In order that these may in some measure be conceived by the soul introduced through faith into communion with the infinite, it has pleased God to discover by revelation much whereby the mind can finitely conceive and express him: not however that finite perceptions or expressions

are similar or adequate to him, but only that those made use of are not repugnant.

§ IX.

The connexion between the infinite and the first finite.

Having now, by the formal resolution of the question of *cause*, or the *whence of things*, obtained this unknown *quale*, viz., the infinity of God, so that the human mind is plainly convinced of it; as also that God is in the infinite, or himself is infinite; we will in the next place follow the mind in the further enquiries which it makes as to the *how* and the *wherefore*. The infinity which the mind unhesitatingly ascribes to God, is now no longer assumed as unknown, but as known. By affirming it, the mind makes it positive, because it has no more to be sought, but is sought and found; though still indeed, however known and positively affirmed, the mind remains in the dark as to its *quale*. But enough, that this is no longer sought, and no longer dwelt upon. The mind being disembarrassed of this quest, it is not surprising that it now desires to go further, and to enquire into the *nexus* or connexion between the infinite and the finite, between the cause and the causate. In the course of reasoning, when the mind acquiesces in a point as no longer doubtful, it there leaves it, and ceases all attempt to descend into particulars where it knows that this is impossible. In the present case therefore it now comes closer and closer in thought to the first finite; but before taking hold of it, and determining to explore it, the mind proposes and ruminates certain middle questions, touching the actual existence of a nexus, and the possibility there is of discovering the nature and quality of the nexus which subsists between the cause and the causate, or between the infinite and the first finite. The philosopher hopes indeed to detect quality in the first finite, however he despairs of it in the infinite. Still, as we before observed, he assumes the infinite as known to the extent of affirmation.

When at length he fixes upon the nexus as an object of mental investigation, he directs his attention at one time to the infinite, at another to the first finite, hoping to discover the nexus from the latter, though not from the former; and stands

hardly knowing which road to take, between some light and more darkness. And so he hesitates in his course, and asks whether a certain amount of illustration may not haply be borrowed from the finite side. In this way he elicits for his own mind the various states of the question, rejecting some and accepting others, until at last he sees one aspect on which he can dwell and reason.

Perhaps the reader may think that the present point is one which ought not to be enquired into, but that we ought to rest satisfied with what we know already. But what if reason does not rest, and cannot unhesitatingly believe many of the consequences which flow from our positions, until this doubt also is resolved? What then is to be done? Must we not enter, with the philosopher, into the field of ratiocination? Shall we not attempt to clear up the doubt and untie the knot by the aid of reason? Shall we not strive with all our might to make the nexus positive as we have already made the infinite positive? We have no right to despair of succeeding in this also, after solving, as we have done, that primary doubt which attached to the infinite.

In attempting to simplify and unravel the difficulty, it first occurs to us to enquire, if reason be competent to decide whether the infinite is the immediate, or whether it is the mediate, cause of the finite? On pondering this question, and carefully considering its philosophical relations, it is evident at once by all the laws of reason that there can be no mean between the infinite and the primitive. Were there a mean, or a middle cause, either this cause would be infinite, and therefore distinct from the first infinite; which would be contradictory of the infinite; (for how could there be two infinites, one the cause of the other, unless in point of infinity they were one and the same): or else it would be finite, and therefore distinct from our finite, and consequently a finite like the first; which would be to multiply entities unnecessarily; for the question is at present, Is there a cause intermediate between the infinite and the primitive? The suggestion then occurs, whether a middle cause be possible, partaking at once of the infinite and the finite. But this is soon rejected when we remember, that any finite whatever, the least or the greatest, attached to the infinite, would be

equivalent to nothing; which proves that the two must be distinct. As it is evident therefore that no intermediate or proximate cause of this double nature is possible, the conclusion follows, that the infinite is the immediate cause of the finite or first simple. And this is the answer to the first question; so that it is no longer doubtful that the infinite is the immediate cause of the primitive or pure simple.

The primary end is for the infinite.

Next the mind goes deeper, and enquires into the nature and quality of the nexus between the finite and the infinite. It is evident enough that in point of essence the finite cannot partake of the infinite, because there is no ratio or relation between the two. Nevertheless the mind desiderates some nexus between the infinite and the finite, because the one is the cause, the other, the causate; and if the one depends on the other in the way of causate and cause, there must be a nexus between them, or a principle derived from the cause in the causate,—a principle to which the causate owes everthing. Therefore the mind assumes that there is a nexus; and this, not merely as regards existence, but also as regards essence. For unless the essence and its actuality were presently and continually dependent upon the cause, there could be no essence or actuality in the first finite; but as it is evident that there are both, so the mind will search for the nexus by way of analogy. Without a nexus the finite could neither exist nor subsist. Unless the principles in the first simple were related to the infinite by a nexus of some kind, they would evidently be annihilated at once, and dissipated outright; and the whole universe would perish with them. On these grounds the mind perceives that a nexus must exist; not indeed a perceptible, proportional, or natural nexus, or one which partakes of the finite: but still plainly a nexus; and it is equally evident, as it was before when we were speaking of the infinite, that it is impossible to know the nature of the nexus, because it must be absolutely infinite: although notwithstanding its existence is not the less clear. By consequence the mind acknowledges a something which it understands no better than it understands the infinite. We cannot in fact deny the nexus without at once destroying the finite, which derives from the nexus its very existence and subsistence, because its cause. Nor yet

can we affirm that the nexus is perceptible, for it certainly is not perceptible in any natural or rational way. The conclusion then is, that there is undoubtedly a nexus, but that this nexus is infinite. The nexus is affirmed, but it is not known. We declare its positive existence, but pretend to no knowledge of its qualities. Here, and thus, the mind confesses its original ignorance, in that it can never discover the nature of the infinite by reason, however much it may choose to exercise that faculty upon the subject, for the utmost extent to which induction can attain is a bare admission of its existence.

Since we now affirm as a positive truth that there is a nexus, (but a nexus equally unknown with the infinite itself,) we may be more and more confirmed in our opinion by the answers to various questions concerning the creation of the world; as the end of that creation; the why and wherefore; the immediate purpose; the impelling cause. If there were really no nexus, there would be no *wherefore*, or end, in the case. The end stands related to the beginning; and the last cause to the first; but such relationship would be impossible if there were no nexus: the mutual relation of ends consists wholly in the nexus, whatever that may be. The final cause cannot be primarily for the finite. Were it so, then all effects would be simply for the same, and the efficient cause would have no end to exist for. This would be at variance with its infinity; for if there be a nexus, and the infinite be the first cause of all, it is impossible but that all its successive derivations must be related through the nexus to the first cause. The whole sphere of the finite, or the universal world, must of course be referable to its own prime, beginning therein, and terminating therein. Therefore the final or impelling cause cannot be in the means, but only in the end itself; nor can it terminate in the finite sphere, but only in the infinite. And thus all the multiplicity of causes that concurred to the existence and creation of the world, can neither end nor begin anywhere but in the infinite; whatever proceeds therefrom consists merely of causates. Nor can it be said that any cause concurring to creation exists elsewhere than in the essential cause itself, *i.e.* in the infinite. Were we to declare that the infinite created for no cause of its own, but purely for the sake of finite beings, in this case a particular act

of will would be conceived apart from the nexus of causes; an intelligence would be conceived in the will without a cause; an efficiency proceeding from the will without either a cause or an end; all which would involve contradiction or negation in the infinite. If then all that there is in God be infinite, there must also be an infinite exertion of will for a cause, as well as an infinite intelligence in the will, and an infinite efficiency from the will: in short without a cause, no principle whatever is conceivable in the infinite. As then the infinite is in this will, and cannot be otherwise, so it must also be in the cause for which as an end [the creation was effected]: which cause consequently cannot be other than infinite, or other than primarily for the sake of the infinite; or what amounts to the same thing, for the sake of itself. In this way then the whole universe, and the whole sphere of the finite, was not created primarily for the finite, or for men and souls, but for itself; otherwise there would have been no infinite in the act of will which produced it; in which however the finite could not have been, and the infinite must. The final cause, therefore, or the end; all the effects which are ends; all the means which in themselves are ends, although in relation to subsequent issues they are causes, and in relation to the two extremes they are means,—all, we say, are for no other final cause but God alone.

Seeing then that all things are created for the infinite, and that the final cause is infinite, as the beginning or first cause is *the* infinite; both causes being therefore identical, *i.e.* infinite; we may now perceive that there must of necessity be a nexus between the infinite and the finite. Causes and ends cannot be connected without means; cannot be related to each other without a nexus. Hereby the affirmation is strengthened of the existence of a nexus between the infinite and the finite; though its nature reason can never know, because the nexus too is infinite. Hence the position of existence is affirmed, at the same time that that of quality is ignored.

But possibly some of our readers may think they have reason to object, that according to this, the ultimate end of substances, or ultimate natural effects, would seem to be infinite; although they are as far from being so as the infinite is far from the finite, or in common parlance, as heaven from earth. For they urge

that the first natural entity is that least or minimum of which we had made such frequent mention; and this first natural entity is not infinite, but the infinite is simply its cause. And as the first natural entity is the cause of the whole series, so the last must be like the first, that is to say, finite and natural, and by no means infinite. Again as there can be nothing infinite in the first natural entity, because the finite and the infinite cannot coexist as proportional constituents of one and the same thing, so there can be nothing infinite in the last. Or to speak more clearly, such coexistence cannot be conceived, although if stated there might be no contradiction in the words. Consequently all the ends of nature, all the boundaries of natural things, begin and end in the finite sphere. To all this we beg to observe, that we are speaking at present of the first and last final cause; and seeking the end for which these natural boundaries were created. The first cause cannot be anywhere but in the infinite, for it has nothing natural in it, but the natural begins in the first entity produced by the cause; by which natural things become means to this infinite end. Therefore the ultimate end of such cause cannot consist in any simply natural realization, but only in a connexion with the same cause by natural means; and so the first and last ends are connected together, and consequently are infinite, or for the infinite. Hence all things tend to enable natural means to conspire to that end, and as man is a mean to it, so he too enters into communion with the same end, not however as being himself an end, unless in a secondary sense, but only a means. But of these subjects we shall treat more at large in the sequel.

§ X.

There is a nexus, and the infinite is the final cause of creation.

We thus arrive at the second of our unknown quantities, and this likewise by reasoning; and we have, therefore, now no right to despair of arriving by reason at anything, be it even so profoundly unknown; howbeit it is not equally permitted us to attain a knowledge of quality as of mere existence. Still we have got so far as to believe in a nexus between the infinite and the finite, but not a natural, neither a mechanical, geometrical, or physical

nexus, nor one of any kind that has any analogy with the qualities of the finite. In a word we know that there is a nexus, but what it is we know nothing whatever. This too may therefore be reckoned among affirmative and positive verities. And likewise this, that as there is a nexus, all things stand related to the first cause through the nexus; and that the primary final cause exists entirely for the first cause; wherefore both ends agree in this, that all things are made and created for the infinite. Let us now go further, and see whether anything more be discoverable by the reasoning process.

First, however, let us see, whether there be any source besides mere reasoning, from which we can know the existence of the nexus. To illustrate what we mean, let us suppose that some other person now tells us the same thing that we ourselves had discovered by reason; in this case we shall be bound to think that he too has discovered it by the same process. And if any one told me the same, but gave additional particulars coinciding with it, which went still more to confirm it, then it would be fair to believe, that he had reasoned more deeply, distinctly and acutely than myself; since he not only sees all that I do, and draws my conclusion, but superadds new results, of which I knew nothing, yet which are nowise at variance with mine, and therefore I have every reason to believe them. And hence the mind that would not be deceived, lays hold both of that which is concurrent with its own reasoning, and of that which other minds superadd, and which appears to be not at variance with the former.

But perhaps the reader may be curious to know my drift in these remarks, and he may ask what greater degree of affirmation I want on the subject. I wish then only to draw this conclusion, that if any one tells me the same thing that I myself have arrived at, I am bound to believe him on the simple ground that I believe myself. Let us now see whether God himself, or the infinite, has not been pleased to reveal to us this very thing; for he tells us that he had from eternity an only-begotten son, and that this only-begotten son is the infinite, and is God, and that the connexion between the finite and the infinite is effected by the only-begotten infinite and God; and that the father and the son are one God; both infinite; both the creator of the

finite universe; that both concurred in the work of creation, yet that the two are so distinct, that the one is the Father, the other, the Son; the one the first person, the other the second; wherefore in respect to the names of Father and Son, and in respect to the word Person, they are indeed two, but in infinity and divinity they are one and the same. In this way we have here something like what reason had dictated, to wit, the existence of a nexus between the finite and the infinite; also the declaration that the final cause belongs to the infinite, but through the above nexus; and that the connexion between the infinite and the finite is through the Son, and through nothing else. Thus then we have an agreement of revelation with reasoning.

But here again some may choose to infer as a philosophical conclusion from our premises, that in this case God created the finite universe mediately and not immediately; for if the nexus between the finite and the infinite lies in the only-begotten Son, the latter is then the real medium through which the universe was created. But why, I ask, should we reason so naturally? why so finitely? We see already that there is a nexus; that the nexus is infinite; that the infinite does not admit of distinctions like the finite; so that it is impossible to say with any meaning that there are two infinites, or that the infinite is divided, or that one infinite has done anything through the other; for herein we should be again desiderating a *quale* in the infinite, in which no *quale* can be found as in finites; wherefore neither finite terms, nor finite reasons and perceptions, can have place here. If you say that there is a connexion between the infinite and the finite through the Son, and add that the Son or nexus is infinite, this amounts to the same as saying at once, that the infinite is the immediate or proximate cause of the creation of the finite; for you cannot make one infinite prior to the other in time, or nearer than the other in place, or imagine any medium of a finite kind, since the infinite can be no other than one. Therefore, the Son being infinite, the infinite is the proximate and immediate cause of the finite. Thus it is the same whether we say that the Father is the immediate cause of creation, or the Son; for as we have often observed before, the infinite admits of no finite or natural distinctions. To say then that the finite came forth mediately through the Son, is exactly

tantamount to saying that it came forth immediately through the Father, or immediately through the Son; since the Father and the Son are alike the infinite, and the infinite is the immediate cause of the finite. In short we may in a thousand ways play with words expressing the finite, and with reason also; for all our speech and reasoning is necessarily finite. However, if you choose to state that there is a connexion between the infinite and the finite through the infinite, and consequently through the Son, as infinite, I hardly think you can be far wrong. At any rate to whatever quarter you turn, or however forcibly you entreat your reason, you will never elicit anything more, than that the nexus is infinite, and that revelation therefore coincides in declaring, that the world came forth immediately through both the Father and the Son.

§ XI.

But as we have now committed reason to the subject of the nexus, and it is desirable not to leave it there, plunged in sheer stupefaction and amazement at the innumerable things that it sees, of which it is to remain for ever in ignorance; as this is the case, we will proffer our hand to reason for another stage of the journey, and to the best of our ability direct her on the way, pointing out how far it appears possible to venture, in these mysteries, and where we must necessarily stop. We said above that reason would avail us to the point of knowing that there is a God, and that he is infinite; but that it would not avail to that other point, of shewing his nature, or the nature of the infinite. We said also, that reason may see as a last result of induction, that there is a nexus, and that the nexus is infinite; but that it cannot know what the nexus is, simply because it is infinite. It remains now to be seen whether there are not a vast number of other particulars touching these subjects, which we may fairly arrive at by reason, and come to know the existence of, although not the nature. When the mind is satisfied on the question of *existence*, the next thing is, to enquire how the question of *nature* or *quale* may best receive that illustration

Man is the ultimate effect in the world through which the divine end can be obtained.

of which it is capable. But we have not yet arrived at this part of the subject. The questions concerning existence will in the meantime afford us many affirmative and positive data, from some of which the question of quality may to a certain extent be elucidated.

We said above that the primary final cause belongs to the infinite, or exists for the infinite, and is obtained by finite means. For if there is a final cause at all, one for which all things exist, (which presupposes an impelling cause,) there must then be ends, *i.e.* a first end and a last. Such an end as the first and the last, can only exist by means of a subject which has a first, a middle, and a last term. And as the final cause cannot be obtained but by ends, it follows that it cannot be obtained but by a peculiar subject which has ends; that is to say, by the finite, or by the world considered as finite. If it can be obtained only by ends and boundaries, then there must be two finite ends, a first and a last; to say nothing of middle terms, of which we shall speak at length in another place. With respect to the first natural end, we have said that it is the first created minimum, the smallest natural seed, or the simple principle of the world. We shall now leave the middle terms, and pass at once to the last natural end, through which the divine end must be obtained; which, as respects its first cause, is the infinite; wherefore the final cause is infinite, and therefore the same in the first end as in the last; and so the first and last cause are at one in this, that they both exist for the infinite.

Now then the question is, where or what is the last effect in the natural or finite sphere by which this final cause can ultimately be obtained? We reply that for this planet the last effect is man. We will not now expend our attention on other worlds, or enquire whether there are any such, or how many, or whether they too contain planets, or whether in them also there are ultimate effects by which this final cause is obtainable. Denial or affirmation on these points is irrelative to our argument; for we are not now canvassing them, nor are they in question at all. But we are here speaking of our own planet, and we aver that man is the last effect thereon by which the end contemplated by the infinite may be realized. We will now enquire whether men are these last effects we are in search of,

or angels, if the reader believes in angels, or whether anything else is to be so considered. It is no longer denied that the natural minimum, the seed or primordial germ of nature, is the first effect. This admission gained, let us proceed in our investigation. Intermediates are necessary to the obtaining of the ultimate effect. It would be contrary to all reason for the ultimate to be in the intermediates, or the end in the middle. Therefore the elements cannot be the ultimate effects, for they are the intermediates which provide for the existence of the ultimate effect, and give it being. Ether, air, fire, water, cannot be what we are seeking; for they are only means, and besides are inanimate; and so far present us with nothing of a living and intelligent character into whose composition they enter; therefore they cannot be ultimate effects. The earth with the various growths that adorn it, cannot be the ultimate effect; for in the latter all the means must concur. What is the use of the means but to constitute the ultimate effect, by which alone the end can be obtained? It is indeed obtained by means, yet only by the means leading to the ultimate: whence there is nothing in the world but conspires to the same end or *finale*, to obtain which all things must conspire to the ultimate effect, in which, in this manner, the end will exist. We see then that in the subjects we have mentioned, something is still wanting, that is to say, some ultimate effect. Now therefore let us come to man, and let us see whether all things conspire to make him the ultimate effect, through which the said divine end can be realized. In him all other things concur as means: all the elements concur to his life, to his senses, to his reasoning power, &c. Whatever be the nature of the elements, or our opinions about them, they must exist in a series, the subtle first and the gross afterwards; otherwise the body would be without breath or life, and its finer parts would be destitute of motion, nay, destitute of the very springs of motion. At least the subtler elements concur to produce or to move the grosser, for no motion can be induced upon bodies without a cause, or without principles of motion derived from other substances. And if motion contributes to the life of man, the subtler elements are still the means, and in this way conduce and tend to realize the ultimate effect. To whatever class of philosophers the reader

may belong, he must admit, if the subtler elements concur to the existence or subsistence of the last, and this last concurs to realize a particular effect, that then, in all reason, all the elements necessarily concur to realize the same. We know, however, by the senses, that nearly all things do concur in man. We see that water, fire, and earth contribute to form and sustain him. For he is nourished by them; he is made up of them; his blood and humors are rendered liquid by their instrumentality; he also obtains heat from the same source; out of the air he takes hearing; out of the ether sight; and if we chose to proceed, we might shew that the subtler elements likewise, both severally and in combination, concur to endow him. Neither the elements then, nor the elemental world; neither the matters of the earth, nor the planet itself; no, nor the vegetable kingdom, can be regarded as ends, inasmuch as they all concur to make up and support another finite being as their last result. If it be objected that numberless other occult finites, as souls, angels, &c., possibly exist in nature, which perhaps do not concur, I still answer, that nothing can by any chance exist in nature, be its sphere as subtle as it may, no not even angels, but with a view to concur in man; not indeed to concur to his formation, yet to the obtaining of the divine end in man as the ultimate effect of the world.

