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## ARTICLE V.

OF THE EXISTENCE AND NATURAL ATTRIBUTES OF THE  
DIVINE BEING.

By George I. Chace, Prof. of Chemistry and Geology in Brown University.

THE innumerable forms of matter which everywhere reveal themselves to the senses, may be contemplated under several distinct points of view. In the first place we may regard them as separate and detached bodies, having no common relations, and sustaining no common dependencies. We may examine each one of them individually. We may observe its form, we may ascertain its structure, we may learn its dimensions, and may make ourselves acquainted with its various mechanical and sensible properties. Having done this, we may further compare these bodies with one another, marking their resemblances and noting their differences, and may finally arrange them in classes, orders, and families according to their observed affinities. It is by pursuing such a course that the portion of knowledge has been created which constitutes the Science of Natural History.

Or, secondly, we may direct our attention to the relations which these several bodies sustain to one another. We may observe their modes of action and reaction under all the different circumstances in which they naturally occur, or in which for the purposes of experiment, we may place them. We may note and compare the results of our observations, and may pass thence by induction to those general laws by which all matter is alike governed, and upon the ceaseless operation of which, its larger and more sensible phenomena are immediately dependent. The facts and principles of which we should thus gain possession, reduced to their proper order and connections, would constitute that part of the science of nature which has been denominated Natural or Mechanical Philosophy.

Or, thirdly, we may direct our inquiries to the elementary particles or atoms, of which the material masses are composed. We may examine these atoms, and see whether they all present the same characters, or whether there be not different kinds of matter. And having ascertained the truth of the latter supposition, we may take each one of the different elements whose existence has been determined, and bringing it into relation successively with every other element, we may

thus develop its several properties. But, before we have proceeded far in our investigation, we cannot fail to discover in nearly all the different elements or kinds of matter, a disposition more or less strong to enter into union with one another. In truth, when these elements are brought together under favorable circumstances, such union is found in almost every instance actually to take place. We have now a new subject for study. We have a class of compound bodies differing in their properties widely from the elements of which they are composed — in themselves extremely numerous, and moreover entering in turn into new combinations, and thereby giving rise to all the endless variety of substances found in the mineral, vegetable and animal worlds. The phenomena which come under our review in these inquiries belong more immediately to the Science of Chemistry.

Or, fourthly, we may contemplate matter neither in its masses nor yet in its atoms, but in those complex organic forms which it assumes on entering the structure of plants and animals. Here a new set of phenomena present themselves, as unlike those which arise from the mere chemical properties of matter, as these latter are unlike those dependent upon the mechanical properties — phenomena of a much higher order and of a more varied character — phenomena termed vital, because they are exhibited only during the continuance of those mysterious and complex relationships which constitute life, or upon which life is immediately dependent. These phenomena, however, are as entirely due to matter under the peculiar forms in which it is combined and aggregated, and in the peculiar relations in which it is placed, as any of its simplest and most familiar manifestations. They grow as directly out of the inherent constitutional endowments of the original atoms, which required only to be placed under the proper conditions in order to their exhibition. The study of these phenomena and of the laws which regulate and determine them, so essential to the forming of any just ideas of the vegetable and animal functions, is the especial business of the physiologist.

Or, lastly, we may consider matter not in the relations which the different portions of it, whether larger or smaller, whether organic or inorganic, sustain to one another, but in that higher relation which all matter sustains to a power without and beyond itself. From the principles of our mental constitution, we are necessarily led to infer from what we see in the world around us, the existence of such a power. It is a part of that great primary law of human belief, that every effect must have a cause — a cause in its nature adequate to produce it. Wherever we turn our eyes we behold the evidences not only of power but of intelligence and design. The universe itself is but a vast sys-

tem of means wisely adapted to the production of ends. Whether we look at it as a whole, or view it in the detail of its parts, this great fact equally forces itself upon our observation. The development of life — intelligent and conscious life — is the sublime object to which all its provisions look, and in the accomplishment of which all its agents find their appropriate and intended office. The celestial mechanism lies back of the terrestrial, which it regulates and to a great extent even determines. This in turn furnishes the conditions of existence to the innumerable animal and vegetable tribes with which the surface of our globe is covered. Arrest the earth in its course round the sun, or change in any manner its relations to that luminary so that light, heat, and electricity should no longer flow from it in the same measured quantities, and the disturbing influence would be felt through every link of the entire chain of physical causes which binds together the terrestrial phenomena. All the conditions of organic existence would be changed, and disorder, desolation and death would quickly pervade regions which are now teeming with an exuberance of life and clothed in perennial beauty. So many and so mighty are the agencies employed in maintaining the life of the feeblest plant! So vast and so complicated is the system of means made tributary to the sustenance and well-being of the humblest animal!

It is not, however, in the general constitution of the universe, or even in the physical arrangements of our own planet, that we discover the clearest and most unequivocal evidence of contrivance and design. The assemblage of instrumentalities employed here is so vast, and the objects to which they are directed are so remote, that we cannot in all cases perceive the relation between them, and even when we are able to trace it, it is in parts of a system every way so far surpassing our powers of comprehension, that we do not feel quite certain whether the connection may not be simply accidental. Moreover, the effort of imagination necessary for taking in even the parts of a scheme of such vast magnitude, as well as the emotion awakened by their contemplation, is unfavorable to that clear perception and that calm and logical deduction which can alone inspire the mind with full confidence in its own decisions.

For the clearest evidence of adaptation, the strongest and most overwhelming proofs of intelligence and design, we must look to the structure of organic beings. Each one of these, which crowd upon our view in countless myriads wherever we turn our eyes, is as complete in itself, forms a whole as perfect in all its parts, and as perfectly adapted to the ends intended to be accomplished by it, as the world to which it belongs or the universe itself, of which that world forms so

insignificant a portion. Here too we find ourselves comparatively at home. The relations involved in the structure of these beings come for the most part within the sphere of our comprehension. By careful study we may understand the objects for which each one is designed and may trace the connection between the several parts of its organization and these objects. If we regard the physical conditions under which an animal is to pass its existence as already determined, the mode of life must be conformed to these. But this mode of life, whatever it may be, necessarily implies certain functions. Indeed the generic idea of life includes little else than an assemblage of functions — its character being dependent upon their nature, variety and number. Now as these functions whether of perception or of motion must be in strict relation to the external circumstances of the animal, so must the several parts of its bodily structure be in strict relation to these functions. For each one there must be a special organ, possessing all the endowments and capabilities necessary to fit it for the performance of that function. These endowments and capabilities must further be provided for in the constitution of the organ. The parts of which this is composed must be of such a character and so related to one another as to confer upon it these endowments and these capabilities. Between the most elementary portions of the structure of every animal and the external conditions under which it is designed to exist, there extends, therefore, one unbroken line of connections — one continued series of adaptations, every part — every step of which may be traced. All this is well understood by the comparative anatomist, and it is in consequence of it, that he is able from the mere fragment of a fossil skeleton, from a tooth or a toe bone which has lain for countless ages buried in the earth's crust, not only to restore the entire animal to which it belonged — to place it before us in all its living proportions, but also to infer many things concerning the climate and physical condition of the earth at the time when the animal constituted one of its inhabitants.

Here then is a field wide enough for every imaginable form of contrivance — every conceivable variety of adaptation. At the same time the ends proposed are so definite and come so entirely within our comprehension, and the means employed for the attainment of each are so direct and lie within so narrow a compass that every part of it is fully open to our investigation. It is not however the design, nor would it be compatible with the limits of the present article to enter upon the examination of this field or even to present in detail the results of such an examination. Two or three facts gathered from a general survey of it will be sufficient for our purpose.

The first which we would mention is, that throughout the whole range of animated nature from man down to the humblest thing that lives and breathes, the functions provided for in the organization of each one of the countless beings presented to our view, however numerous and however diversified, are so conceived as to be in perfect harmony with one another and at the same time subservient to the general purpose designed to be accomplished in its existence. In not a single instance has the most profound study of the constitution of these beings revealed any defect or suggested any improvement in either of these respects. On the contrary, whoever has engaged in such study has risen from it with enlarged ideas of the comprehensive regard to the conditions of existence by which each function has been determined, and with more exalted conceptions of the wisdom and skill with which they have all been combined in the life of the animal.

Still more striking and impressive are the evidences of intelligence and design displayed in the assemblage of instrumentalities provided for the maintenance of these functions. Upon the innumerable contrivances and adaptations included in this, we see expended all the combinations of a mechanism, of which we have but lately become masters, and all the resources of a chemistry the depths of whose lore we have hardly yet begun to fathom. So complete as a whole, so perfect in all its parts is the organization of even the lowest and most insignificant animal, that it is impossible to add to or to take from, to alter or in the slightest degree modify, without marring the proportions and beauty of the structure and diminishing its subserviency to the ends for which it was specially intended.