But it may be thought that, at this rate, we only prove that man is the ultimate effect of nature in point of existence, *i.e.* the last in time; and if this were all it might then be argued, that other animals too are ultimate effects, as their composition, senses and mechanical organs appear to be similar to our own, and all the before-mentioned series concur to produce them, just as they concur to the corresponding parts and endowments in man. How then can it be said that man is the ultimate effect through which alone the end is realized, when by the shewing of our very senses, the same ultimate effect is evidently presented in other living creatures also? But let us proceed a step further. The ultimate effect we are seeking must have more in it than a mere machine: by a mere machine the divine end could never be realized. If it could, the whole universe might justly be regarded as the ultimate effect. A mere machine, however, can only serve as a means to the ultimate effect. In

the ultimate machine something more is requisite; something not merely passive; something active in addition to the passive; in short, something that tends and contributes to the end of creation. This end does not come of itself, or result from a mere machine, unless the latter has in it something by whose instrumentality it is enabled to concur to produce the end. Much as in an ordinary machine, the force and power lie not in the matter but in the mechanism. And so in the ultimate mechanical or material effect of the world, there must be a power and a principle which if not active and causative, is at least admissive or receptive, and by which the machine is enabled to acknowledge and to contemplate God. There must therefore be something that can comprehend the end, that can acknowledge the end, and acknowledge also, in the fulness of faith, that the end is infinite. Without such a power and endowment, an ultimate effect embodying the divine intention is inconceivable. But animals have not this power, nor can they have any comprehension of its object. There must then be a mean whereby an endowment so necessary in the ultimate effect shall be present there. There must be not only a body, but a soul; and not only a soul, but a conjunction between the soul and the body, and consequently a rational man. Hence rationality is given to man through the soul and body at once, that the divine end may be realized. We see therefore that man is the ultimate effect on our planet; the effect through which this grand result may be obtained.

§ XII.

It is evident from the foregoing considerations, that man is the ultimate effect of nature, intended to realize the divine end for which the world was created; and that unless the first and last final causes, or the impulsive and the final cause, could combine in this ultimate effect; so as to be one and the same in either end; or so as to present a connexion between the infinite and the last end, as there is between the infinite and the first; there could be no final cause, still less one that respected the infinite. Therefore in this ultimate effect, namely man,

dwells the veriest final cause of creation. But for this last cause in the finite to respect the first cause, there must be something in the same finite, that can, and does, partake of the divine and the infinite: were there nothing divine or infinite in the ultimate finite effect, the infinite could have no final cause respecting it in the finite. But this perhaps startles the reader, and prompts him to enquire what new distinction I am drawing, and why I speak in such manifest opposition to principles and reason; for how can the finite possess aught of the infinite, when there is no ratio between the two. Good reader! have a little patience. I say that as the end of creation is purely divine and infinite, and as it is realized nowhere but in the ultimate effect, which is man, so it follows in all reason, that there must be something divine, or receptive of the divinity, in man; otherwise the end is not obtained. But hear now in what this divine or infinite predication may consist. Not certainly in the fact that man is an animal, and has senses provided him to enjoy the delights of the world; nor in the fact that he has a soul, for his soul is finite, and can contain nothing of the infinite. Neither in reason, which is the effect of the coöperation between the soul and the body; which as they are both finite, so the effect of both is also finite: therefore it does not lie in reason. So far we find nothing divine in man. Where is that then which appears to be nowhere, and yet is necessary to realize the divine end? It ought to be present in the subject to be fairly predicated of it. We answer that in spite of any difficulties in the case, we may nevertheless learn through reason what this divine principle consists in; in short that it lies in the circumstance, that man can acknowledge, and does acknowledge, God; that he can believe, and does believe, that God is infinite; that though he is ignorant of the nature of the Deity, yet he can acknowledge, and does acknowledge, his existence; and this, without the shadow of doubt: and especially does it consist in this further privilege, that by that undoubting faith, he is sensible in love, or delight resulting from love, of a peculiar connexion with the infinite. But where he doubts, he does not acknowledge, and the divine is not in him. All divine worship proceeds from this fountain of faith and love. Of worship, however, we must treat in another place, the subject

being one of immense extent and difficulty: enough for the present to know that it is given in revelation. Thus the true divinity in man, who is the ultimate effect in which the divine end dwells, is none other than an acknowledgment of the existence and infinity of God, and a sense of delight in the love of God. Here then is the solution of the problem. Yet this divine principle could never be realized in man, unless his body had a soul given to it out of the purer and more perfect world, and unless reason were accorded as the fruit of the intercourse between the two, with a power of concluding by self-contemplation, by the view of effects, and by everything in the world, that there is a God, and that He is infinite; although human reason cannot do this of itself, inasmuch as man, with all his parts and his very soul, is finite; notwithstanding which, he may be a fit recipient, and as he is in the finite sphere, he may concur to dispose himself for reception. Thus we see that the end is obtainable through man alone, and through no other creature, although other creatures may be regarded as means to the existence of the ultimate effect, and therein of the divine end. Therefore the acknowledgment of God, with faith for its ground, is the foundation of all divine worship.

§ XIII.

Objection: That the divine end is not obtained in the ultimate effect.

But while the mind is thinking on this subject, many perplexing considerations cannot fail to arise, and first it may be argued, that if the above were the impelling cause of creation, or what is the same thing, were the final cause in the infinite; and if man be the ultimate effect designed to realize the divine end; then it is evident that although there is the final cause in God, yet the infinite has not obtained his end. From which it is inferred, that failure in this respect argues a certain imperfection and finiteness, destructive of the divine infinity in the cause. For if the end does not answer to the cause, what becomes of the infinite in the cause? Besides which, we do not see that there is any divine end in the ultimate effect *per se*; and how is this difficulty to be surmounted?

Before we can solve it we must recur to our principles, and institute an examination of our first finite, after which we shall be prepared for advancing. We have gained thus much, that the infinite is the cause of the finite, and that the first finite is most perfect or most perfectly finite; for nothing but what is thus perfect can proceed immediately from the infinite. God alone, as we said above, can be infinitely perfect. Were anything else so termed, the adjective perfect would be simply destroyed, leaving the infinite only, which is God. Yet although, save God, there cannot be anything infinitely perfect, there may nevertheless be that which is finitely most perfect, as coming proximately and immediately from the infinite; yet even this is but finitely perfect, and involves mere finiteness, and nothing whatever of infinity. Nothing but what is most perfect can proceed from the infinite, and as the primitive proceeded immediately therefrom, so nothing but what is most perfect can be predicated of it. If there be a nexus between the infinite and the primitive, then whatever is most perfect in the primitive, is infinite in the cause. Thus all that there is in the primitive, is superlatively perfect by its derivation from the infinite. The eminent perfection of the primitive may be divided into innumerable particulars as its grounds, all of which are infinite in the cause, and therefore do not forbid us to attribute them finitely to it, although there is no ratio or analogy between the primitive and the cause. Let us grant then that the primitive is most surpassingly perfect in the finite sense, and now let us see whether all its consequences or derivatives can by possibility be equally perfect in the same sense, or whether the primitive alone can be so. To aid our conceptions we will take but one illustration of perfection, as an example of the most perfect state, and confine ourselves to that, in order not to distract the mind. All the least and simple entities or first natures of the world—all which are produced by the infinite immediately—are finitely speaking most perfect; and therefore also most self-similar. Finite perfection of this order admits not of dissimilitude. Otherwise it would not be what it is, but the perfection would be at fault and never reach the summit. It must therefore be granted that the above primitives were most self-similar, because most perfect or most perfectly similar. Now let us

come to the derivatives and consequences. Whenever a compound issues by derivation from perfectly self-similar primitives, many of which together are required for its production, it is evident that modes must at once be called into existence. No compound can be formed without them. We will suppose then that the first mode coming from the first most perfect entity, is as perfect as its source; for no most perfect and self-similar essence can produce any mode, or any second thing by a mode, without the mode immediately adhering to it being similar to its antecedent essence. On this ground we may grant that the first modes, like the first entities, are most perfectly self-similar. Furthermore, contingencies must concur before anything can be produced by modes. Let us see now whether, finitely and rationally speaking, anything that is most perfect can be derived from the first most perfect entity, by modes and contingencies. We say that as the first is finitely most perfect, this is impossible, and contrary to the very definition and conception of the finite; *i.e.* if the finite compound requires to be finited more and more by finites, and if this necessarily take place by modes and contingencies. Granting even that contingencies and modes existed in the superlatively perfect primitive, and in themselves were equally perfect, still it does not follow that other derived contingencies, modes and substances can be perfect in the same degree. Were all things, from first to last, equally perfect, were they all most perfect, the finite would not exist. If the world is to have being, more or less must be admitted in perfections, namely, of the scale or series; succession also and degrees: without degrees no finite properly so called is possible. Were the perfection equally consummate throughout in the derivatives of the series, the finite would not be true to itself in point of perfection—it would not be finite, because there would be no degrees,—no perfect, more perfect, and most perfect,—but all together in this respect, or abstractedly from substance, it would be infinitely perfect, in short, infinite. Therefore as it is finite, and the essence of the finite consists in its subjection to degrees, and to the laws of succession and derived substantiality, as well as to other predicaments which are inseparable from the finite proper; so of necessity in the derivatives, both through modes and contingencies, the likeness itself can never

amount to identical similarity, but on the contrary must involve degrees, or degradation from more to less. Granting then the one proposition, that the primitive was finitely most perfect, we have also obtained the other, that there were finiteness and degrees in the perfection; so that by derivation the subject becomes successively less perfect, and images the perfection of the primitive less and less. For all that is finite must admit of a succession of different states: the infinite is the only being to which this necessity does not apply.

And from these considerations it follows, that all derivatives are perfect exactly in proportion as they are near to the primitive; for the greatest finite perfection becomes less and less in succession. To shew this we will again instance the perfect self-similarity of the primitive. Now this similarity cannot be equally perfect in the derivatives, because it is finite, and because the finiting process by which the compound is made, takes place with successive increments through modes and contingencies. Therefore the same self-similarity cannot exist in the ultimate derivatives; we mean the same absolute and most perfect similarity. Experience and nature both attest the truth of this; for in these derivatives there is no one thing that is absolutely or most perfectly like any other. This is a rule in derivatives, and applies to all natural compounds whatever. Thus the superlative degree of perfection cannot exist in derivatives, because they are finite, and the infinitely perfect cannot exist in finites. And by consequence, whatever of imperfection, or of lessened perfection, there is in nature, has its rise immediately from finites. From the infinite it can derive no conditions but those of superlative similarity, perfection, and purity.

Let us now proceed to man, who is the ultimate effect of nature, with a view of seeing, whether anything superlatively perfect in a finite sense can exist in him, or the contrary. We answer in the negative. We say that as he is the ultimate effect of nature; as he is made up of all the intermediate effects; as he is finite, and many times finite; and as his soul may obey his body, and thereby become like his body; so that which is superlatively perfect in a finite sense is impossible in him. This is a consequence of the antecedent proposition. And we know not if it may not even be taken as an axiom, that perfection

indeed may exist in man, but naturally speaking by no means superlative perfection, which may be manifested in the primitive alone, and nowhere else.

§ XIV.

God has exercised his prevision and providence at once, to ensure obtaining the primary end.

We shall now be asked how the divine end can be obtained, unless the last effect of nature be similar to the first? For if the divine end is to be obtained through the finite, it cannot possibly be obtained, unless by the constant presence of a superlative perfection in the whole series, causing all things to conspire to this divine and infinite end. Not, however, to moot this question at present, though it must come before us shortly, we may observe that at any rate all the means cannot conspire to the above end, unless they too are similar in perfection to the first principle: and here suffice it to say that naturally speaking this is impossible.

The infinite could not but foreknow this, and as the end was divine and infinite, could not but at the same time provide to meet it. For as the end is infinite, and as God is infinite, so his foreknowledge—his PREVIDENCE—cannot be distinguished from his PROVIDENCE, but the two are one and the same to the mind: in fact, were they divided, we should at once come into the sphere of the finite. Therefore foreknowledge and providence were present together to obtain this end. Let us see then what was the nature of this combined or identified previdence and providence; which we may now do in a finite manner from the effect or *a posteriori*. For as the corporeal part of man could not possibly be the superlative perfection of finite existence, being so low in the series of derivations, and so distant from the perfection of the primitive; and as Deity foreknew this condition arising out of the finiteness of the subject—foreknew that the body or the last effect could not have the above perfection;—therefore he at once provided for the case by the creation of the soul, which he made rational, and consummately rational, and indeed most perfect, so that it might rule the body. A soul that should have dominion over all parts of the body at once. A soul without which the body could do

nothing, but which should dispose the whole and the parts at its sovereign will. A soul without which nothing should be admitted into the human will. A soul without which neither a single condition of will nor of action should be manifested in the body, or by the body. Now in this we recognize a Providence; in the circumstance, we mean, that a consummately rational and perfect soul was given to man, with a power of so governing the body, as that the whole corporeal frame, with all its parts, should singly tend to the above end, namely, to the divine *finale*. With a view to which, and by means of the superlatively perfect connexion subsisting between it and the body, the instant obedience of the whole and the parts is surrendered to it. That thereby it, the soul, may make the body, intrinsically imperfect though it be, in its own likeness; or in the likeness, and with the superlative perfections, of its own natural minimum.

By giving a soul to the body.

And as the soul, though finite, is comparatively similar and near to that most perfect first principle; for all dissimilitude proceeds simply from remoteness, and from the law of series and derivation, according to which the perfect becomes less so by degrees;—as, we say, the soul is comparatively near to perfection, so, when left to its own disposal, it would seem that it could not fail to aspire to that end in a purer manner; and therefore,—I am now speaking of the soul of the first man,—to desire to constitute the body in its own likeness, and to govern it as such; for it had the power, inasmuch as nothing could be done without its knowledge and concurrence. But as the soul was not alone in the government of the will, but exercised its rule in conjunction with the body, so its efforts—its *nisus*—could not by possibility be exactly identical with, or perfectly similar to, the *nisus* of the body. For since the will depended upon the reason, and the reason on the soul and the body together, hence the one must have governed the other; which would not have been necessary had the will depended simply on the soul, without the body being involved in the compact. And here we might expatiate at great length on the free-will of man, and specifically on that which the first man enjoyed in worldly things; and on the intercourse between the soul and the body as concurring simultaneously to the faculty of will; but we

must not now meddle with these subjects, lest they should disturb the course of our argument. Let us therefore continue the thread where we left it, and proceed with the conclusion, that the infinite Deity has exerted both prevision and providence, in making all things tend to the divine end; and this, through a soul destined to have dominion over the body, and with the body to govern the determinations of the will: through a soul which was endowed therefore in the first man with a superlatively perfect direction to that primary end.

But perhaps it may be urged, that the Supreme Being having foreseen and provided, that the soul he had given to man could not absolutely dispose all the parts of the body at its own pleasure to that primary end, but that it would succumb to the body, and the action of the body prevail in the will, and thereby the primary end would necessarily be lost; as the Omniscient and Omnipotent Being foresaw this; why did he give man a body of the kind? Why did he give him a soul which was unable to govern the body? Why did he make an ultimate effect which *could* fall? Would not this seem to argue, that the ultimate effect was not under the direction of the infinite, and did not exist for the ends of the infinite? The objection is specious enough. Yet as the infinite is not chargeable in the case; especially as the whole of primal nature was in a finite sense superlatively perfect; and finitely speaking, as all the means conspiring to that end, were given; so that the first man could, if he would, have been faithful to the end; and as we in no way detract from finite perfection, in declaring that all the parts in man might have conspired to that end in the most perfect manner, provided only the will could have been governed by the soul: and as the soul could not possibly be alone in the ultimate effect, or act by itself, without the fellowship of the body; as it could not singly have dominion in the will; so it was not of possible attainment, that the whole ultimate effect, in all its parts, should tend to the end, precisely in the same manner, or with the same consummate perfection; nor on the other hand that the effect should live intelligently without communication with the soul. In fact, without the combined agency of both the soul and body, the end could never be obtained, inasmuch as it was obtained in the ultimate

effect. But these subjects will be better seen hereafter, when we have treated of the mechanism by which the soul and the body communicate with each other, of their respective governments, and also of the will; which matters we intend to discuss in the work to which the present treatise is preliminary.

But to continue the tissue of our discourse, which it would be unwise to interrupt, since we might thereby hinder the mind from seeing the tenor of the divine foreknowledge and providence: as God foresaw that without a rational soul the body could not be a mean to the primary end, so he provided that a consummately rational soul should be given to it, or that reason should be given at once to both body and soul, to enable man to acknowledge God, and become a mean to the end. And having given and connected these two, he also foresaw that the body would command the soul, and that the will common to both, could and would, obey the body in preference to the soul. In this case providence went hand in hand with previdence. In short, the Deity provided means by which the primary end should be realized notwithstanding. He provided that on the part of the body itself there should be a connexion of the finite with the infinite; that there should be a nexus in the last effect equally as in the first, (of which we have spoken already). He foresaw that no nexus was possible between the finite and the infinite, unless the nexus itself were infinite; as a necessary consequence of which, the connexion between the last effect, namely, man, and the infinite, must have place through the infinite; otherwise the divine end could never be obtained. Now by the fall, and the dominion of the body over the soul, the connexion was broken and the end would have been frustrated. But God provided against this by his infinite, only-begotten Son, who took on him the ultimate effect of the world, or a manhood and a human shape, and thereby was infinite in and with the finite, and consequently restored the nexus in his own person between the infinite and the finite, so that the primary end was realized. Thus we see that all things have conspired to it; that to further it man has a soul given him, whereby he becomes a rational being: that the soul and the body have a divided and at the same time a combined dominion in the human

By the only-begotten Son, who took upon Himself the ultimate effect.

will: that as the Deity foresaw that the issue of this dominion would be unhappy, he provided for the event by a connexion of man, or the last effect, with the infinite, Who thus himself became the last effect, at once God and man, the Mediator between the finite and the infinite. That so by him alone, and through our connexion with him alone, we ourselves are ultimate effects to the primary end. And that without him there would be no connexion between the last effect and the infinite; whereas through him somewhat of the divine may dwell in us, namely, in the faculty to know and believe that there is a God, and that He is infinite; and again through Him, by the use of the means, we are led to true religion, and become children of God, and not of the world. This, however, is not the place to enquire what the nature of the above connexion is. For the present let us be content with the certainty, that through the only-begotten Son of God, the first finites are connected with the last, and both with God; and that the nexus itself is infinite in the last and the first alike; as we stated before.

How the end may be obtained in the Gentiles.

But perhaps the reader still feels a difficulty, and thinks, even granting what we have stated, that the divine end is not obtained thereby. For have we not declared, that it cannot be obtained in the ultimate effect, unless by a connexion between the infinite and the finite in the only-begotten Son; and of consequence, by faith; true and steadfast faith being the only means to obtain it. And yet it is a well-known circumstance, that scarcely one-third or one-fourth part of our race is aware that the only-begotten Son of God assumed the human form; still less, that our sole connexion with God is through him; and that the foundations of faith are possible through him alone. And it is equally certain that before the coming of the Messiah nearly all mankind was in the dark; and even the Jews themselves were no better; for they believed for the most part that the Messiah was to come, not for the cure of souls, but for empire in the world; to give their nation universal sovereignty; an opinion which is still entertained by that people. On these grounds it might be thought, that no divine end could be obtained, save in those few who knew and believed, during their sojourn in the world, that the Messiah would come, and did come, for the salvation

of our souls. But let us turn to those who had lived in ignorance for ages before the Messiah came, and to those now alive who were and continue ignorant that the Messiah assumed the human form, to connect us, as imperfect beings, through likeness with Himself, with the divine end; and consequently not only to capacitate us for the reception of faith, but also for actually living in the divine end. Now the question is, whether those who were and who are ignorant of the coming of the Messiah, could, or can, be in the divine end? I answer that they can. For whoso has faith in the Infinite, does not exclude from faith the only-begotten Son. It is true he does not distinguish between the two, because he cannot; nor can the persons in the Godhead be distinguished in faith in point of divinity and infinity. Hence those who can believe implicitly in God and the infinite, thereby implicitly include all that is infinite in God, yea, even those attributes of which they themselves are ignorant. And as there is a divine essence in faith, so therein the one infinite is inseparable from the other. And thus although the Gentiles be ignorant, yet even in this point there can be no negative principle, for if they believe in the infinite, they comprize all that there is in the infinite. Nevertheless they can neither become partakers in the divine end, nor believe, nor be saved, otherwise than through that infinite nexus, without whom there is no salvation. The only question remaining therefore is, whether we are made partakers of the divine end by the advent of the Messiah, by his assumption of the form of the ultimate effect, whereby he has connected it with the infinite; or whether, for this result, we also require to possess a knowledge of his advent? I reply that those who did not know, and do not know, that He has come, could, and can, become partakers, by the grace of God, through his coming; for otherwise we should suppose something in God that would seem at variance with his divine nature and end. But as for those who know the Messiah, or have the opportunity to know him, we say that they too are made partakers through his coming, but the knowledge also of his coming is necessary to them, in order to their faith; for the quality of faith is determined by knowledge, and its perception rendered distinct and full; and therefore where knowledge is given, it and faith are

inseparable. But on this head we shall have more to say when, in pursuance of our present plan, we come to treat of divine worship. Here we are only desirous to shew what the end of creation is, and to prove that it exists primarily for the Infinite or the Creator; and that everything in the created universe tends thither.

§ XV.

There are many secondary ends.

But lastly, if the primary end be infinite, and terminates as it begins in the Infinite, for whom alone the world was created, are there not other ends also for the existence of man? Was he not meant to enjoy the earth as a possession? to enjoy human delights? For what else are his senses given him? or why do his delights penetrate to his very soul? Is he not designed to live after death in blessedness greater than the earth can afford him? All this I do not wish to deny, nay, cannot deny. But I have been speaking only of the primary end, which is not finite, but infinite; not for man, but for God himself. Therefore in what has been said it is by no means questioned that there are numerous secondary ends. All primary ends, before they are obtained, divide, by means, into many secondary ends in the finite sphere. I maintain, however, that all these secondary ends conspire to the primary end; and are necessary as ways and means to it. And as there is a divine principle in the progression of the final cause, it is impossible but the middle causes, and above all the last effect, which embodies the final cause, should themselves participate in that cause. Let us instance the human senses, and the delights that we receive by them. Now unless we had senses, and their exercise was attended with pleasure sufficient to cause all the harmonious perceptions of sight and hearing to affect the soul with vivid delight; unless sight and hearing were ends; and unless the soul's delighting itself with them, and with their harmonic recipiency of the creation, were again their end,—unless, we say, this were the case, the primary end would never be attained. The privilege which is possessed by the soul, united to the body by the tie of natural harmony, of being carried away, in fellowship with the body, with new delight, and

with added freedom, into the knowledge, adoration, and love of God, is a means to the primary end. In truth, there is nothing in the world that is pleasurable to the senses, but becomes superlatively delightful, if the thought of God is in its enjoyment, converting all things into still more exquisite delights; which the subject will perceive if he be connected with the first cause. Furthermore the soul, as it is bound up with the body, requires to be instructed by the senses, to enable it thereafter to instruct the body, and both to tend to the primary end. So also whatever lies in the body tends to that end in the same manner. Man's possession of the earth as his own tends again to the same end; we mean, the circumstance that he is nourished upon the earth; that he lives on its surface; that his senses and soul are schooled by it, and he is taught the better to acknowledge God and the infinite, and through this acknowledgment, in conjunction with faith, to become a partaker of the primary end; yet only as the ultimate means, for the primary end lies in the infinite, and the secondary ends in man, terminating in him as a finite being; although by the acknowledgment, thought, and love of God, and the pleasure experienced in the thought and worship of him, man himself becomes a partaker, though only, we again repeat, as a means—of the primary end. It may therefore be said, that nothing can be or exist in man, or the world, that does not tend to that one end; so that in this way there is nothing, whether dead or alive, but adores and worships God, since all things tend to obtain the divine end in the ultimate effect. And oh! how greatly happy would man be, if he directed thither all worldly delights, and all the gifts of the mundane sphere. What a soul would he form! What a subject of everlasting happiness, ineffable in its delights, as perpetual in its aspirations to the end of ends! It has seemed good to the supreme and infinite Deity, that for all ends in all living subjects delight of some kind shall always be the impelling cause to the final cause: what some call pleasure, but we prefer to term it natural delight. In every animal there is this impulsive element, which spontaneously drives and incites it to peculiar ends. There is one delight which impels it to nourish itself; a delight received through all the senses impelling it to live; a delight which attracts it to procreate its kind; and a de-

light which causes it to rear its offspring. From the natural delight, therefore, in every case, we may conclude unfailingly to the end for which the subject was created. In man there is a similar natural delight, which drives, incites, and carries him to all his natural ends; viz., to live as lord of the planet, to nourish his body, to propagate his species, and to rear his children. Now the single incentive in all these acts is some particular pleasure or element of delight, which in one case is denominated taste, smell, or sight; in another, desire, love, parental affection, glory, or by numerous other titles; the source of all, however, consisting entirely in the pleasure and delight of which we have spoken; and the source of the delight, in love, while love itself depends upon connexion or harmonic contiguity. Therefore we are naturally incited to all our ends by some element of delight, the extinction and death of which is on this account so contrary to our nature. But let us come to the primary end, to which, as to other ends, we are led, in part sensibly, in part insensibly, by a peculiar element of delight. Now this delight is far purer, more delicate and strong, than any of the causes and delights of the other ends, and often actually overcomes them all; for it embodies whatever of superlative perfection is possible in delights; so that men often aspire to it athwart the extinction of all their other delights; nay, for its sake desire death itself. Thus we see that as all secondary ends tend to the primary end, so human delights are not really at variance with it. Also that every natural delight, once commenced, increases of itself by use and exercise, expanding in a progressive ratio, and spontaneously attains its climax; after which it spontaneously declines, and diminishes in a similar ratio, until at last it is self-consumed. In some men, indeed, it is so excessive, as not only to consume itself, but even the very body also, before it reaches its climax. The delight, however, that tends to the divine end, inasmuch as it dwells in finite parts, has its origin indeed at the same time as reason, and has also its increments and its degrees; yet we see that instead of reaching the highest degree, and then declining and diminishing until it vanishes away, it ever tends to the very acme of perfection, up to the hour of death, when it ought to be present in all the perfection of which it is capable. It therefore nears

and nears the summit to the end of this life. And here be it observed, that we cannot now argue the question, whether the rights and laws of nature in human society are only to be regarded as means for its preservation,—whether, in short, the maintenance of society is their only end,—or not. The subject would be out of place at present. Supposing it decided in the affirmative, it will still follow, that these means are proportionably perfect, and most in accordance with reason, when they so regard the economy and preservation of society, as to make it a means to the primary end, or to any secondary end which tends either mediately or immediately to realize the primary.

Having fairly arrived at this stage by the resolution of the question of cause, we are now for the first time in a condition to institute the question of *quality*. For observe what we have gained. We have the affirmation of reason for the existence of God, and also for his infinity; and as this is now positive knowledge, together with that other truth of the existence of a nexus between God and man in the person of the only-begotten Son, so we may legitimately advance, not indeed to enquire into the nature or qualities of Deity, because he is infinite, and his qualities therefore we can never penetrate; but to enquire what there can be in man to lead to this primary end; what there can be in him that does not repugn the infinite and the nexus: how a confessedly infinite Deity may best be expressed in finite terms that shall not be repugnant to the occasion: what befitting worship consists in; what is the peculiar efficacy of faith proceeding from a true acknowledgment of God; with innumerable other subjects, which cannot be settled briefly, but require to be rationally deduced in a volume by themselves. And as, by the grace of God, we have all these matters revealed in Holy Scripture, so where reason is perplexed in its apprehensions, we must at once have recourse to revelation; and where we cannot discover from revelation either what we should adopt, or in what sense we should understand its declarations, we must then fly to the oracle of reason. In this way natural theology must proffer her hand to revealed, where the meaning of revelation seems doubtful; and revealed theology must lend her guidance in turn to rational theology when reason is in straits. For

revealed and rational theology can never be contrary to each other, if the latter only be truly rational, and does not attempt to penetrate into the mysteries of infinity; in which case it is not truly rational.

Conclusion: Let us now define the meaning of the terms *natural* and *divine,* as contradistinguished from each other; for some mistake the divine for the natural, and some, on the other hand, the natural for the divine. In general, by natural or material we mean all that of which we see the effect in nature, and likewise the cause, instruments or means. Thus machines and their motive powers are mechanical and natural, because we see the instruments of motion, the wheels, the levers, the pulleys; and also the power accruing therefrom by mechanical laws. In the elemental sphere we consider it *natural,* that the vapors of water drawn up from the earth are condensed into clouds in the upper region of the air, and descend in showers; that storms arise; that the sun enlightens the world with his rays, and cherishes and warms it; that the ocean ebbs and flows at regular intervals. And the causes of these events we regard as natural, because they recur at stated periods, and because in time we may be enabled to comprehend that the means which produce them are in visible nature. It is natural in the mineral world for fire to melt metals; for mixtures of certain liquids to war, effervesce, fume and ignite; for different metals, in certain proportions, when immersed in appropriate liquids, to form what are called philosophical trees, [as of zinc, lead, &c.]; for the magnet to attract iron, and turn to the pole. Not to mention numerous other circumstances, which, as we know that they arise from visible substances and matters, and at the will and pleasure of human workmen, we term natural and not divine. In our animal kingdom sight is natural; also hearing, feeling, the growth and expansion of our limbs and frames; old age; the pain which wounds inflict upon us, and the state of disease which follows them; death succeeding either poison or the sword: all these effects come under the designation of *natural.* So again the motions and sensations of living creatures, whether external or internal, are denominated natural instincts, and the whole animal being is organic. As to those other matters of which we know nothing, and which are transacted in that purer

sphere from which all the modes existing in compounds derive their principles, some persons would have them named divine or spiritual. In my judgment all that exists from the primitive seed of nature to her largest compound, including the whole world with all its parts, and the origin and motion of its parts, and the innumerable modes proceeding therefrom, in a word, the totality of the finite sphere, all—all is natural. But yet there is nothing natural but is divine. The only difference is, that the primitive is made natural by God immediately, while the other substances successively arising and subsisting from it, are made so mediately. Thus whatever we term natural is mediately divine: for it comes through finite means from the primitives, and consequently from the infinite, who is the cause, fountain and origin of all the parts as well as of the whole. Therefore nothing exists, subsists, or is made, but derives its origin and cause from the infinite, without whom nothing can exist, nothing can subsist, nothing in the universe can be, or can be made. For nothing exists but from causes and causes of causes, and consequently from the first cause, that is to say, from the infinite. In this respect God is all in all, and there is nothing conceivable without a beginning and cause in the infinite, provided always it be not repugnant to him, no matter how low it stands in the finite series. But to call the cause, origin and effects of anything in the subtler or grosser field of nature, which exists mediately through other finite things, immediately divine, would be tantamount to finiting God, or making him similar to the finite being; and consequently to denying his infinity; or to forming and fostering a gross, natural and idolatrous idea of the infinite Deity; which is permitted to no one; least of all to Christian philosophers.

Analogical instances illustrate, although they cannot demonstrate. Thus by the comparison of the soul and body it seems possible to gain some little light respecting the connexion of the infinite with the world. Apart from the soul there is neither action, passion, life, nor intelligence in the body. The immediate effluence and minister of the soul is that analytic, philosophical and distinct rationality by which we are distinguished from the brutes. All the remaining operations are the property

of the soul, although only mediately; for example, all instincts, appetites and pleasures: and all confused states of thought and feeling, and perceptions of hearing and sight, are equally referable to the soul, however they involve the instrumentality of the bodily organs. In short, all sensibility, wherever located in the body, owes its very existence to the soul. The law of action, passion, or sensation, wherever they exist in any contiguous organization or volume, requires them to begin at one end, or perhaps in the middle, and to terminate at the other end. Nothing can exist within the field of any contiguous and connected entity, without coming into relation with its ends or boundaries: nothing, therefore, can exist within the microcosm of the body, without being referred to the soul, where it becomes sensible in the first place, and at last intellectual. And in the same way nothing whatever can exist in the macrocosm of the world, but is referred to the Infinite; without Whom there is neither existence nor subsistence; for in Him is the source, cause and end of the whole universe. And yet there is nothing immediately divine save only that one thing which is either purely simple or primitive, or next thereto and superlatively perfect. All other things are mediately divine, because, both in point of existence and subsistence, they stand related to their principle mediately, by the way of connexion and contiguity. And hence without the infinite there would be neither activity, life, nor intelligence in any subject in the world, and above all, neither existence nor subsistence. But if the reader should choose to adopt a different argument, proceeding by induction, he may, if he please, reason of the infinite from things in the finite sphere. Thus he may say that excepting the first or smallest substantial there is nothing in reality substantial in any finite subject; for whatever exists is composed of the smallest substantials. Or he may go further, and declare, that there is nothing in finites but the pure simple, inasmuch as all things have had their origin from pure simples. Yet whatever inferences we make in the way of analogy and comparison from finites to the infinite, conduce to illustration indeed, provided they are not contradictory to the case, but they in no wise help us to form an analytic induction in a finite and geometrical

sense. All modes, and analogues of modes, and of such it is that analysis is formed, begin in the simple or primitive of nature, and not in the infinite, in and from whom, nothing can be said to exist, or issue, immediately, by any mode which is intelligible to us in any geometrical, analogical, rational, or philosophical sense whatever.

CHAPTER II.

THE

MECHANISM OF THE INTERCOURSE

BETWEEN THE

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Is the soul finite, or infinite?

At the outset to an enquiry into this subject, we are met by the general questions, of, Whether the soul be finite, or not? And whether the animal spirits, as they are commonly called, be finite, or not? To which we answer, that no one can deny that the soul is finite, and that its spirits* are also finite. There is nothing infinite but the one only God. Whatever is not infinite must be finite, or analogous to finite. No middle term is possible; no essence partaking of both; but the finite is by itself, and the infinite by itself, or the nexus between the two is infinite. As then there is no compounding of the finite and infinite, but the one is as nothing in relation to the other; and as there can be but one infinite, and that one is God; so the soul cannot be infinite, because it cannot be God: therefore it is finite.

Is the soul amenable to laws?

But another question arises, namely, this: If the soul be finite, and consequently created by the infinite, is it amenable to laws? or is it independent of laws, and the first being that is without them, but which, on this very account, by virtue of its own innate force and activity, can give laws to lower and grosser things? We answer that if it be finite, it cannot be devoid of laws. Apart from quality the finite has no existence. Quality attaches to all finites as an inalienable attribute. Whatever becomes finite must, as such, have a peculiar character of some kind; which character or

* Spiritus *animales*=the spirits of the *anima* or soul.—*(Tr.)*

quality must also be finite, or be finited in a certain manner, and be amenable to certain laws. The finite devoid of quality is tantamount to the infinite. Quality cannot exist without laws, without discrimination from other quality, without difference, without distinct capacities for action and passion. Moreover if the subject is finite, all the predicates must be so likewise. And if the finite has modes, then at any rate there are laws by or according to which it has them; which alone is sufficient to shew that it cannot exist without laws, which indeed must be similarly finite with the subject itself. Nor is there any doubt that the soul has its own laws, inasmuch as its main quality consists in its operation on the body and the organs which compose it. Whether, however, this operation is mediate or immediate, is a question we do not discuss at present. But as the soul is so connected to the body that it can communicate its activity to no other body but its own, and can impress it upon no other, so at least it is undoubtedly subject to one general law, namely, that whereby the power of communicating itself and its qualities is limited to one particular system. And as it is thus bound to the body, operating upon one part of it at one time, upon another at another, and distinctly accommodates its operations to the formation of the body, and of the parts which compose it; and as it is often unable to dispose that body and those parts at its will and pleasure, being on the contrary obliged and enabled to adapt itself to the position, form, and motion of the body and the parts: so we see, that not only in itself, but also in the peculiar laws which it enjoys, it is so endowed that it can adapt itself to the body, whatever the nature or state of the latter may be; and in this respect assume as it were a different identity, not always confining its operation to one method; or as we may even say, it can submit to be formed afresh by new conditions, and to operate on the members of the body by itself taking upon it their likeness, or harmonizing with them; while yet it operates in such a manner that these members obey its operation. And thus we perceive that the soul also has a QUALE, in that it can be such or such a soul, or become such or such an one, and operate not only upon parts like itself, but also upon a succession of other parts which are less and less so. From which circumstances we can only deduce,

that it has in it a quality, faculty or power of operation, in conformity wherewith it possesses laws, by which it governs, and is governed. Nor need we dwell longer on the point. For it is impossible to deny with reason that the soul is finite, and therefore has laws of its own, by which it operates upon the body.

Are there any but mechanical laws in finite things?

The next question is, are there in finites any laws but such as are mechanical, and admit of geometrical definition? We do not here propose the question, whether God could have created a finite nature different from that which can only be finited by our mechanical laws, and consequently by geometry. For to God, who is infinite, nothing is impossible. But seeing that God has chosen to finite, and to produce a finite nature; and seeing that that nature, obviously to the senses, and in its more considerable parts and effects, is finited in a given manner, in other words, is mechanical, and subject to the laws of geometry; seeing this, we say, our question simply is, whether in her least parts nature be finited otherwise than mechanically or geometrically? Before we can answer this enquiry, let us observe how nature is finited in her gross compounds and her low and remote derivatives. Now in all the objects perceived by the senses, we see that there is nothing but is mechanical, but has mechanical powers for its laws, which laws are founded in geometry. We remark this in compounds; and cannot therefore deny that so far all is mechanical and geometrical; for we either do, or may, gain this primary information by the senses: and on this very account can have sensual experience of motions, distances, and figures, and measure them accordingly. We now proceed to those other existences which are internal to the sphere of the senses, and of a more subtle nature; and we affirm that there is nothing in the gross, large or sensible world, but derives its cause by a successive process from the subtler world; for all effects proceed from their own peculiar causes. But the effect, issuing, as it does, from its causes, cannot fail to be similar to them; for it derives its very beginning—its principle of identity—from those causes. Therefore the very principles of things pass from causes into effects. And since, as we have seen, all visible effects are mechanical, what else can we infer, but that there is the like principle in causes too; and that even in them the

mechanical and the geometrical are present? Were there not the same principle in causes, in the subtler world, as in effects and the grosser, the effect must become absolutely unlike its cause; or else there must be something in causes over and above what was manifested, or what came into effects. But this is neither rational to suppose, nor accordant with experience. An analogous principle to what we perceive in effects may or should be involved in causes; a principle which, allowing for the difference of sphere, admits of being inferred from the effect. Indeed there are many things apparent to our senses, whose causes, causates and effects we see and feel; so that before our senses even we have both effects and causes. When we are desirous to reason of causes from experience, and to shew how they concur to form effects, we can have no better method than by considering those causes which we see in palpable combination, and in the same plane, with particular effects; in instances, that is to say, where both causes and effects are comprized within one and the same sensual sphere. Now in all these cases we have observed that there is a mechanism; *i.e.* that there is a mechanism in the effects, and that there is a mechanism in the causes: and this we continue to observe until the causes become so subtle, that they at first begin to disappear, and at last actually disappear from our senses. At this last juncture we find that we desire to deny mechanism to the vanished causes. It is, however, no sufficient reason against their mechanical nature, to say that it is not sensible: it may be perceptible notwithstanding, and plausible too, when we reason inductively from those objects that lie within the province of the senses. To reason thus would be no more than if we should say, I see that an animal moves its members, as its head, feet, loins, and limbs; and it also moves their different parts: I see mechanical effects in its larger subdivisions: and I see by dissection that its mechanical movements depend for the most part on the muscles, which are themselves adapted and formed to produce a mechanism of the kind. We have ocular demonstration of a thousand figures designed for such motion, and likewise of numberless species of bodies formed with no other view. We can shew the arrangement of fibres necessary to produce it. We can take the muscles and other parts in our hands, and set them in

motion, during which we shall see, that the manner of their motion is not and cannot be different from the actual effect, that is to say, from the action of the moving member. We may take a separate fibre or any other part, and demonstrate its flexibility to the senses, and its power of contracting and dilating in combination with the associate parts. Therefore we see causes and effects with our eyes, and recognize mechanism in both, and geometrical adaptation to mechanical motion. And if we make use of the microscope, we shall see the lesser parts as we before saw the larger, and observe in the lesser the causes which produce the motion and extension of the larger. But when the parts begin to disappear, and we no longer see them either with the naked eye or the microscope, what are we then to think? Are we to say, because they are hidden from the senses, because the causes are unseen, that they are not equally subject to mechanism or geometry? Granting that a thing is possible because we can see it, it by no means follows that its existence is impossible because we cannot see it. It is more feasible as well as logical to suppose, that in the lesser sphere, or in causes of causes, nature is the same as we see her in causes and effects. That such is the case we may infer, continuing the same process of reasoning, from the case of insects, some of which are so small as to be invisible to the naked eye, and yet under the microscope we not only see them, but also perceive that they are capable of motion, and possessed of members. Yet if their members were beyond the power of the microscope, as sometimes they are, would it be right to conclude that they had none; or that if they had, the members were destitute of muscles and fibres, and all analogous structures, whereby the motion of the parts, and by a just succession, that of the whole, is provided? What reason would there be for denial? The circumstance of not seeing is no reason at all. The seeing and hearing sense is given us, to comprehend certain effects and causes; and a soul is given to these senses, and a reason thereby, to infer the nature of the causes and effects in those things which we neither see nor feel.

Is the finite conceivable apart from extension?

Is the finite conceivable apart from extension? At this stage it is particularly necessary to our argument that this intricate question should

receive a plain answer. Let us see, therefore, whether every finite thing must not be natural also; whether every natural thing must not have peculiar laws; and whether all the laws of nature, both in her least and greatest, and in her invisible and visible spheres, must not be mechanical and geometrical. We have hitherto endeavored to prove by visible causes and effects, by induction, and in short by reason proceeding on the ground of analysis, that all natural connexion between things would be impossible unless there were the like principle in causes, as in effects, and consequently the like in causes of causes. Proceeding onwards let us take any finite, for every created thing is finite, every natural thing is finite: and the question will be, whether every finite is natural, and natural in the same sense as, and with the same qualities that we recognize in, the visible world? Tell me then, is it possible to conceive the finite without extension? Were it devoid of extension, and of all analogy with extension, must it not be infinite? At any rate can you conceive that there is anything devoid of all analogy, or resemblance of the kind, and which derives absolutely nothing from extension? Whatever is finite, and everything natural is finite, is utterly inconceivable without extension; at all events without analogy or connexion with extension. I here speak naturally, for it would be against all reason to fly at once to the infinite while professing to investigate nature; the more especially as we have causes of causes in the finite sphere, and as nature once for all has been made finite by the infinite. However, even granting a finite that is not extended; granting the possibility of a finite whose peculiar nature does not lie in its precise extension, yet still it is undeniable that it must involve something like extension; otherwise it could neither act with, nor in, nor upon extension. But let us willingly adopt the position, that everything is extended in proportion as it is finite; bearing in mind that we are now speaking of substances. In proportion, then, as it is extended, in the same proportion it occupies space; which be it as small as you please, still is space notwithstanding. This being the case, it is inconceivable without attributes; for nothing finite is without them; which attributes indeed can in no way be separated from their subject. If the subject be extended, one of its attributes must consist in the possession of figure or

form. Extension or space without form is a nonentity, or a notion contrary to reason. Extension combined with form is a geometrical subject. Geometry simply considers extensions and spaces with particular forms, or forms in their subjects. But can there be form in extension without its having a geometrical import, considering that the extension is finite? In proportion therefore as the subject is extended, it is also formal, or contains the element of form; and in proportion as it is extended and formed, it is also geometrical. Let us now proceed to the mode or motion of a formed portion of extension. Motion may exist in any space or extension if the latter has parts, in which case a motion of the parts is possible to a given place in the extension; *i.e.* a local motion of the parts. If the extension has no parts and still undergoes motion, in this case the formed extension must itself move from place to place. If it consists of parts, and all the parts compose the given extension, and all, therefore, move together, in this event we have a motion of the whole. In short, the extension may undergo motion either as regards the parts or the whole. And if it undergoes motion in any way, the predicament is mechanical. The motion of an extension, of whatever description the motion is, cannot be other than mechanical; for mechanism embraces all motions, and all the forces resulting from them; no matter what their nature is, provided motion be present at all; or mode be present, which cannot take place but by motion: consequently the fact of motion and mode is mechanical. Now again comes the question, Whether the laws of motion affecting the simpler and smaller bodies be as the laws of motion affecting the larger; be, in one word, mechanical? And here we affirm generally, that there can be no motion of an extension, or of any parts in an extension, but such as comes under the denomination of mechanical; for all mobility is mechanical. But if the subject moves, or is capable of motion, and thereby is mechanical, then we ask, can motion be considered apart from figure? Assuredly it would be contrary to reason so to consider it. If the path of the motion be a straight line, still the predicament is geometrical, in so far as a linear or straight progression is involved in the case. By the same rule, if the motion be circular, the result is geometrical, and figured likewise. If the motion take

any other course or shape, provided only it passes from one place to another, this is at once tantamount to its passing from one boundary to another, and thus the motion becomes geometrical or figured. We may conclude from these and a multitude of other arguments, that there is nothing in the nature of things,—in so far as their nature is finite, and endowed with qualities and modes,—but has its own peculiar laws; and likewise that in our natural sphere,—in man as a natural being,—there are no laws possible but what are geometrical and mechanical.

Is the soul a pure simple?

But as we are treating of the soul, let us see whether we can rightfully conceive of it as a pure activity; as a simple* of such a nature as to be devoid of geometry and mechanism. For if it be a pure simple, it admits of no degrees. The essence of the pure simple lies in absence of parts, in consequence of which it is destitute of extension, space, dimension and figure. If the simplicity be so preëminent as to exclude all further simplicity, it must of course be wanting in parts, space and figure. Where parts are present in a simple, we have at once a simpler; each part being simpler; wherefore the pure simple has no parts. And if it have no parts, and admit of no deeper simplicity, then it is an unlimited essence, without end or boundaries; unless we choose to say, that it has one limit or boundary, and only one, inasmuch as it has the power of giving limits or boundaries to compounds. For every portion of extension arises from what is less extended, and at length from what is simple or not extended. In like manner every figured subject arises from what is simple or not figured, in which nothing but simplicity is conceivable. Nor can a simple of this kind, involving neither parts nor extension, be denominated finite; for there are boundaries in the finite; those, namely, by which it is finited or limited. With such a simple, the soul, which is finite, and bound in allegiance to finite laws, bears no analogy. This pure simple, being devoid of parts, is indivisible; and to divide it, is to annihilate it; for when no

* Respecting the terms *simple, active, finite, element*, &c., the reader is referred to the author's *Principia*. By consulting the Index to that work, he will obtain an insight into the usage of these and similar terms in the present Treatise.—*(Tr.)*

parts enter an essence, its division or partition amounts to annihilation. And as there are no parts and no substantiality to undergo motion, or oppose resistance; and consequently no moments or degrees; hence the annihilation as well as the origin must be conceived as instantaneous. Whence again it follows that this simple cannot possibly involve anything of the finite. If it did, it could not be instantaneous, or without quality or mode as regards its origin. And if it be finite, it must be so through a mode, and must have become so through a particular quality; otherwise it could never communicate quality to other things, or operate through modes upon remote derivations of finites. And if in its very essence there be nothing of the kind, nothing of modification, then it must have arisen immediately from the infinite, and it must be a simple, which is neither infinite nor finite. It follows that it is not identical with the soul, which at all events, by common confession, is finite, and possesses laws and modes within it and without it.

Is the soul a simple finite?

But as the soul is thought to be a pure and simple activity, and at the same time to be finite, let us see whether it is identical or not with the simple finite. The simple finite is not the same as the pure simple, inasmuch as it is finite, which the pure simple is not. And being finite, it is of course made so by constituents simpler than itself. The before-mentioned simple is therefore simpler than it, and consequently the first finite is relatively compound. If simpler things than it exist, then it cannot be purely simple, because it admits a higher simplicity. Thus the simple finite supposes a mode by which it is finite; it supposes boundaries to which it is limited; ends for which it is finited; it supposes a peculiar nature through which it is finited, and this, in its own contradistinctive manner. And as the pure simple is devoid of parts, extension, space and figure, and yet parts, extensions, spaces and figures had issued from it; so this simple finite could not originate from any other source than the pure simples, which made it finite. On this account the *simple finite* cannot be said to be altogether devoid of parts, since the simpler grounds may be conceived to be its parts, or to be such as to yield or generate parts, either by the process of multiplication

or some other mode. Therefore it cannot be regarded as entirely without extension and space, though it is the least and smallest thing in space, the very smallest possible substantial or natural principle. Nor can it be said to be indivisible, for it admits of division into the simpler grounds we have before spoken of, and therefore may be divided without being annihilated. In a word, before it obtains its boundaries, it obeys modes in its origin; and consequently in its existence and subsistence also. Can the soul, then, be a simple finite of this kind? The soul cannot be conceived apart from activity. Its essence consists in its activity; in its ability to act upon the parts of the body; and of its own body exclusively. Unless therefore we regard activity as involved in the simple finite, the latter is not identical with the soul. The activity of the pure simples in such finite, must either be an activity among the parts constituting it, or else an activity of the whole. If internal or among the parts, it would not follow that there was any activity among other parts extraneous to itself. If, on the other hand, it be an activity of the whole, this cannot be conceived without activity in place, or local motion. Without local motion, no force or action can be exerted on adjoining bodies, and no change can be produced in them. If the activity were simply effort to motion, no bodily action or force would ensue, that is to say, unless the effort resulted in local motion. We have therefore to conceive that the simple finite is active not only intrinsically or in its parts, but also as a whole. If then there be activity both of the parts and the whole, and that of the latter be local, the motion itself at once becomes finite, not only as taking effect from one place to another, but also because the essential which undergoes the motion is finite. No essential finite can produce a pure or total motion. Action supposes not only force or effort, but also velocity and time. Therefore the activity in this least substantial, is finite, and in nowise pure or total. Purity exists in the pure simple alone.

Is there passivity in the soul as well as activity?

But assuming that the soul is a simple, a pure, and a most perfect active; finite, however, in its simplicity, purity and perfection; it remains to be seen how this predication would coincide with its essence and attributes. If the activity of the soul consists in

these, it must necessarily be such that it can act upon the parts of its own body exclusively; that it can suffer and receive the motions or modes arising from the body; that it can dispose or adapt itself thereto; and afterwards reflect them, and meet the forces acting upon it by a corresponding reaction, so as to be adapted at least to produce such modes, and this, within the sphere and space of the bodily system. If the soul were merely an active of this kind, it might indeed act, but it could not be in itself sentient of the actions of the body, nor dispose itself for reception at the same time as for action, nor modify itself to the different parts of the body. The complement of its essence requires then something beyond pure activity; in short, a passive principle, adequate to enclose or shut its actives in a definite space, or, if we may use the expression, in a passive expanse; whereby it may not only be enabled to act on the body, but also to receive the actions arising from the body; also to adapt itself to the variety of modes, and reflect them back again; a passive principle, we repeat, in which the soul may be able to exert its actuality and power; and which, in a word, will ensure passivity to the soul as well as activity. In this manner the soul is a sentient subject not only during the life in which it is conjoined with the body, but even when it is out of the body: after its release from which, it remains capable of doing and suffering still, of action and passion, of perceiving degrees in delight, and of living without the possibility of dissipation. But none of these circumstances can be conceived without passives in the soul; nor passives without an expanse; nor an expanse without a figure; nor active and passive together without space and extension; nor the required extension without elasticity; nor consummate, genuine and primitive elasticity without actives enclosed or shut in a given expanse; actives which will act perpetually upon the expanse; but are incapable of forming a contiguum like that produced by elementary particles; also of occupying place, or capable only of occupying such place as the expanse allows; actives to whose motions the predicates of upwards and downwards are inapplicable, but which act at all angles and in all directions, and cannot therefore be said to resist, but simply to act; not to

mention a number of other predications, on which we shall dwell at another opportunity*

§ II.

Is the soul bound by geometrical and mechanical laws?

We now come to the final question, viz., Whether or not the soul be bound by geometrical and mechanical laws; that is to say, Does it exist, subsist, rest, move, and operate on the parts of the body, mechanically and geometrically; or the reverse? And here it is necessary to recur to the previous question, and again ask whether the soul be finite, or not; whether it be created, or not? The affirmative of this is not denied; for no one can declare,—no one can have any motive so far to contradict reason as to declare, that the soul is other than finite. For it is created; it dwells in the world; in this respect it is a part of the world; it operates in a finite manner upon the natural parts or members of the body, *i.e.* upon the body; inasmuch as the body upon which it operates is composed of parts. As surely therefore as it is created, and dwells in the world, and exerts its actions upon confessedly corporeal and natural parts; so surely must it be admitted to be finite. A further question now suggests itself, namely, Is the soul natural, or not; that is to say, is it a part of nature, a part among other parts? We answer this in the same manner as the previous question. As the soul is created and finite, and as God created the finite, that is, nature, hence the soul cannot be otherwise than in nature. But is it natural, or not? It is clear, indeed, that it is in nature, and was sent into nature by God together with the world, and that therefore it is one among the parts of the created world; also that it is not without or beyond the world, and that it is not infinite; that it admits of being enclosed within the finite, that is, within the body; and that therefore it is attached to the parts of the body. Were it infinite, the latter circumstance would be impossible, but the soul would be a

* For information on this subject, see the Index to the *Principia*, under the head *Active.—(Tr.)*

separate essence from the corporeal parts, and would lie both without and within the body. It is, however, clear from experience altogether apart from reasoning, that the soul is a real constituent part in the body, and is attached to the body, and consequently is not infinite, but limited to the body; and therefore one of the natural parts in the body. And thus we obtain a directly affirmative answer to the enquiry, Whether the soul is a part among the physical constituents of the human body.

As then the soul is natural or physical, is it simply under the laws of nature? or has it other laws of which we are, and for ever will remain, in profound ignorance? We answer that according to our former conclusion, whatever is natural must come under finite laws; otherwise it would not be finite, but infinite: therefore the soul is under laws, and can and must operate according to them. But what laws? Have we a right to suppose that we can never penetrate them? On the contrary we may recollect that we have proved above, that our natural or physical sphere admits of no other than the very laws which appear in actual effects, of no other than geometrical and mechanical laws; geometrical in regard to figure and space; mechanical in regard to motion and force. If any one can point out to me,—I will not insist upon demonstration,—but if any one can point out, how any other laws than these are possible in our finite system, I will cede the whole argument. But as it is impossible to conceive any finite existence without extension; or extension without form; or extension and form together, where motion is performed, without mechanism; or mechanism without figure; so I am utterly at a loss to know how it can be shewn that there are any other rules or laws of nature beyond such as are geometrical and mechanical. And when I assert the coexistence of mechanism and figure, it will in no way impede the argument, if the reader shall declare that he can conceive many things without extension; that he can conceive modes, modifications, contingencies, time and the like. For I assert that he cannot conceive any of these in the abstract, or apart from extension, for that they all are produced by the modifications or motions of extension; and therefore are referable to finite extension, together with all in them that comes under the designation of succession, degrees and moments: hence they

too are in this respect extended. I am, however, well aware that any one who chooses to deny extension, denies also the geometry and mechanism of nature. But then whoever denies extension, denies the finite also. If, however, he can shew how the finite may still exist, without extension, succession, degrees, moments, and similar predicates; and that it does not take its rise from extension, I will cheerfully pass over to his opinion. But if the soul be created, finite and natural, (for God would never create two kinds of finites or two naturals, unless to concur to some similar end, in which view they may be considered together as one natural,) and subject moreover to the laws of nature, then there is no escape from the consequence, that it is subject also to mechanical and geometrical laws.

The comparison of the soul with machines, — in what sense justifiable?

But if the soul is mechanical and geometrical, it may be difficult perhaps to explain many of its faculties, as imagination, perception, the power of conclusion, memory, self-consciousness as it is termed, the ideas of reflexion, &c., &c. On this subject, however, we would observe, that we may receive at all events some little light from the vast field of the animal kingdom;* and also from the subjects of the brute creation, which both have life, and breath, and animal functions, and in which we find senses similar to our own, as well as similar motions, and a similar configuration of the parts and the whole. It is true we do not find in them reflexion, imagination, memory, or rational analyses such as we perceive in ourselves: but nevertheless we see parallel traces of these faculties. At the very least we may remark in animals some similar endowments, some confused and rude symptoms of our own powers; some endowments which we are content to denominate natural instincts, considering them as an organic condition, and in point of fact as a machine. If then we conceive these predicates as more pure, perfect and distinct in man—if we conceive that all these analogous and parallel faculties in him exist with reference to a more distinct, perfect and pure principle or end, in a word, to a soul; whose comparative distinctness, perfection and purity

* By the *animal kingdom* the author appears here, as in his other works, to mean the *human* body exclusively: see our Introductory Remarks to the *Economy of the Animal Kingdom*, p. xxxii.—*(Tr.)*

do not make it any the less mechanical in its purity and perfections; in this case mere difference of perfection does not involve the putting aside of all the laws which exist in the purer field of mechanics, and in the purer world. So that if the reader would speak of the soul by comparison with machines, I have no objection to respond in the same tone; only I cannot allow the comparison with inanimate, but with animate machines. But on this subject I shall speak in detail in the work to which this essay is preliminary.

Is the soul immortal?

But as we declare that the soul is subject to mechanical or geometrical laws, it may be thought that it is not spiritual but material, and therefore will die with the body. Such a view, however, can only arise from a very gross idea of the purer mechanism: otherwise it could never be supposed that the soul will perish like the gross materiality and organization of the present body. For if we consider that on the one hand we have a gross, imperfect and mutable world, and on the other a relatively pure, perfect and immutable world, it will not seem likely that that finer world, near, by its very conditions, to the primitive substance, should perish with the grosser. Whatever is obnoxious to destruction and change, is on this account finite and substantial, or material; and has derived its mutability and imperfection successively, by its lowness and remoteness in the scale of creation. But the purer field—the finer, purer and more perfect world—is not thus obnoxious to change, nor thus imperfect. We should seem to go contrary to the Infinite, and to repugn the divine essence, if we said that the purer sphere, and the souls which inhabit it, were subject to those casualties of death, change and transformation, which affect the grosser. Whence we have reason to conclude, that the superlatively perfect finite, *i.e.* whatever is most perfectly finited, and dwells at the same time in the purer world, by God's grace is secure from destruction, and will never taste of death. For, as we before said, its immutability is in direct proportion to its perfection and purity. And if the soul be a portion of that world, then the most thorough self-similarity must pervade it and all its parts, in whatever they do or suffer. And if we direct our attention to the mechanism of those subtle parts of which the soul is one, we shall see that it cannot die

without these minutest parts themselves undergoing destruction or annihilation: we shall see that it cannot die though the planet with its water and earth should perish; nor though the air nor the ether should perish. But were nature's subtlest sphere to perish, then not only would the whole finite universe, of which the soul is a part, be annihilated, but all things would return to nothing. The soul is immortal, therefore, by the grace of God, and by the same grace the universe is preserved from annihilation. There is no occasion to say more. In our intended Work we shall demonstrate the point as clearly as we are able, and shew that the soul is perfectly, and in the high sense, purely mechanical, and that it is immortal, and cannot perish without the universe be annihilated: likewise that it has been so created and formed as to begin to live in the body, yet never to die; and that it is naturally impossible that it should die; and that it can be harmed neither by fire, nor by air, nor by ether, nor even by any elements subtler still.

We said above, that philosophers have hitherto regarded the soul as a thing utterly and preëminently unknown, and destined so to continue to the end of the world, or at any rate till death, when the soul being released from the body may perhaps at last come to know itself, as we know ourselves, by the senses. Having regarded it in this light, and yet observing that it operates upon our mechanical organization just as one mechanical thing operates upon another, and concluding from this that the body and the soul must be so connected with each other that the former can do nothing without the latter, and without in fact previously referring all its intended actions to the soul as a centre; and seeing also that the will does not depend upon the body singly, but also upon the soul, in fact upon a reason and resolution the product of the two: seeing, I say, such a combined system of operations, the philosophers were unable to separate the one from the other, or to consider them as separate subjects, without supposing a medium partaking of both, this medium being the animal spirits, to perform the behests of both as ministers and emissaries in all parts of the system, and so not only to dispose but to urge the muscles and fibres to compress or relax the organs by one motion or another. It was on this account that they called these emissaries, "spirits," adding

also the predicate, "animal," so as to have some words to express the medium, and at the same time to convey that these spirits were as thoroughly unknown as the spirit of man apart from the body. They selected the expression because they could not deny the nexus, and yet were in the dark as to its nature. They saw, however, that the one operated on the other as passive on active, or as fire operates upon material bodies; or as any other agent or efficient power operates upon anything for the production of effects. Nevertheless they denied that the animal spirits operate by any mechanism, or by any other but unknown laws foreign to all common and known mechanics. And whenever they spoke of the mutual operation of the soul and the body, they chose to illustrate it by a number of distinctions, and by terms borrowed from the scholastic philosophy: though nevertheless the whole matter remained equally unknown as at the beginning to both their readers and themselves. The conclusion was, that the active principle must be not material but spiritual, and that the spiritual principle must have the power to act.

Mechanical laws admit of superlative perfection as much as any other laws.

But what occasion is there to set ourselves up against the laws introduced, and given to nature by the infinite? Why may not the highest degree of perfection exist in them? Is a thing imperfect because it is called mechanical or geometrical? Are not the laws of mechanics and geometry derived from the infinite? Why should we reject them on the ground of inadequacy when it has pleased the infinite to produce by them effects perceptible to the senses? Why may they not involve a power of the same kind as those other laws which we suppose unknown, whereby the soul is governed? Why are we to leave our unknown quantity to posterity, which perhaps will not consider it as unknown? Why should we not be beforehand in the matter, and penetrate it with our science in the present age? We are like the rude and uninstructed inhabitants of some country, who are ignorant of the earth's boundaries, and do not even know that it has any, and although they see that the land does not end with their own parish, they think it must surely cease at no great distance beyond. And when in course of time they travel onwards, and come to some lake, or to the shores of the ocean, they cry out that they have found the end of the earth. Their

posterity, however, having learnt the art of navigation, has found by experience that the end is not there; and at last they discover that the earth is round or oval, and that therefore they can circumnavigate the entire terraqueous globe. In short the children are more enlightened than the parents, and know the very thing which the parents declared unknowable, and gave up accordingly; and so they laugh at the simplicity of their forefathers. The same progress is exemplified in anatomy. For instance it used anciently to be thought, that the members of the body moved in some unknown way; that the ear heard in an unknown way, and that sound consisted in the organs of hearing, and sight, in the external organs of sight. Later enquirers, however, penetrated deeper, and discovered not only that sound arises from the undulation of the air, but also that the ear contains instruments of mechanical construction for receiving the undulation, and conveying it inwards. And in still more recent times the microscope has added new sharpness to the eye, and enabled our anatomists to discover parts which were altogether unknown to their predecessors. Moreover the more acute philosophers have made out, that neither hearing nor sight have a real existence until the undulation reaches the inner parts, and the senses themselves are taken into fellowship with the soul. Thus learning encreases by slow degrees. And as the learned world is continually engaged in exploring the mysteries of nature by experiment, there is no reason to despair of further progress, or of their ultimately reaching the soul, so as at all events to judge of its mechanical operation. Inasmuch then as the sciences are diving continually deeper into the mysteries of nature, and as continually detecting a resemblance between the substances of the subtler and grosser worlds, it seems just to believe that they may one day attain to knowledge on even this abstruse subject. And why not at the present day? so as to forestall our posterity, and prevent them from laughing at us as we ourselves now laugh at some of the old philosophers.

From ignorance of the state of the soul, we may easily pass to a denial of its existence.

We will not indulge in a recapitulation of the several opinions which have obtained on the human soul; for although nearly all the philosophers have considered it as a preëminently unknown essence, still they have been anxious, by one means

or another, to demonstrate its connexion with the body. For when we are busied with the unknown, and do not wish to acknowledge its resemblance to the known, the result must be, that opinions and conclusions will arise which demonstrate nothing at all. On this account the greater number of philosophers swear by the animal spirits, explaining all the motions of the body by them, the soul, however, having command over them, and they executing its behests, and running hither and thither in the system, to perform their duties as servants for their mistress and queen. Some thinkers, however, and these not a few, although far from choosing to commit their sentiments to paper, privately and quietly consider, that doubt hangs upon the whole question of the soul, and that its very existence is problematical; for they see that it is impossible to regard it as a mistress sitting in her high chamber, with the animal spirits standing around her like servants, and flying quick as air to do her bidding: so that in fact they neither acknowledge the queen nor her government. Desirous, therefore, to explore the nature of the soul by reasoning, but unable to come to any solution, they leave it doubtful altogether. And as the passage is easy and short from doubt or ignorance to denial, so they tacitly deny the soul, and declare the materiality of whatever exists in the body, and of consequence the mortality also. Indeed, many half-philosophers rendered the subject one of doubt for themselves, until their position became so critical, that the faintest gust of reasoning was sufficient to tumble them into negative opinions. For when we are perfectly ignorant of anything, we naturally either recognize it as unknown, or else, if the clearest case be not made out for it, we rest in doubt and unbelief, persuaded by circumstances to the latter course. Moreover, when our reasoners consider the animal creation, they see that brutes have senses equally with man, and enjoy, in common with ourselves, the endowments of seeing, hearing, tasting, smelling, &c., &c. The interiors of their bodies also present nearly the same construction of parts, the same mechanism of organs. They have a cerebrum and a medulla oblongata, cerebral membranes, cortical and medullary substances, arteries and veins: in short, to the senses of such reasoners, animals have all things almost the same as ourselves. And what is more, some animals

have acuter senses of sight, hearing and smell, than man. And when to this it is added, that something very like reasoning or understanding is observable in brutes, and furthermore that some men are but little different from brutes, they can no longer refrain from what to them is the irresistible conclusion, either that animals have souls of some kind, or else that men are like animals, only in some respects more perfect, and of consequence that they may die like animals, and human souls undergo dissipation and annihilation. Nor is it wonderful if some thinkers have fallen headlong into this conclusion, considering their ignorance of the nature of the soul.

The soul is immortal.

If, however, they had thought, that the end for which the world was created is divine, or is for the infinite in the first place; and that man is the ultimate effect, by which this end may be obtained; and that a soul is given him which in conjunction with the body has the prerogative of concluding, and by virtue of revelation, although not of itself as a finite creature, of believing that there is a God, and that He is infinite: and that in this way there is somewhat of the divinity in man: and if they had chosen to infer in consequence, that man is in this respect a partaker of the final cause; and that the soul, as a part of the purer world and nature, is, by the bond of the divine communication, comparatively near to the most perfect* of things; and thus can not only love the Infinite, but also desire a more perfect state: in short, if after forming certain conclusions, they had chosen to carry the argument into a higher sphere, they would clearly never have fallen into the error we have mentioned. Rather would they have seen, and their reason confirmed, that this ultimate effect, viz., man, who can acknowledge God, and through love feel himself in the bond of the final cause,—who, therefore, has in him God's final cause,—can never die, but is for ever a partaker of

* We presume that by the term *the most perfect*, the author here means the natural minimum, the point, the seed of the world, of which he treats at considerable length both in this work and in the *Principia*. It is to be borne in mind, that there is a difference between *the most perfect*, or *the superlatively perfect*, and *the absolutely perfect*. The former is the highest of three degrees of comparison; the beginning of the series of finite perfections: the latter is infinite, and beyond comparison and series.—*(Tr.)*

the final cause, and therein, of the infinite; in a word, a permanent existence: and nothing whatever could have induced them to believe, that this final cause would desert man at the hour of death; which indeed would be to accuse the infinite, whose cause it is, of finiteness or imperfection. And the same conclusion comes palpably before us with all the force of fact, from the circumstance that the divine end, which is only obtained by undoubting faith in God, brings with it such a bond between the infinite and the soul, that whoever undoubtingly believes in the existence of God, also undoubtingly believes in the immortality of the soul; while on the other hand, those who do not believe in the infinite, also do not believe in the immortality of the soul; but think finitely of both: which shews that the effect of faith is in this respect a sign of the connexion between the infinite and the soul, insomuch that no one can really believe the one without believing the other; or deny the one without soon denying the other. We may therefore conclude, that the immortality of the soul is equally certain with the existence of God; and that the divine end cannot fail to have immortality with it, seeing that true faith implies a belief in immortality.

We may also deduce and conclude analytically and rationally from the nexus of natural beings and things in the world, that the soul or subtlest part of the body must be immortal. For as the soul is in the purer and more perfect realm of nature, and the body in the less perfect, it follows that the soul cannot be obnoxious to change like the grosser bodily parts; and that it resembles the more immutable nature, as it has the power both to act and suffer, and to conform in every manner to the entities of that sphere, so as like them to enjoy the most complete immunity from change. But the immortality of the soul is declared by facts presented in our very bodies. For love, with its delicious sense, which is purer as the nature is purer, arises simply from the harmonious connexion of natural parts. It is afterwards derived *per nexum* into the grosser parts of the body, that is to say, into the less perfect sphere of the animal world, where it has again the same end, namely, of conferring perpetual life in a certain sense on the body also. But as this is against the nature of that mutable world of which the body is a

part, so the body aims at perpetuity by the propagation of offspring, and the representation of itself in another being arising from it, in whom it may in a manner begin to live when itself surceases. This could never proceed from the body unless the cause and source preëxisted in the soul; nor could it be derived from the soul into the body save by connexion and contiguity, and consequently by supreme delight. As we may see from the consideration, that the soul concurs to obtain this end, a particle being veritably taken from it: so that in truth we know from the effect what is involved in the cause; from the last end what lies in the first; from the body what lies in the soul; namely, that in the body, by the instinct of the soul, a similar estate is desired to that which there is in the soul. And it is clear that the aspiration to this end is of a deeper and more sublime nature in man than in other living creatures, inasmuch as he not only enjoys the delights of propagating and rearing his offspring, but has also a perennial desire of living in the persons of his sons to remote posterity; whence it is seldom that parental love is extinguished, but encreases rather in descending to children's children. Not so, however, in the brute creation. For the same reason it is, that noble minds desire to be held in everlasting remembrance, and pant for fame and glory, for perpetual life in the annals of the race, their virtues aspiring to the integrity and perfection of a higher state, an antepast of which they already furnish; and to gain it, they are often impelled, sometimes in despite of the shrinking body, through death itself and contempt of all other pleasures; content if in this way the soul can give or impart to its beloved body what itself possesses. Still more is immortality evidenced by the fact, that those who are in the true bond of the divine end, or have a true acknowledgment and love of God, desire nothing more strongly than the immortal estate of the soul, and count nothing of less value than the mortal estate of the body; nowise fearing, but many times wishing, the death and end of the body; a condition of mind which can only proceed from the soul already perennially living in the bond of the divine end, and fearing lest aught should happen through the body to deprive it by any possibility of that high prerogative. Thus we may argue from effects to causes by the analytic method with

good certainty; and by what we know, arrive at a knowledge of the unknown of which we are in search. Nothing happens in the grosser world but its principles lie in the subtler, together with the causes which determine it to occur in its own distinctive manner; nor is there a single end in the grosser world but respects an end in the subtler; although the latter end is only a mean to the essential end in the most pure being.

Furthermore, in demonstrating the immortality of the soul, we may infer from the infinite to the soul, as from the soul to the body; that is to say, from the connexion between the infinite and the soul, as from the connexion between the soul and the body: for as we said before, from connexion love immediately arises, or that delight which is felt in love, in other words, in the harmonious conjunction of parts and modes in the world. The love or friendship between the body and the soul, as between the soul and the infinite, lies entirely in the connexion. It is the sign and effect of love, for the first to consider the second as itself, for the one to regard the other as its own, or to see its likeness in the other; for unconsciously it feels in the other, by connexion of contiguity, the same as in itself. And since the love of self is the nearest and the strongest, hence what it feels delightful and pleasant in itself, it earnestly desires in its object as another self; and loves therefore to assign and to give to it what itself possesses as an essential good; or longs to find in what is connected with it the same or the like state as it has in itself: and so the soul wishes for the body, the same purity, perfection, and perpetuity which it possesses itself. Those then who are in the nexus or bond of the divine end,—which bond is perceived in the delights of the love of God,—cannot but be reciprocally in God's love, inasmuch as they are in the divine nexus; nor consequently can His love towards the soul be other than similar in this respect to the love of the soul towards its best beloved, because its most united, friend, the body; wherefore it must infinitely wish the soul to be his likeness; and love to assign and to give to the soul what itself possesses, that is to say, perpetuity and immortality. If the infinite did not respect as its own the finite which is connected with it, particularly in that essential particular, of making the soul like itself in immortality, then there would be no

element of infinity or absolute purity in God's love toward man, but, on the contrary, a something repugnant to the infinite. For did God admit aught of mutability in his likeness, or in the being connected with him, there would certainly be something in his love that he himself does not possess, or that is contrary to him; that is, which is not his likeness but his unlikeness: this, however, even in the natural sphere, can only exist towards objects which are unconnected or inimical. But this love can only extend to the parts of the purer world, *i.e.* to the soul; and not to the parts of the comparatively impure and imperfect world, or to the body; which cannot be otherwise in the divine nexus than through the soul, as both soul and body cannot be otherwise in the same than through the infinite nexus of the only-begotten Son. Nevertheless, if the body could be so completely governed by its purer essence, the soul, as readily to obey its every intimation and command, in this case the very body might be considered as a part of the purer world, and might enjoy the same immortality and integrity as the soul. It seems likely that this was the state of the first man, formed, as he was, in correlation to all the harmony of the world, and that in him all the grosser parts admitted of being ruled by the soul, and consequently with it could enjoy immortality. But when this integrity and perfection in the connexion between the soul and the body, and therefore in the connexion between God and the soul, had perished, and afterwards degeneration had naturally ensued in the posterity of Adam, then of consequence the body could no longer be considered as a part of the pure and perfect, but of the imperfect world: and so mutability and mortality invaded what was once immutable and immortal; prerogatives, however, which may possibly be regained if the soul be clothed with a body which is not immediately inherited in the hitherto natural manner from an imperfect parent.

In what sense the subtle world is more perfect than the gross, is plain from the analogy of all the parts and modes which enter into the compounds of the former sphere. For the subtler a part is, and the nearer to its simple, the less is it subject to modification; and in the same proportion, the more like and homogeneous is one part to another: and the more the parts are similar, the more perfect are they both in substance

and mode; and hence all parts thus homogeneous aspire with comparative purity to subsistence and perpetuity in their figure and motion. And thus the entities of the subtler world, among which the soul is one part, become less obnoxious to mutability: and can be harmed neither by their likes, nor by any heterogeneous presences, for which indeed there is no room; nor yet by grosser matters, which cannot act immediately upon these subtle parts, or if haply they do, cannot disturb their connexion with their fellows which are so similar to themselves.

But probably there are some readers who will not allow this, but will persevere in their own unbelieving imaginations, and require to perceive the soul as they perceive the objects of sight and hearing, and to comprehend truth by sense, and will not be even then satisfied unless they can thrust their hands into the prints of the nails. My end, therefore, at present is, specially to demonstrate, to the best of my ability, the nature and properties of the soul, and then to shew from these endowments that it can never die without all nature be annihilated: and such being my end, I do not see how any one, unless indeed some singularly obtuse priestling, can disapprove of the undertaking.

§ IV.

Let us now enquire in a general manner into the nexus between the soul and the body, and into the operation of the one upon the other, with a view to see in what its mechanism consists. We say, *in a general manner*, for if all the details of the subject were to be set forth specially, we should rather be entering on the work of years than of a month, and we should not be writing one book, but a series of volumes. For to prove all our points, we should have to take account of all that anatomy has discovered in the body, and of all that we know specially, and by experience, of the understanding, the memory, the will and the affections. Besides which we should be bound to avail ourselves of both the mechanism and geometry of these as well as of all other parts by whose connexion effects are manifested. This would require more time and space than we can bestow in these preliminaries, at any rate so to draw

them out, that their truth should be reasonably plain. We will here, therefore, present only a general idea, so as to enable the reader to judge in a general manner, antecedently to demonstration, at least whether what we say be agreeable to reason, or the contrary.

There is no connexion between finites without natural contiguity.

I. And the first general proposition we would state is, that all connexion supposes contiguity, and that no connexion can be conceived or given without contiguity. Wherever there is connexion, there must be ends, and wherever there are ends, there must be means also. Moreover there is no connexion unless the ends are connected by the means. This fact, we mean, that connexion is inconceivable without contiguity, is familiarly known in applied mechanics. In invisible nature, connected as it evidently is with visible nature, contiguity is always supposed, sufficient for one part to be in contact with, and move, another, from one end of the medium to the other. Connexion by matter, or by motion, rationally speaking is alone perceivable by the mind, as consisting of means or media orderly and successively connected with each other, and by which the ends are brought into mutual relation. The same is the case universally with all those things that are incapable of being considered in this material manner, but which, however, still depend on, and proceed from, material and substantial subjects. Wherever there is any connexion in them, a connexion between them by contiguity is at once supposed, and this at last, if we push the matter home, supposes connexion of, or with, substances. But leaving these details, let us simply attend to the fact, that connexion supposes contiguity in substantials and modes, and that without it, connexion, finitely speaking, is inconceivable. All our knowledge of things through experience points to the affirmation, which reason indeed makes as well as experience, that there is a connexion between the soul and the body, whereby the one can operate upon the other, and likewise that the one does actually operate upon the other. Granting which, it is impossible to deny, that there is a connexion between the soul and the body, and that there are means to form and cause it. For as there can be no connexion, either in substantials or modes, without contiguity; and as we see that numerous operations

take their rise in the more considerable organs of the body, and in the parts subject to mechanical laws, in their motion, and in many ways; so we affirm that there must be *contiguum* or contiguity, and that there can be no such thing as an absolute division or break between the soul and the body, but that there is a contiguity: of what nature, however, is a point for special demonstration.

The nexus between the soul and the body has its limits or ends included in man.

II. The second point we have to notice is, that the nexus between the body and the soul must have ends. In finite nature there is nothing conceivable but has its own ends; in short, there is no infinite nexus. And as we see that the nexus or *contiguum* between the soul and the body terminates on the one hand in the soul, on the other, in the visible organization of the body; so of necessity this *contiguum* must have its ends, and these must lie within the body. Or to state the proposition more specially, when any effect within the *contiguum* proceeds from the soul and the body, we affirm that let its nature be what it may, it must needs have ends of its own, or a separate starting point in either term. And inasmuch as the effect exists, or may exist, in the body, the ends must of course be within the body or included in the body. For if both the first and last end were not in the body, and both in this way included therein, and attached to the corporeal space, then no effect whatever could be perceived as taking place in the body; and consequently there could be no operation of the soul upon the body, or of the body upon the soul. If in fact the effect went out from the soul beyond the limits of the body, then the operation of the body would pass at once by connexion and contiguity beyond the soul to some ulterior end; and the effect proceeding from either end could not become sensible in the corporeal space. And therefore whatever we feel in the body as an effect of the coöperation of the body and the soul, must be distinctly related to ends comprehended within the bodily space. All, however, that goes further, as there is a *contiguum* through universal nature, may undergo dissipation thereby, but will not be felt in the body. In short, whatever is there felt, supposes ends within the body; and the fact of the ends being in the body, or enclosed in the bodily space with all its contiguity, on the one

hand in the external senses, on the other in the soul, is the single cause which makes man live. The connexion of ends sensible through motion within the space, creates his living essence; the life being in exact proportion to the quantity of ends that can be said to be enclosed in the space, or to terminate within it. If a large measure of ends can be said to be enclosed, then the life is also large; if a small measure, the life in that case will be small; supposing always that the means are entire and unbroken. Moreover the longer the series of the contiguity, the more distinct the life. More or less, too, contribute to the result in some degree. But of these subjects we shall speak in greater detail in a special demonstration. We may now take it for granted, that the ends in man consist on the one hand in the external senses or their organs; on the other, in the soul; and that therefore they are twofold. And whatever then comes to the soul, must stop there, as having arrived at an ultimate end enclosed in, or attached to, the body. And whatever does so stop, man is enabled to perceive within his living space; and thus the centre of all perceptions lies in the soul, and all things first stand related in their rational conditions to the soul as a centre.

No perceptible operation can take place between the soul and body, without some previous mutation.

III. The next point is this, that if aught which is sensible or perceptible is to pass from one end to the other, or between the two ends, it cannot do so but through some mutation. If no mutation existed in this animal *contiguum,* nothing sensible could be, nothing could be perceived. Were there no mutation, there would necessarily be quiescence of parts, and consequently nothing sensible, or distinct from rest, because nothing active. Suppose a *contiguum,* and also ends, and in the *contiguum,* or between the ends, suppose simply nexus in substances, but without mutation; and can you in reason perceive how anything could exist on such conditions? But the point may perhaps be more clearly illustrated by gross sensible objects. Thus there is no such thing as taste, unless something is present to cause a change or mutation, and to enable us to feel by taste. Were nothing present there would be no taste. And in smell unless there were something to move the organs, or induce a change, there would be no sense of odor. In the ear were there nothing

to move, and no undulating motion, there would be no hearing. The same is the case in sight. If hearing and sight, or the organs thereof, were wanting, and mutations were unable to proceed from them onwards by contiguity toward the soul, there would be no sensual element at all. Therefore whatever is perceived from one end to the other, must have its cause in some mutation.

No mutation can happen without motion in the natural sphere.

Now it follows from these considerations, that in finite parts, in so far as they are extended or natural, no mutation can happen without motion: be the finite parts gross or subtle, so long as they are natural, they cannot be changed without being moved. The one condition supposes the other. So that when we are treating of extended or finite things, we may be sure that no mutation can exist otherwise than by motion, whether the motion be of the parts or the whole, so long as the mutation exists. In the animal *contiguum*, therefore, in as far as it is finite and extended, that is to say, natural, in so far motion is the cause of all mutation. Once more take the case of the external senses. How could one hear without motion in the air, and communication of the motion to the drum of the ear, and consequently to a graduated scale of finer and finer organs? How could one smell without there were something to move the olfactory organs, and in moving them, to originate motion? The case is the same in taste; and in sight also. For the formal element cannot exist, unless there be something to make or cause it; either motion in the parts, or motion extraneous to or beyond them. We do not wish to come yet to the inner sphere of the body, notwithstanding which we may argue unhesitatingly by the connexion subsisting between it and the outer. If at one end of the animal body, namely, in the external senses, all things exist by motion, and if there is a connexion between the body and the soul, and the other end lies in the soul; and if that which is felt through motion at the one end, is felt in the other also, it cannot pass through this *contiguum* to the other end otherwise than by the means existing in the first end, that is, than by motion. It would be unreasonable to attempt to say, that although the sensation exists in the first end by motion, it does not therefore follow that it exists in the other end by motion. For if motion begins in one end of a

contiguum, it cannot be said to be dissipated before it comes to the other: were it so, there would be either rest in the soul, or no mutation: although it is impossible to deny that there is indeed an active, motive and efficient element in the soul. This, however, cannot possibly exist without mutation. Since at one end mutation consists in motion, why should we deny the fact of motion? Why should one say that the mutation at the other end consists in some mode different from motion? If you say that there is a mode which cannot be called motion, in short, a state, and that the mutation can only be called mutation of state, and not of motion, pray then what kind of state is it whose mutation may be called change of state, and not motion? If the state be infinite, I have nothing to rejoin, but most willingly admit that it is not motion; though by the way in this case it is not change of state. If the state be finite, there cannot fail to be a quality in it, for there is in every finite. But without motion can there be any mutation in finite or extended beings? The mutations however in modes proceeding from that finite, may by analogy be termed motions, as they come from their substances or subjects: and thus motion is predicated of substantials. But not to dwell longer on these particulars, we shall only observe, that if in our explanation of special principles we can demonstrate, that motion is the cause of sensations through the external sensory organs, and if motion passes through the *contiguum* towards the subtlest sphere on its way to the soul, and if all perception, understanding and memory, and the like, can be mechanically and geometrically explained, then perhaps the reader will not be so ready to deny, that motion is carried *per contiguum* towards the soul, and that there is motion in the soul, most distinct, however, and most subtle, and yet like that in the grosser parts.

There must be substances in man recipient of motion.

IV. If then connexion consists in contiguity, and the body operates upon the soul by motion, it follows again that there must be substances adapted for receiving the motion; substances, that is to say, extending from the body to the soul. If there be *contiguum* or contiguity, and if the operation take place contiguously by motion, evidently there can be no contiguous operation reaching to the soul, unless there be means through which it may

exist. If there be motion, and the motion be carried by contiguity to the soul, there must be substances capable of receiving such motion and conveying it. If there be an end, there must be means: if a mode, there must be a substance from, or by, which, it exists. Mode is nothing without substance, motion is nothing without substance. There is no motion without there be something to be moved: motion, unless it supposes a subject, is a nonentity. If then there be motion, mutation, or mode passing from the external parts of the body to the soul, there must be a subject by which the motion, mutation, or mode exists, and consequently there must be substances adapted to receive the motion, and to convey it towards the other end. For a moving body is a mechanical thing, which necessarily supposes also a geometrical element set in motion, and supposes further a geometrical element in the motion itself, so far as regards the direction of the motion. It supposes again a geometrical element, or something else, to be moved, before the force can be heard or felt. That is to say, every moving body supposes a mode proceeding immediately from a substantial, and acting immediately on a substantial. And this mode, as respects time, is past in effort, but present in act, and future in its operation on anything else. However, the moment it acts, all are present. And thus the motion or the mechanical element is identical with the substantial and geometrical.

There are several elements connected with each other by contiguity.

V. The same may now logically be predicated of the elements of the world; to wit, that there is a connexion between them, also a contiguity, and the connexion indeed by means of the contiguity; whereby all things, whatever their description or number, are mutually respective or related, and connected from one end to the other, *i.e.* from subtle to gross, and *vice versâ*. I say, logically, or by the connexion of our argument, for we see and perceive that one corner of the world is connected to the other, and that the nexus reaches from the sun and stars to the eye of the beholder. From every earthy particle we see that there is a nexus, and therefore a contiguity, whereby the eye, at great distances, can join sight with the very particle seen. We see the same in the ear, there being a connexion between it and the mouth of the speaker. No effects of

the kind could be either seen or heard were there not a connexion by contiguity reigning among the parts. Let us restrict our attention to the grosser element, namely, the air. Now we see in the air a connexion of parts amounting to such perfect contiguity, that no interruption whatever takes place to make the hearing fail. We find that the air may be compressed and dilated with such perfect uniformity, that when confined it presses equally in every direction, operating by the most constant natural laws. This supposes a contact between all the parts, and consequently a connexion by that contiguous contact. I do not believe that any one can bring a reason instructed by experience to deny the existence of elements in the subtler world. No one denies the existence of ether, for what an amount of phenomena are seen by the eye, and what changes are caused by the elements in the various organs! Hence, though sight cannot see the parts that cause or make sight, nor even the parts in the air that cause hearing; nor that affect the organs of smell or of taste; all these being internal to the sphere of the senses; yet we cannot, and ought not, on this account, to deny their existence; for we do feel their effects. And as in nature's subtler sphere we see phenomena so admirably wonderful, and which cannot be attributed to either the air or the ether, does not this argue the existence of elements still subtler than these; and that it is not unreasonable to affirm it, albeit the mere external senses cannot shew the fact; and likewise to presume a connexion reaching from the first minimum entity to the grossest in the elemental world, in short, to the aërial element itself; a connexion whereby one element moves, and is moved by, the other; whereby, from the very first simple, one has successively originated from the other; whereby, consequently, one subsists through the other. But we will not here confidently assume so much without demonstration; but will only remark, that the reader is bound in reason to grant us, that there is a connexion in the elemental world from least or subtlest to greatest or grossest, and indeed a connexion by contiguity—*per contiguum;* and that without nexus or connexion nature is inconceivable. And in short, if any one rightly applies reason to experience, and the soul to the senses, I see not how he can deny nexus to elemental nature, which is the most fluid

nature of all, since nothing natural can be conceived without nexus; or deny that all the causes and all the principles of things and modes existing in the grosser world, lie in the subtler world. As for the nature of the elemental parts or constituents, it is a subject for which we refer the reader to our *Principia,* where we have treated of the elemental kingdom. We will here content ourselves with citing from that Work the following: viz., That if an element exist, it must needs be fluid enough to be capable of the aptest fluxion; nor can it be capable of this, unless each particle be fluid, and therefore contribute to the motion of the whole, to the general motion, to that of the volume. Did not each particle contribute, cohesion of parts would ensue, and no elementary fluidity could exist. And if each particle contributes to the motion of the volume, we may be sure that the volume during motion must move with reference to the mechanism and geometry of the parts. And if a large volume in motion be similar to a small one, we may conclude by induction that the moved volume must at last be similar to the particle it consists of. Proving that from effects, or the motion of the volume, we may judge not only of the peculiar geometry existing in the parts, but also of the particular mechanism existing in the elemental world: especially as the motion of the volume or the effect of the parts is always so extremely self-similar. And if the fluidity of the parts or the volume be elemental, and enables them to undergo motion as well particle-wise as volume-wise, it follows of course that there is elasticity in the parts; as indeed might be inferred from the circumstance of there being elasticity in the volume; which could not exist unless it existed correspondently in the parts. All this is perfectly evident in the air. And since we find that there is an element subtler than the air, viz., the ethereal element, and this, of the most fluid property, and immeasurably surpassing the air in the moments and degrees of its velocity and fluidity, hence I do not know what other account can be given of its fluidity, but that each particle contributes separately to the general motion; and is formed so to contribute; and to be elastic, and perfectly adapted in point of mechanism and geometry to the general motion; and that it is far more elastic than the aërial element, because the elasticity of the air

cannot be self-derived, but must have a cause, which cause must come therefore from a ground in the subtler elements next to it: just as the air cannot be set in tremulous or vibratory motion by its own power, but requires the aid of the ether; for sound penetrates the glass of the exhausted receiver, through which the air cannot enter. Thus motion, and elasticity in motion, come from the presence of more subtle elements. Nor do I see why it may not be inferred, that there is a succession of elements subtler still, involving still greater fluidity, higher mechanic adaptations for its exhibition, and more perfect elasticity; and indeed elements, and an augmentation of predicates, till we come to the least and most universal, to the element the most perfect in all such endowments. And as we see so many admirable phenomena in the elemental world, both in the air and in the ether, why not go further? Why not boldly advance by reason to a subtler sphere, and arguing by analogy, infer its possibility and existence. And if we find experience confirming reason, and that causes are explained by it, it will then be right to conclude that we ought to go beyond the point where the bare senses begin and end; and at least to declare for certain that a connexion exists, and a contiguity also. For when the infinite had created his minimum entity, it appears that he willed, naturally speaking, to make it the cause of the creation next following, (as we always see in the finite sphere that one thing is the cause of another); and created no second compound immediately like the first, but chose that the first should be the means of producing the second, and the second, of composing the third; and this, both in successive and simultaneous order. If the origin itself took place by connexion, like the causes, then all things must subsist by the same causes as gave them origin. In a word, it is rational to affirm the connexion of the elements, and in fact, the existence of an elemental *contiguum;* for one element cannot subsist without connexion with another, and the end cannot *be* without the means: supposing it were the ultimate end, it must stand related to the first by connexion and contiguity. Otherwise the last end would perish, and the grosser world would fall into very ruin: nay, it could not be really separated from the subtler without annihilation. As this view of the case is to the last

degree reasonable, I cannot see, if we grant the existence of a nexus and connexion, how we can do other than grant that there are subtler elements as well as grosser, and that the gross are connected with the subtle by contiguity. But we have treated copiously of these subjects in our *Principia*, where we have established four elements; the aërial element, the grossest of all; the ethereal element; next, one still subtler, to which we have given the name of the magnetic element: and next, another, the subtlest or most universal element of the world: the whole of the four standing in mutual relation to each other both as regards origin and subsistence.

Since then, according to all reason, there is a succession of elemental particles of different sizes, smaller and smaller, and which are capable of motion singly or separately, and consequently of fluxion, elementwise,—it follows demonstratively, that the particles of the gross element must move comparatively slowly; those of the subtler element with greater velocity; those of the subtler again with greater velocity still; and that the particles differ in their degrees and moments of velocity in proportion to their masses. This is equally a matter of sense as of demonstration. For we see that water moves slower than air, air slower than ether, and therefore ether slower than the next finer element; and so forth. Thus in proportion as parts are minute, and near to their first simple ground, they are also less in mass, their dissimilitudes are less, their disabilities and impediments are less, and their figures are perfect: in other words, they are in the same proportion perfect both in their geometry and their mechanism; they are quicker to move, and swifter in motion, being less impeded by bulk, dissimilitude, and a number of other modes and conditions which have the power of causing at all events a certain amount of resistance, stoppage and irregularity. In short, the nearer they are to their simple, the purer are they, and the more approaching to superlative perfection in all their mechanism and geometry. And it is also a consequence of these premises, that they are capable of moving distinctly exactly in the same proportion as swiftly and perfectly; there being not only very slight dissimilarity in the motion, but the particles undergo modification of

the most distinct kind as contrasted with the modifications and motions in their grosser correspondents; and furthermore can make thousands upon thousands of moments in the most distinct manner, while the volume of the grosser element is making a single one, and that one, far from distinct: especially, too, since the elasticity in the lesser particles is more excellent, pure and perfect, amounting in them to the primitive and prime essence of the power.

And since there is a contiguity of all the elements, it follows that none of them can be set in motion without the motion being felt in some measure in the others also. Where there is a *contiguum*, nothing can exist in one part of it without becoming sensible to a certain extent at the other. What occurs at one end goes at once by contiguity to the other. When the air moves, the ether cannot but feel it, and the subtler elements too, even the last and first; there being a connexion of motions as well as a nexus of parts, a connexion of modes as well as a nexus of substances. If then the air be the grossest element, and the others are finer and finer in succession, and a motion have commenced in the air, it is a demonstrable fact, that the motion in the air, however small, becomes additionally sensible in the ether, and more so still in the finer elements. The least motion in the air cannot but exhibit a like motion in the ether, but as the parts of the ether are finer than those of the air, so a little volume of ether may be set in motion by a single particle of air: and by the same a larger volume, so far as number of parts is concerned, in the particles of the still subtler elements. If the motion of a particle of air is slow and confused, it will be successively more and more distinct in the ether, and in the primitive elements, with their parts so exquisitely minute. And thus when any motion commences in a gross medium and tends to a finer one, it becomes more and more palpable, and therefore distinct in its course. Tremulation in air will cause undulation in ether, and this, in its turn, a far greater undulation, indeed, a species of local motion, in the next subtler element. This may be shewn by a series of balls of different sizes, which, if elastic ones be chosen, will afford a sensible proof of our argument, and lead to the conclusion, that the

like is true of the very least particles, that are, or that can be, beneath our senses. But perhaps we have already dwelt too long upon this subject.

The elements operate on the substances of the animal frame; and the like exists in the elements as in animals.

VI. We may now approach the mechanism that intervenes between the body and the soul. We have found that there are elements which operate upon the organs of the body, as for instance the air, which operates upon those of hearing, and the ether upon those of sight. And as they can only operate by mode or motion, (no operation, as we said before, can exist without mutation, and no mutation in the finite sphere without motion either of the whole or the parts,) so there are elements that operate on the organs of hearing and sight, and this, by a motion which, in the air, we know to be undulatory or tremulatory, the ether contributing to produce it; and the motion being an admitted fact at the present day. For the sound is plainly produced by the motion of the nerves or membranes; the tympanum is visibly extended in the ear, visibly adapted also for receiving the motion; besides which there are finer organs present to carry the motion inwards, and subtilize it into sensation. We may therefore infer that the same scale of progress takes place in the ether, whose modification consists in motion, inasmuch as it moves the organs of sight to exercise sensation. For undulation as existing in the elements, or in their parts, or parts of parts, (on the position and motion of which their formal essence depends,) is in fact their most general, as well as their most natural, motion, because by it they move particle-wise or particularly. And as in the undulations of an element there may exist all the conditions on which the infinite variety of phenomena is explicable; and not only explicable, but geometrically and experimentally demonstrable; such conditions, we mean, as this, that an element admits of innumerable undulations simultaneously and successively; that a lesser and larger, a quicker and slower undulation, may exist in one and the same volume; and the lesser within, and together with, the larger; that there is nothing to prevent new undulations from constantly entering an identical tremulous volume, and coexisting therein, thousandfold variety thus taking

place in a single *contiguum*. This is cognizable in air sensually, in water visually, and we know it demonstratively by the mechanism of the parts. If then corresponding undulatory motions exist in the minutest elements, in which all modulations are far more distinct, sensible and perfect, of course they may still more distinctly admit the existence of an added number of tremors. These particulars, however, will require a special process of deduction.

VII. Seeing then that the elements consist of parts that are to the last degree moveable in the cosmic space, and that in this respect they are the very sources of motion; and that they are moveable in any given space or place, whether they be in a state of compression or dilatation; a quality by which they can enjoy both rest and motion, passion and action, and the possession of which in fact constitutes them so to speak the life of the universe,—seeing all this, we cannot but conclude, that all motion in man from one end to the other, from the external senses to the very soul, through the whole human *contiguum*, is in this respect like the elements, and indeed is the microcosm of the universe; and that in man, too, all actions take place by means of *contiguum;* the motion tending from gross to subtle, from the senses to the soul; and in ascending the scale of finer and finer entities, stopping in the finest of all as the centre; that in this upward course, it becomes more and more sensible, more and more distinct, as we said of the corresponding motion in the elements; that it becomes more and more nicely fitted to receive all kinds of varieties; and the finer or subtler the other end, the more sensible and distinct the effect of the motions; so that at length there is nothing in variety but may be distinguished, and nothing but may be distinguished by variety: not to mention several other particulars in which human life seems to follow the pattern of the elements, and to take similitude therefrom. On this ground it is, that the theory of the elements requires to be delivered before we can labor with the least effect towards a knowledge of the operations in human life.

VIII. But living creatures, of which man is the last and most perfect, do not consist of elements, but are bodily or

corporeal, and therefore we have now to consider the structure of their bodies. As we see that such wonderful varieties of motion, both simultaneous and successive, are possible in the elements; and that these varieties become increasingly multiple, sensible and distinct in the subtler sphere; and that in this respect the animal body is like the elements; and as that body is corporeal, and not purely elemental,—so let us observe whether aught having similar relations, or recipient of the above varieties of motion, is to be found in the corporeal sphere. And first let us regard those large and more considerable parts whose bodily mechanism is evident and admitted. Now the motion of the air is received within the body by particular membranes. We see this in the whole construction of the ear; we see that the entrance or external meatus is closed by a membrane, upon which the undulating air will necessarily impinge, and cause in it a corresponding undulation. And on examining further into the internal conformation of the ear, we again find membranous expansions of a finer and finer texture; and also machinery for concentrating the undulation, before it is conveyed to the higher sphere; so that the resulting sound may become more articulate. And the same process takes place again and again as the undulation passes inwards. In the eye we have a machine, all whose parts conspire to enable the rays of light, or the modulations of ether, proceeding from the whole space that is comprized at once in the field of vision, to make their way distinctly towards the retina; so as afterwards to be spread through the optic nerve, and at last diffused through, and immersed in, the substance of the medulla oblongata, and of the cerebrum. All these facts are visible and tangible; and it only remains for us to bring reason to bear, and before coming to a conclusion, to enquire, whether the above parts, with no exception, are not bodily formed and fashioned with a view to the undulation or modulation begun in the element, being carried inwards bodily, that is to say, through bodily parts? In answer to which enquiry, we are bound to conclude in reason, that there is no alternative, but that the above motions must be received, and carried inwards, and ultimately to the cerebrum, by bodily organs. And as we find that a peculiar sensation exists within

There are membranes in the human body to receive all the motions of the elements.

of which the subject is conscious,—and that there is an imaginative faculty, which is active enough for the man to feel it, and for his very body so to feel it, that in numberless instances the grosser parts of the frame, the blood, and the other fluids, together with any saline, sulphurous, or other particles that they contain, are excited and moved thereby,—so we are bound in reason to conclude from fact, that here the cause can be of no quiescent or passive, but of an active character, and in short that it can be no other than motion.

Let us, however, pursue the argument, and observe if there be anything in the body that on mechanical principles will receive the motions in their various degrees of subtlety. Thus much is certain, that in the grosser parts there are drums and membranes admirably conformable to the motions of the aërial element. We have now to shew by induction whether there are membranes of different degrees of subtlety, and which are conformable to corresponding motions in the subtler elements. Nor by rational analysis can we conclude otherwise than in the affirmative. For if there are membranes to receive the undulatory motion of the air, then why not subtler membranes to receive subtler undulations? It is at all events possible that there are, and being possible, is it also fact? To determine this we must have recourse to anatomy, and examine the several parts of the body, availing ourselves also of the assistance of the microscope, and we shall find that a very large proportion not only of the brain but of other parts of the system, consists of membranes. In the cerebrum, for instance, we shall see that there are membranes of different degrees of fineness, and that the finer membranes give place to others finer still, until at last the subtlety is so extreme that neither the eye nor the best microscope is adequate to recognize it. The difference of the membranes in fineness is plain enough to the naked eye. In general moreover we find that there is hardly a part in the human body but runs through a scale of fineness or subtlety, ramifying, and in this way diminishing, until it eludes the power of the senses. This is clearly evident in the veins and arteries, in the nerves, in innumerable other parts, and among the rest, in the membranes. We may very fairly conclude from it, not only to the possibility of the subtilization of the membranes

through finer and finer expansions, one after another, but also, on the ground of anatomical demonstration, to the actual existence of the same. Besides which we have the same ground for asserting, that there is no part of the human body but is clothed by one or more membranes of different kinds. The individual man with all his members is enclosed in membranes, two or three; the cranium, the same; the cerebrum is clothed with its own membranes, gross and fine; so also the cerebellum and the bulk of its parts. The like is true of all things in the lower sphere of the body, as well as in its parts; nay, of even the minutest vessels. The bones, wherever situated, are clad with peculiar membranes. The nerves too. The fat, particle by particle, is enclosed in an infinity of membranous loculi or cells. And thus in the body, whether we consider it as a whole, or regard it as made up of parts, and parts of parts, the anatomical eye recognizes that all things are enclosed in membranes, and that the membranes ramify, and become finer and finer, until at last the eye can see them no longer. Yet to argue that because they cannot be seen, therefore they cannot exist, is to draw anything but a logical consequence. It is more reasonable, as we see the membranous form wherever the eye can reach, that reason should begin where the eye ceases, and conclude without doubt that there still are similar subtler forms, inasmuch as we see answerable effects in the subtler sphere.

IX. Having now arrived by the aid of reason at the conclusion, that the existence of the finer membranes is not only possible, but plausible, we have next to consider their qualities. And if they are formed for the reception of motions, finer and finer, on the pattern of the motions in the elements, it follows that the membranes must of necessity be tense. Motion cannot be received without tension. No tone comes forth unless the membranes exhibit contiguity sufficient to cause one part to move when the other does. Unless the drum of the ear be tight or tense, the air has no chance of producing in it motions answering to the aërial movements. Unless the nerve be tense, it will never allow any vibration to reach the sensible sphere. Tension therefore is required; and being absolutely necessary, the presence of a specific cause is also required to produce it. Here again let us first proceed to the experience of

the external senses, and when this fails, and not till then, let us appeal to reason. Now we see that the larger membranes are put in tension by various bodies that they enclose, either by bones, or by nerves, the coverings being stretched just as the parts enclosed stretch them. But to come to the membranes themselves, we see that they are stretched by liquids; evidently indeed by the blood and the different other humors. We also know by sight and experience, that the blood when collected in any quantity, is sufficient not only to stretch the parts covering it, but furthermore that the finer parts being attached and connected to the grosser, the tension arising from either the quantity or insurgency of the blood, is sufficient, taking into account the contiguity and connexion, to put the lesser membranes also in tension. We cannot stretch a fresh piece of membrane between the fingers without its finer parts undergoing a corresponding tension. If the tension is produced by swelling, either from the blood or any other fluid, it amounts to precisely the same thing, only it must be admitted that such swelling is a cause of tension not only in the larger but also in the finer parts. Experience is itself too eloquent on these subjects to require much assistance at present from reason. Thus we see that various membranes in the body are put on the stretch by the swelling blood. And as the result of tension we see not only an alteration in the senses, but even in the imaginative faculty, and in the muscles, as during anger, intoxication, accessions of fever, &c. The position is therefore experimentally clear, because we see effects which extend to the very soul.

Although, however, we cannot at present penetrate further by experience and the external senses, still it does not follow but reason may go further, and, assisted by geometry and mechanics, be as positive in its statements and conclusions as the external senses themselves; more especially if we reason from effects as well as in causes. As then the larger membranes are put in tension by the grosser liquids; by the blood and the rest of the humors; and as finer membranes do exist, and must equally have their peculiar tension, and if stretched by a general expansion, their parts also must be so disposed, as to undergo a perfectly even or equal tension; consequently as there must

be some liquid or fluid to cause this power of equal tension, and to make the parts so preserve their tension as equally to diffuse over them the motions received:—so from the large and the visible we may conclude without hesitation to the minute and invisible, and infer that there is a fluid that specially stretches the lesser parts. And as there are membranes of superlative fineness, we may conclude that there is also a fluïd of equal fineness, to enable like to operate upon like. And thus the inference that exquisitely subtle membranes are put in tension by an exquisitely subtle fluid, is repugnant neither to the experience of the external senses, nor to mechanics, nor to effects, but on all these grounds is perfectly agreeable to reason. And since from effects we recognize innumerable predicaments like and corresponding with the motion of the elements, it becomes probable from this also, that there is an elemental fluid of some kind to put the finest membranes on the stretch: and that it is finely elemental in proportion as the membranes are fine: the subtlety in the elements having its analogy in the membranes of the animal body; whereby the elements operate on their own correlatives in the body; and by a peculiar membranous connectedness and contiguity ascending from gross to subtle, the elemental *contiguum* conspires with the bodily *contiguum;* which produces analogous effects in the body and in the elements, with only this difference, that the *contiguum* in the body is enclosed in space, and undergoes tension and fluxion from one end to the other; whereas in the elements, there is no end or enclosed space, for the whole universe is their space and field. And consequently the membranes are designed to enable the motions to be confined to space and enclosed within boundaries. In short, a motion similar to the elemental exists not only in the elements, but also in the membranes of the body, which latter have their peculiar boundaries.

The membranes are formed geometrically, with exquisite precision, for the reception of the motions existing in the elements.

X. And for the above reasons the membranes also feel. For the soul operates upon the body through them alone, all the motions of the body are performed by them, and all vitality, and all the animal and sensual powers, consist entirely of their motion; so that there is hardly a single anatomist who does not declare without reservation

that all the membranes feel. Whenever a membrane is touched, sense is at once excited, which shews that the membranes are means for sensation, although it is not felt at the point of contact until the membranes in the brain become conscious of it, by means of the contiguity subsisting in the latter, assisted by the elemental fluid. And in order, I repeat, that the membranes may the better adapt themselves to the sway, motion or vibration of the elements, in short, fall into imitation of the elemental motions, they require a formation so nicely mechanical and geometrical, as will capacitate them for receiving the whole possible mobility that exists in the elements; the motion of the latter being in this way fixed or represented in them. To fulfil these conditions, the middle membranes require to have in them not merely the due and fitting form and shape, but also the due size, thickness, and the several other qualifications which geometry can bestow. This, however, is not the place to descend to particulars. But unless the drum of the ear were exactly calculated to the vibratory motion of the air, both in thickness, figure and position, it could never receive as distinctly as it does all the moments and degrees of the aërial motion; and unless the same were the case with the inner membranes beside the labyrinth and cochlea, it would be utterly impossible for all the moments and degrees to penetrate so distinctly and with such concentration towards the subtler sphere.

Moreover unless in the middle membranes there were a peculiar system of attachment, sufficient to preserve them in their proper shape, and to produce the fittest and nicest division in each particular expansion; and unless they were so formed as to enable the elemental fluid to pass in the freest manner through them all as well as through their attachments; unless these conditions also were fulfilled, the membranes could never be kept perfectly equal in their tension, nor conform to any given motion. And therefore there ought to be the exactest harmony between the membranes and their corresponding elements, since it is by means of the latter that a perfectly similar motion may be diffused through the whole body, and consequently that membranes, always and everywhere similar, may fall into the same or a similar motion. The element is the only thing that can transfer motions. The membranes of themselves

cannot be other than merely passive; yet are they so formed as to receive the motion of the elemental parts, and by whatever cause they are moved, they fall into imitation movements, and moreover act upon the enclosed volume of the element reciprocally. By the operation of the element therefore a similar modulation is diffused in a moment all over the body; and in this way the vibratory or undulating motions in the elements enclosed in the frame, are in the truest sense those animal spirits that are said to obey the volitions of the soul, and that realize whatever is desired by the body and the soul conjointly. But we shall treat better of this subject in a special theory; here we can give but a confused and general idea of the operation.

XI. As we learn by experiment that the vibrations or undulations of fluids follow their own laws of motion with the utmost exactness, and in fact that any element in motion cannot but move according to principles of its own, and according to the figure and mechanism of its parts; so again, as the elements fix their tremulous and undulatory motions in the membranes, they retain their own laws, and these, the most perfectly harmonic, in the purest form, and in the most exact manner in the latter, and the membranes cannot stir a single step without those laws. From the nerves equally with the membranes we learn the nature of these laws, and are taught that they are the laws of harmonic proportion, which is always in relation to distance from a centre. Let us take an instance from a membrane convoluted or formed into a spiral or any other figure conceived to have a centre. Now this membrane, at a certain or given distance from the centre, will necessarily move with a vibration proportioned to that distance or to those bounds, and the vibration will have proportional moments or degrees, and a proportional velocity: at another distance from the centre, either greater or less, it will necessarily take on a particular vibration proper to the place, and will admit of no other. And to make any kind of harmony between two or three distances, the distance of one from the centre must be a proportional of the distance of the other from the centre; and the distances must also be mutually related, and therefore themselves make harmony. And this is the case in the nerves,

The laws of motion in the elements, and the similar laws in human organs.

in which indeed there is the same ground of harmony; although the nerve can only respond to one tone, but the membranes to all tones. Where the nerves are many in number they may collectively represent a single membrane, and their proportions or harmonies will be as the distances already mentioned, provided the different nerves are exactly equal in tension and the same in point of thickness. And thus the vibration of membranes is always in the ratio of the distances from the centres, and if these are as the mutual distances, then the vibration is thoroughly harmonic. But all this applies to membranes which are geometrically constituted with a centre; in other cases the harmonic ratios are most nearly represented among the asymptotes in a hyperbola. The vibrations in the membranes before alluded to for the most part generate a geometry of their own, or acquire a particular harmony by habit and exercise; yet even this harmony always consists in the circumstance, that the distances from the centre stand in mutual relations to each other. The whole field of continuous harmony gives birth to a single harmonic vibration, which may be called a mixed or compound vibration. And a vibration of this kind may be still more finely concentrated into a unity in the subtler membranes. Moreover from a number of mixed vibrations, other mixed and compound vibrations may arise, and so on through successive degrees of elevation, as the membranes in the body are finer and finer, and fitter for a perfectly distinct reception of all vibratory movements. On the other hand, those vibrations of which the mixed order is composed, may be gradually, harmonically and separately brought out from the compounds, which in this manner may be resolved into their parts, if the mind attentively dwells upon them. Two tones or sounds may generate a third, which, however, will be precisely such as can fit in harmonically among the ratios of the distances. Like vibrations may produce their like in the adjacent parts; in the subtler parts; in the grosser; and this both simultaneously and successively: for a like vibration may in a manner spontaneously (by the mediation, however, of the element) cause a like vibration in another membrane, and consequently call forth other like vibrations which have been imprinted by use and habit: just as a vibrating string sets another string, whether thick

or thin, of similar tone, into the same vibration with itself. And if in mixed vibrations there be several tones, a similar tone may be called forth from them in particular in another place; a tone either simple or less mixed. And if all the delicate membranes be harmonically enough adapted by use and cultivation, a genuine and perfectly distinct effect will be produced: all which circumstances must ensue, provided only there be a succession of membranes, finer and finer, and their position and shape fit them for the distinct recipiency of all vibrations, and for the production and representation of all. But the whole of these particulars will have to be deduced at large, and demonstrated geometrically, in a special theory: here we have simply been anxious to give a general idea of them, and by this means to help on others more penetrating than ourselves to a deeper investigation of the operations of the elements upon the membranes, and of the membranes upon the elements. In a word we would say, that so far as concerns the tremulous motion of parts or surfaces of parts, there can be nothing in the elements but is likewise possible in the membranes of the body, provided they are adapted to receive from the elements a motion imitative of their own. And hence numberless and almost ineffable varieties are possible, where there is a graduated scale of membranes, gross and fine, thick and thin, more or less, and diversely, tense, stout, figured, &c.: as many varieties in short as exist in the elements themselves. And thus the elemental world has made itself sensible by the membranes in the small world of the living microcosm.

This too it is which has caused many previous enquirers, (for I am by no means the first in this walk, but have had learned predecessors, with whom I will not venture to compare myself,) seeing the correspondence that subsists between the motions in the elements, and the motions in the membranes, to declare that vibratory or tremulous motion is the cause of sensation. Former writers, however, have not attempted to go beyond this general induction, but have betaken themselves to certain animal spirits of unknown operation, finding in them a general asylum, to make an end and mode somewhere to their investigation.

Granting then that the microcosm, man, within his bounda-

ries, is analogous to the macrocosm within its boundaries; and that in the little human world there is a membranous as well as an elemental nexus reaching without a break to the very soul; and that the soul is a part of the purer world; or that one end of man is in the subtler world, the other in the grosser: granting these premises, it follows: 1. That all motion or mode in this animal and living microcosm comes either from the subtler world, and tends through the *contiguum* to the grosser, that is to say, from the soul to the body; or that the inverse movement takes place, viz., from the body to the soul. 2. If the origin of a given motion be in the soul, then it passes into the grosser world by connexion of contiguity, and this, harmonically: and where the harmony is true and perfect, the passage to the other end will be effected freely and instantaneously; and will be felt at the other end as well as in the means. Nevertheless in tending from the subtler to the grosser sphere, the mode or motion will become gradually grosser, more impure, less perfect, comparatively indistinct and rude. And if the origin of the motion be not adequate to the substances of the grosser world, piecemeal and gradually it may vanish away and perish, before it can arrive at the ultimate end. And if in the gross and imperfect world, or in the field of means, there be aught that is still less perfect, and greatly discordant, dissonant, or dissimilar, or if the *contiguum* be not sufficiently harmonic, in this case, as it proceeds, it will be confused, dispersed, perish and die away, before the mode has fairly reached its destination. 3. Suppose, however, that the source of the motion or mode lies in the first instance in the grosser world, and that the *contiguum* is harmonic, in this case it will pass in a moment to the soul, and be felt with pleasure in the middle terms, because it is felt with pleasure in the soul; and it will also be comparatively pure, perfect and distinct in the means, because it is pure, perfect and distinct in the soul; that is to say, it becomes relatively pure in proportion as it penetrates deeply into the purer world. But where the connexion of contiguity, or the natural harmony, is comparatively imperfect and dissimilar, it can reach the soul neither distinctly, nor purely, nor harmonically, nor delightfully; for it meets with a barrier of dissonance or discord on the way, and the mode is either dissipated, or comes confusedly,

and with pain, to the soul. 4. Continually discordant modes, and their frequent use and employment, may produce a peculiar habitude, whereby at last the soul will seem to love discord in motions more than harmony, and to seek delight in dissonance and contrariety; so that it will begin to be formed upon the model, or to the modes, of the body, and to be assimilated to the grosser and impurer world: in which case its harmonies are discords. When such like souls are released from their bodies, natural harmony can give them no other than a feeling of dissonance, perpetual contrariety, and painful misery, especially when aught from the purer and more perfect world approaches them. For they enjoy no connexion, but are in perpetual discord, with the more perfect world; and can have no pleasure except in experiencing the dissonant modes of the impurest sphere which answer to their own impurity.

The soul is the centre of such motions.

XII. We have hitherto confined ourselves to the organs or membranes upon or through which sensations are conveyed by vibrations towards the soul; whereby the soul perceives all things with the greatest distinctness, and has concentrated in itself, than which there is no subtler essence in the body, all vibrations, both mixed and simple. Did not the soul consist of the very subtlest parts, so as of right to have conveyed to it all motions and vibrations by the midway of the membranes, it could never become conscious of any motion that begins in the first instance in the grosser organs. The membranes, therefore, upon which vibrations pass after the manner of the elements, are but organs between the external senses of the body, and the soul. Without these means, the soul would be destitute of all power and faculty to act or operate, and incapable of feeling what goes on in the grosser sphere; destitute also of the faculty to coöperate with the body, and of the power of calling into motion similar parts, and this, more and more distinctly. In a word, the soul would be without the body, and the body would be without the feeling of a soul. And if these middle membranes should lose either their connexions, or tone, or tension, instantly a dissimilarity—a rupture of analogical likeness—contrary to usual habitude, must be represented to the soul. And when in this case the soul begins to operate, it will have to work

through a crowd of unlikely parts and circumstances, and no proportional or rational result will follow. Rationality is never therefore the product of the soul alone, but of the other parts as well which form the medium or *contiguum* that connects the senses with the soul.

In the soul undoubtedly we have the centre of all the vibrations we have spoken of, as well as a most active and supremely geometrical and mechanical essence, in which all motions and vibrations whatever are represented and felt, both distinctly and mixedly: and from which the whole of the finest vibrations are diffused over the multitude of similars, or excite motion among them: whereby lastly, through the analysis and harmony of similars and dissimilars in some third or fourth degree, or in any which is required, the soul is enabled to acquiesce or rest harmonically and delightedly.

XIII. But lastly, it is probable that the reader may be anxious to pause for awhile at this stage, and to ask us what we think about the place and residence of the soul in the body; what the soul's nature is both in point of mechanism and figure; also the peculiarity of its immediate or proximate operation upon the membranes which aid and subserve it: with a number of other questions concerning that part of man, which although the most unknown, is yet the chief of all, and which questions are well worth solving. On these subjects we will now open our mind, although in a slight and exceedingly general manner.

The seat of the soul in the body.

With regard to the place or locality of the soul in the body, it is clear from the foregoing pages, and from the reason of the case, that the soul dwells in no particular gland, in no particular membrane, and that it is not diffused all over the body: but that its dwelling-place is there, where the membranes pass through higher and higher attenuations, and attain the finest subtlety they can. When we examine the human cerebrum, we find that there is hardly a part of it but is enveloped and clad not with one but with several membranes: we find that the general portions of it are loosely invested with the dura mater; that a still larger number of its parts or divisions is covered with the pia mater, which dips deeply into the folds, furrows and crannies of the cerebrum; and that these two membranes accompany the spinal marrow

where it issues from the head, and sheathe the nerves throughout all their wide courses and ramifications. Neither in the nerves, however, nor in the fibres, can we see that their ramifications form the smallest membranes, but for the most part they are evident and visible, although even there so subtle as to begin to escape our sight. Not so, however, in the cerebrum, all whose parts are enveloped with their peculiar tunics, and the tunics and membranes that are visible, and the still larger number that are invisible, can and do ramify in an eminent manner; from which it is fair to conclude, that the seat of the rational soul is in an especial sense in the brain, and does not extend beyond it. In the cerebrum we have the pia mater, a very fine and visible membrane covered with innumerable blood-vessels, and which ramifies again and again, and detaches tendons of the finest make, as well as an exquisitely delicate contiguity of membrane; all which dip into and pervade the cerebrum, and ultimately pass in a still more highly attenuate and subtle form into its very substance, first into the cortical substance, next into the medullary, in which latter, therefore, we see the most manifest signs of the ramification of membranes. And inasmuch as similar substances are found in nearly every part of the cerebrum, and also of the cerebellum, and in the medulla oblongata throughout, so we conclude that the soul resides particularly in the cortical substance of the cerebrum, and partly also in the medullary, where these exquisitely subtle membranes, from the structure of the organ, can run connectedly from particle to particle, and likewise above, around, and within every particle of the above substance. The cortical or cineritious substance lies immediately and closely under the membranes, being about two lines in thickness in the cerebrum, and making serpentine windings, and often penetrating inwards. In the cerebellum it exists in even greater proportion, and represents a beautiful tree or shrub full of branches, the trunks or peduncles of which consist of the three medullary processes. Furthermore, the pineal gland is of the same substance, and its processes and base are frequently medullary. The medulla oblongata, which lies under the two brains, and partakes of both, has some little cineritious substance inside it, but for the rest is medullary: the commencement of the medulla oblongata

is of the same substance externally, while on the inside it is beautifully striated. I do not, however, maintain that the medullary substance is devoid of the soul, especially since in some places, as for instance the medulla oblongata, which is the fountain-head and origin of the nerves, it appears to be of a fibrous and tubular character, and mixed with the finest arteries of the cortical substance. But of all these subjects we shall speak more at length in special treatises. Here we only wish to shew logically, that the soul is in all those places where the membranes of the cerebrum expand into successive fields of diminution, and have a comparative fixity from the membranes which produce them.

The soul is the same wherever it is seated.

Granting then that the soul is diffused throughout the cortical substance, it follows, that it resides in no one place or spot, but is ubiquitous in all parts of the brain, in none of which is it self-dissimilar, but always most self-similar, and cannot operate differently in one part from what it does in another. For step by step, degree after degree, it is fitted for motion, and if we may be allowed so to express it, is formed according to the motion of the middle membranes; and as these pass in all directions around the cerebrum without a break in their continuity, so the soul cannot be presented differently in the medulla oblongata from what it is in the cerebrum, nor in the cerebrum from what it is in the cerebellum; and this, by reason of the contiguity and connexion which there is both in the membranes, and in the motions through the membranes.

But perhaps a question suggests itself, whether we are to consider that the soul is alike in all brains or in all men? To which we reply that it is not alike, but of different formation in different brains. However, it is not our present business to explain what the difference amounts to; although it is clear from the course of the argument, that the soul is not only wrought, developed or cultivated, but is also adapted by use and exercise through the intermediate membranes, and rendered more or less fit or unfit for receiving the motions that reach it thereby: and that in some persons its connexion with these membranes is comparatively slight; in others, intimate and close; in some it is accustomed and adapted to call distinctly

forth the similar motions imprinted by use and cultivation; in others, to call forth but a small number of similar, and a vast number of dissimilar motions: in some it is more rational, in others less so: in some it conspires in one aim with the body and the pleasures of the body; in others it involves a resistance to the body, and rather longs for, and aspires to, the rational estate. In short, there is generally, although not always, a certain agreement and similitude between it and the body. This is displayed in families, where the youngest branches are frequently more like their grandfathers and great-grandfathers in disposition, than like their own parents, from whom they immediately got their souls; or from their great-grandfathers through their parents. This is the reason why grandfathers commonly love their grandchildren more than parents their children.

Again, are we to consider that the soul consists of nothing but a membrane, and therefore is perfectly similar to the intermediate membranes? We answer that by the foregoing arguments its conditions cannot possibly be like those of the above membranes. For the soul is the last and subtlest part of the body. It is the part which is the ultimate end where all the intermediate motions terminate. It is the part to receive all modes in the most distinct manner, and out of mixed and still more compound vibrations to form a simple and distinct essence. It is the part where there is a centre to which all the subtlest vibrations can refer themselves: in which there is nothing of elemental existence, but an essence the most active: without which none of the momentaneous intuition, distinctness, or vitality of the rational power, could possibly exist. If the reader will please to consider this superlative activity of the soul as not unlike our actives in the *Principia*, Part I., Chaps. V. and VII.; he will find, that actives regarded separately from their membrane or envelope cannot be conceived as occupying place or determinate situation; or as forming a contiguity or expanse; of which therefore in themselves they are devoid; nor do they at all imply the relations of upward and downward, or of resistance, but only pure agency; nothing, however, elemental, nor passive, though notwithstanding they involve pure mechanics. But see the *Principia*. All these predications agree exactly with

the description of the soul given by those who love to claim it as spiritual and not material.

This perhaps is that purely actual and simple essence that is commonly attributed to spirits and souls, and which in some sense may exist without involving the conception of extension or any merely mechanical notions. We have stated, however, that the finite actual is impossible without a mode, not only of being actual, and of being able to become so, but also of being of the quality it is, and of the mode or modification that it is, both in itself, and when it operates upon confessedly material objects. For no finite can operate on finite matters without a mode; or without a mutation coming from an actual substance; nor can there be any mutation in passives without the local motion of an active: although still this is merely mechanical.

How the actuality of the soul is to be considered.

But as regards the operation of the infinite on corporeal or bodily substances, and particularly its immediate operation upon the primitive, and the successive and mechanical operation of the primitive upon the substances derived from it,—this is not analogous to the actuality here mentioned; for the one is finite, the other infinite, and we have no right to explain the one by the other in the way of simile or analogy, or to liken God to spirits in point of actuality. This I believe is forbidden to all, and especially to Christian philosophers, who are bound to admit nothing in God but infinity, nothing in other spirits but finiteness; there being therefore no possible ratio or relation between the two. The difference between the infinite and the finite is so great, that the difference between heaven and earth is nothing to it. Actuality in the infinite must be considered as without mode, unless mode in an infinite sense: but the actuality in spirits, as involving mode; for in finite spirits nothing can be set in activity without a mode: and mode in finites there is none but what is immediately referable to substances, and proceeds from them.

Actives cannot be finited without passives or a surface.

But as actives of this nature cannot act, or put forth any motive force, or produce any effect, upon bodies near them, or which they encounter, unless such actives are enclosed in particular surfaces or membranes that will simply obey or comply with the motive

force of the actives; so the soul cannot be said to consist barely of the above actives. It is true that its activity and life consist of them: but it is also requisite that the adjacent parts shall be enabled to act upon the soul, and in a manner to dispose it for action: there must consequently be a passive ground in the soul. Moreover the force of actives upon bodies near them cannot be conceived without a space, in which these actives, thus perpetually operant, are enclosed. And as space cannot be enclosed by them without a membrane of superlative subtlety; so we conclude, that the activity, together with its own peculiar surface, jointly constitute the soul, without which no operation upon the body is possible. And to obtain this result, the membranous surface must in all reason have a centre, by virtue of which, and therefore of the distances from the centre arising from this relation of things, all that is superlatively distinct must have its existence; and without which no distinctness could be.

The souls of brutes. In brutes, however, or in all living creatures but man, the soul is formed on the model or in the likeness of the human soul: but it is much more gross, it is elemental, not consisting of actives, which constitute the actuality of reason, but of a peculiar elemental ground. These are points which we design to prove in a special treatise by a host of arguments which are not perhaps very familiarly known to the learned world.

We have no reason to despair of arriving at a knowledge of the soul, especially if it be no longer regarded as an object of supreme ignorance, and as operating by absolutely unknown laws. For if there be simply a geometrical ground, of the most perfect kind, however, in the soul; if there be simply a mechanical ground, and this also equally perfect, we may then have hope of at last arriving at a knowledge of it: but never, if principles utterly unknown, and which simply aim at ignorance, are assumed at the outset. But we may attain to knowledge on the subject, provided we assume that the actuality of the soul consists in a motion and power consummately mechanical; its surface in a figure supremely geometrical: in a word, if we take for granted a something most perfectly mechanical and geometrical in the nature of things; and if the mind, cau-

tiously and dubitatively during the enquiry, brings before it a geometrical expanse of the kind, and afterwards examines all the facts with which experience supplies it; that is to say, the anatomy of the human body, of all its parts, and their parts, and of all the organs existing both in the brain and in the body throughout; of all the organs of the external senses: all the modes and faculties that can be known and distinguished, whether in imagination, memory, perception, or will; also the varieties and differences of all, arising from affections and other causes the most diverse; with many other subjects which require to be thoroughly scrutinized and compared in the most special manner. By these means we shall at last be enabled to arrive at sure conclusions respecting the true geometry and mechanism of this most perfect entity. And if it pleases God to accord me life and leisure, it is my intention to shew in detail at what stage of the enquiry I have myself arrived. At present I may observe in general, that I do not think it prudent to make any affirmative or positive declaration on the subject: experience and geometry alone have a right to be affirmative and positive, and when they become so, then, and not till then, by the consent of the soul, the rationale of the subject is declared. The main end of these our labors will be, to demonstrate the immortality of the soul to the very senses.

Conclusion. What is Life, but the commencement, formation and preparation of the soul for a state in which it is to live for ever after the body dies? And what this formation and preparation, but the means by which the soul, (which in intrinsic subtlety, purity and perfection, and in its capacity of receiving the divine end, is far superior and very dissimilar to the natural body,) shall continually strive to form and bend the body to its likeness; and never suffer the latter to reverse the order, or to form and model the soul. The issue, however, is by no means so easily concluded from the reason or understanding of individuals, as from the immediate acts of their will. For though reason partakes of both the body and the soul, yet it commonly inclines to side with the latter: but the will and effect demonstrate by which it is that the man is influenced. The soul has the power of feeling everything which exists by motion in the body; by virtue of which power, assisted

by use and exercise, it is enabled to acquire the habit of conspiring with all the actions whereby the body modifies its state: and thus the soul is in itself the centre and ultimate mover of all things, but by habit it becomes also the prime mover, or the mover at the same time of the things occurring in that body with which it is united. Inasmuch then as the soul is formed and prepared in the mortal body for an immortal state, so we men are in this respect the happiest beings in the world, or else the unhappiest; for those who are unhappy, are more unhappy than the brutes, whose souls are extinguished, and their life annihilated, when their bodies perish. Christians again may be still more happy, or still more unhappy; for they possess a knowledge well calculated to lead to faith, and to comparative distinctness and fulness thereof: yet those of them who are unhappy, are more unhappy than the Gentiles to whom no such knowledge has been granted. Those Christians again who are learned in the divine law, the prelates and doctors of the church, are still more happy, or more unhappy; for those of them who are unhappy, are more unhappy than the rudest members of the Christian commonalty, however defective in learning and poor in knowledge and enlightenment. Among the skilful interpreters of the divine law, they again are happier still who have the faculty to engraft reason upon revelation, and to make use of both as means to a knowledge of the things conducing to faith; that is to say, they who are Christian philosophers; who, if unhappy, are more unhappy than those who have obtained their knowledge from revelation alone. For the more knowledge we possess, the more there is to make us happy, and the more to make us unhappy. Hence the Christian philosopher may be the happiest, or the unhappiest, of mortals.

THE END.

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ACTIVE. Actives are incapable of forming a *contiguum;* of occupying place, or only such place as the enclosed expanse allows; the predicates of upward and downward are inapplicable to them, but they act at all angles and in all directions; and cannot be said to resist, but simply to act; &c., 103, 145. Actives cannot be finited without passives or a surface, 146.

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BODY. The end of the body and all its parts is, to enable us to lead active bodily lives, and to be rational creatures, 36. All parts of the body tend to their own proper ends, and all to the common end, or that of the whole, 43, 44. As God foresaw that the will would take the side of the body against the soul, he provided, by his Only-Begotten Son, a connexion of the infinite with the finite on the part of the body also, 79. The bodily space is a living *contiguum* with two ends, the senses and the soul, 118—120. See *Mutation, Soul*. The human *contiguum* of the body is analogous to the elemental *contiguum*, and as motions pervade it from its grosser to its subtler end, they become newly distinct, various, &c., 130.

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and geometry reign universally in finite causes, 96, 97, 98—100. Many causes as well as effects are presented to the senses, ibid.

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Connexion: see *Nexus*. All connexion supposes contiguity and substance, 118. Wherever there is connexion there must be ends, and connexion of the ends by means, ibid. There is plainly a connexion between the soul and the body, ibid. There must be contiguity because connexion between the two, 119.

Contiguum: see *Connexion*, *End*, *Nexus*. The longer the series of contiguity in the body, the more distinct the life, 120.

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68, 123. The several elements are connected with each other by contiguity, 123—127. There are elements subtler than the ether, 124, 127. By connexion one element moves another; one has originated from another; and one subsists through the other, ibid. Each particle of a really fluid element must be fluid, 125. The volumes of the elements move according to the mechanism and geometry of their parts, ibid. Motion, and elasticity in motion, are owing to the subtler elements, 126. We reckon four elements; the aërial, the ethereal, the magnetic, and the universal, ibid. There is a succession of elemental particles of different sizes, smaller and smaller; and as motion pervades them, it increases in velocity, and becomes additionally sensible and distinct, from the gross to the subtle, 127, 128. Vibration in air will cause undulation in ether, and local motion in the next subtler element, 128. The elements operate on the substances of the animal frame, there being the like in the elements as in animals, 129. The elements are the very sources of motion, and by their mobility under all circumstances, are so to speak the life of the universe, 130. See *Body*. A knowledge of the operations of human life presupposes a theory of the elements, 130. Man and animals do not consist of elements, but are corporeal, 131. See *Membrane*.

End: see *Body*, *Delight*, *Finite*, *Infinite*, *Man*, *Nexus*. The least parts are those which mainly tend to ends, 44. The primary end of creation is for the infinite: to suppose otherwise would be to suppose contradiction or negation in the infinite, 60, 61. The final cause of creation is infinite, 62. It is obtained by finite means, viz., by the universe and man, 67. The natural *minimum* is the first end of the world, man is the last, ibid. There are many secondary ends of creation, 82. Primary ends divide into numerous secondary ends in the finite sphere, ibid. All the secondary ends conspire to the primary, ibid. Nothing can exist in a contiguous and connected entity, without coming in relation to its ends or bounds; nothing in man without coming in relation to the senses and the soul; nothing in the universe without coming in relation to the infinite, 88. The connexion of the ends made sensible by motion in the corporeal space, creates the living essence; the life being in exact proportion to the quantity of ends enclosed within the space, 120. The ends in man are the senses and sensories, and the soul; and whatever comes to the soul, stops there, as having arrived at an ultimate end enclosed in the body, and whatever so stops, man is enabled to perceive in his living space, ibid.

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Infinite, the, is the *nodus* of Philosophy, 6. In philosophizing, the mind necessarily comes at last to the unknown and the infinite, ibid., 19. In general terms, there is no ratio between the infinite and the finite, 7. See *Finite, Quantity.*

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LOVE: see *Delight*. It arises simply from the harmonious connexion of natural parts, 113, 115. In the animal world, it aims to confer perpetual life even on the body, ibid. The love of God towards the soul is analogous to the love of the soul towards the body, and desirous to make the soul like itself confers immortality, 115.

MAN was created to enjoy the delights of the world; to associate worldly delights with heavenly; to carry the world to a new perfection; and lastly, to increase the number of the angels, 30. He is so created that his subtlest part shall live in a sense above all others, 32, 43, 44. See *Delight*, *Reason*. Finite man is only a means, and not, unless in a secondary sense, an end, 63. Man is the ultimate effect in the world, through which the Divine end can be obtained, 66—70, 71, 72. All natural things concur as means to man, 68. Man is the ultimate effect, inasmuch as he can comprehend and acknowledge the infinite end of his creation; not so brute animals, 70. Hence his soul, and the necessity of his reason, which is the conjunction between the soul and the body, ibid. In man dwells the veriest final cause of creation, 71. There must be something divine and infinite in the finite man, otherwise the infinite could have no cause respecting it in the finite, ibid. This something does not lie in the human senses, soul, or reason; but in the fact that man acknowledges and believes in the existence and infinity of God, and by faith, feels in love, and its delight, a connexion with the infinite, 71, 72. Man, with all his parts and

his very soul, is finite, 72. He may concur to dispose himself for the reception of the infinite end, ibid. Nothing superlatively perfect in a finite sense can exist in man, as he is finite and many times finite, 75. But see *Soul*. By the Only-begotten Son alone are we ultimate effects to the primary end, 80. See *God*. In man as a natural being none but mechanical and geometrical laws are possible, 100.

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Mutation. No perceptible operation can take place between the soul and the body, without a previous mutation in the animal *contiguum* or living space of the body, 120, 121. No mutation can happen in the natural sphere without motion, 121. See *Motion*.

Nature. The first natural entity is a causate, but not in the same sense a cause, 17, 21. It must originate from the infinite, 20. It is the seed and principle of all natural things, and has in it, in its own manner, everything that can exist in nature, ibid., 21, 24, 44, 45. All things issued from it in natural order, ibid., 24. Nature is the second cause of the world, and not the first, 21. It is impossible to grant

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Nexus. See *Connexion, Finite, God, Infinite, Simple.* There is a nexus, but an infinite one, between the finite and the infinite, 57, 60. This nexus regards not only existence but essence, 60. We cannot deny the nexus without destroying the finite, ibid. The nature of the nexus is as unknown as that of the infinite, 60, 61. Without this infinite nexus, the finite, as the end, would have no relation to the beginning; as the last cause, no relation to the first, 61. The nexus is neither mechanical, physical, nor geometrical, 63, 64. The nexus is to be regarded as positive and affirmed, though its qualities are unknown, 64. The nexus, affirmed by reason, is also given in Revelation; *i.e.*, the Only-begotten Son, ibid. The connexion between the infinite and the finite is through the Son of God, Himself infinite, 65. See *Body*. The Only-begotten Son furnishes a nexus between the infinite and the finite on the part of the body, 79. The instance of the soul and the body throws some light upon the connexion between the infinite and the world, 87. The nexus between the soul and the body has its limits or ends included in the bodily space, 119. In the microcosm, man, there is a membranous as well as an elemental nexus running without a break from the body to the soul, 140.

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Primitive of Nature. All future things were present, and inexistent in act, in the primitive entity, 26. Nothing but superlative perfection can reside in the primitive, ibid. There can be no mean between the infinite and the primitive, 59.

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Revelation: see *God*, *Philosophy*, *Reason*. Revelation discovers much whereby man may finitely conceive and express God; though no finite perceptions and expressions can be similar or adequate to God, but may be simply not repugnant, 58. Revelation and reason, natural theology and revealed, must mutually aid and assist each other, 85.

Scripture. What is proved by Holy Scripture, needs no proof from reason, rational philosophy, or geometry, 13.

Sensation. There is no sense without nerves, and there is no mean to sense in nerves but motion, 42. We are better led to acknowledge the infinite by effects and the senses, than by the other ways or methods of the soul, 46. The end of the senses is, to lead us sensually to an acknowledgment of God, ibid. All sense owes its existence to the soul. See *Author*, *Delight*, *End*, *Soul*.

Similarity: see *Mode*, *Nature*, *Perfection*. The superlatively perfect self-similarity of the primitive entities, becomes gradually less and less in derivatives, 75, 116. The similarity of the parts of the subtler sphere, implies their perfection both in substance and mode, 117. Similars are less obnoxious to mutability, ibid.

Simple. The simple principle of nature has only one limit, and therefore is not finite, 10, 100, 101. See *Infinite*. The simple is not otherwise derivable than immediately from the infinite, 18, 60. Time and succession cannot be predicated of the pure simple, but in point of origin it is instantaneous, yet not eternal, but in a manner before time, 19. See *Finite*, *Perfection*. The soul is not a pure simple, 100. The simple alone, which is neither infinite nor finite, can produce pure and total motion, 102.

Soul, the, is given to the body out of the purer and more perfect world, 72, 76, 77. And this, of God's foreknowledge and providence, to ensure obtaining

the primary end of creation through otherwise imperfect man, 76, 77, 79. The soul of the first man was superlatively rational and perfect, 77. The soul is intended to make the body in its own likeness, and to give it its own perfections, ibid., 148. The soul must be instructed by the senses, to enable it to instruct the body, and both to tend to the primary end, 83. All the faculties of the body are mediately the property of the soul, but distinct rationality is its immediate minister and effluence, 87, 88. The soul and its spirits *(spiritus animales)* are finite, 93, 104. The soul is amenable to laws, and these also are finite, 93, 94. The soul can adapt itself to the body, be formed afresh, and take upon it the likeness of the body, and still the members obey its operation, 94, 141, 144, 148, 149. Distinct quality is predicable of the soul, especially as it is united and limited to a particular body, ibid. The soul is not a pure simple, 100. Nor a simple finite, unless activity be regarded as involved in such finite, 102. The soul must be capable of being confined to its own body; hence it cannot be purely active, but must have a passive surface or expanse, to enclose or shut in its actives, 102—104, 146, 147. This secures its actuality and permanence, not only in the body, but after its release from the body, 103. See *Active*. The soul is bound by geometrical and mechanical laws; it is in nature, and is natural, and a part among the physical constituents of the body, 104, 105, 108. The soul may be justifiably regarded from animate machines, 107. The soul is immortal by the grace of God, and its mechanical nature does not impugn its spirituality, ibid, 108, 112—117. Self-similarity reigns among all the parts of the soul, ibid. It is naturally impossible that the soul should die, as there are no elements in nature to harm it, 108. There is no reason to despair, like the philosophers, of attaining a knowledge of the soul, 108—110, 147. Ignorance of the state of the soul may easily lead to denial of its existence, 110—112. See *Motion*, *Mutation*. By the use and employment of discordant modes, the soul may become assimilated to the grosser world, and its harmonies become discords, 141. In this case, after death, the presence of aught from the purer world will give it painful misery, ibid. The soul is the centre of the bodily motions, 142. It performs its analysis upon them in its own pure and self-similar sphere, and rests therein harmonically and delightfully, ibid. The soul is primarily seated in the cortical or cineritious substance of the brain, where the membranes assume their finest attenuations, 143. The soul is self-similar wherever it is, and is formed according to the motion of the middle membranes, 144. The soul is of different formation in different brains, ibid. There is generally, though not always, a similitude between the soul and the body, 145. The soul is neither elemental nor membranous, but a most active essence; not unlike the actives mentioned in our *Principia*, 145. See *Active*. Actuality in the soul involves modes, and these must be referable to substances, 146. The membranous surface of the soul must have a centre, by which, and the distances from which, all that is most distinct may exist, 147. See *Souls of Animals*. We may arrive at a knowledge of the soul, if we assume that its actuality consists in a motion and power supremely mechanical, and its surface in a figure supremely geometrical, and afterwards examine experience, relative to all anatomy, all the mental faculties, their differences, &c., and many other subjects, 148. The state of the soul is more easily concluded from the actions of men than from their reasons, ibid.

Souls of Animals, the, are formed in the likeness of the human soul, but they are gross and elemental, and do not consist of the actives which constitute the actuality of reason, but have an elemental ground, 147.

Terms. When high subjects are treated, all expressions that can make the reader pause, should be avoided, 3.

Time involves the mechanical element, and is similar to the geometrical, 11. See *Infinite*, *Simple*.

Vibration. All vibrations tend naturally to run in circles and curves, 40. They love spiral, circular and hyperbolic curves, 42. See *Ear*, *Element*, *Hearing*. The vibration of membranes is always as the distance from the centre, &c., &c., &c., 137—139.

Wonder: see *Cause*. We wonder at the causes and leasts of things, as involving the quality of producing, more than at the products or ultimate things themselves, 23, 24, 25. Wonder rises to higher powers in contemplating causes, ibid., 24, 25, 29, 30. The closing wonder is felt when we acknowledge the cause of the least in the infinite, ibid., 24, 25. We do not wonder at the cause of nature merely as a cause, but as an infinitely intelligent cause, 24.

Worship. There is nothing, whether dead or alive, but adores and worships God, since all things tend to obtain the divine end in the ultimate effect, 83.

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