Another fact worthy of notice as showing the transcendent skill as well as exhaustless power of contrivance evinced in the constitution of animals is, that in the distribution of the functions, the same organ is frequently made to perform several distinct, and as it would at first seem, incompatible offices. In such cases, we find the organ so constituted, the parts entering into it of such a character and so combined, that it is enabled to perform each one of these offices as perfectly as if that alone were the sole purpose for which it was formed. A good illustration of this is presented in the human spine — the most admirable piece of simple mechanism to be found in the whole frame. This at the same time supports the head and upper portion of the trunk, lodges and protects the spinal marrow, forms the bond of union between the other parts of the skeleton, constitutes the axis upon which the body and limbs turn, and by its numerous processes furnishes attachment to most of the muscles employed in moving them. And for all of these offices it is so perfectly fitted by its skilful structure that he who looks

at it in connection with any one of them will perceive nothing superfluous and nothing wanting.

Or again, we frequently observe the converse of this. We observe several different organs ministering to the same function. When this is the case, we find these organs, in consequence of relations established between them through physical ties, performing their respective offices with a consentaneousness of action that gives as perfect unity to the function as if it depended upon a single organ. A large number of the more complex motions of the body and limbs are capable of being executed only by the due and harmonious contraction of many different muscles, each having the proper connections with the more solid portions of the frame, and yet, these motions are executed at once and by a single act of the will. Life itself is the result of the combined action of a great number of organs and these organs are made up of many parts and these parts, composed of innumerable atoms, and yet its unity is as perfect as if it were evolved from a single molecule.

Now these wonderful assemblages of adaptations included in the structure of organic beings, involving relations so numerous and so delicate, and repeated with greater or less variation in the different classes and orders of the animal kingdom, not by hundreds but by thousands and hundreds of thousands, necessarily suppose contrivance and design. We can no more conceive them to have originated without these, than we can conceive of an effect without a cause. Their production just as much implies the exercise of intelligence as it does the exercise of power. The former must have been as absolutely necessary to it as the latter. But there is no ground for supposing that intelligence is an attribute of matter. On the contrary every ontological consideration is opposed to such an idea. Being of a totally different nature from any of the known properties of material bodies, it cannot without violation of the plainest dictates of reason and common sense, be referred to the same essence or substratum. Intelligence necessarily implies mind or person. We cannot conceive of it without this. Besides the different forms of matter therefore, there must exist in the universe some being or beings by whom these forms have been arranged and combined and rendered subservient to the wise and beneficent ends to which they are constantly ministering.

Moreover, if we examine the different races of organic beings, we find that they are all constituted in accordance with the same general plan. This is equally apparent whether we consider the functions provided for in their several organizations or the instrumentalities employed in maintaining them. The peculiarities belonging to each are only superficial. They do not extend to the type upon which it is

formed. The same essential idea, the same radical conception, is recognized in all the different classes and orders of animals, however varied their forms and however diversified their organs. Nay more, besides being constituted on the same general principles, these different classes and orders of animals, extinct as well as living, are further related as integral parts of the same whole. They together make up, as naturalists believe, one grand scheme of life, characterized throughout by as perfect unity of plan and purpose as the structure of an individual animal. The same is true of inorganic matter. This does not present itself in detached and isolated masses, but the different portions of it are brought together and formed into worlds. These worlds are framed into systems. These systems are combined together in larger systems and these in still larger, until at length the universe itself arises before us, complete in all its parts, pervaded throughout by the same mysterious force and bathed in the same subtle fluid. From this character of unity so visibly inscribed upon the several portions of inorganic as well as organic nature, we are led to infer the existence of one great Being, possessing the attributes of wisdom and power in a degree far beyond what we are able to conceive or think ; who, if he have not created matter, has formed and moulded it and impressed upon it the marks of intelligence and design which it everywhere exhibits.

Such is the argument in which the science of natural theology has its foundation—a science which lies back of the other sciences, and in its most comprehensive sense includes them all. Like mechanical philosophy, chemistry and physiology, it takes for granted that the phenomena coming within its range are produced by some cause, and like them it seeks to discover the attributes of that cause, and the laws by which their manifestation is governed. There is no more of hypothesis in the one case than in the other. All our inferences concerning matter proceed upon this primary law of human belief. Without it indeed we could not extend our knowledge beyond the merely phenomenal. Caloric, light and electricity, oxygen, hydrogen, carbon, and the numerous other elements having part in the evolution of the terrestrial changes can no more be seen, are no more objects of sense, than the great Being who has arranged and combined these agents in such a manner as to render their ceaseless activity everywhere tributary to the accomplishment of his own wise and good purposes. They lie equally beyond the reach of our perceptive faculties, and for the assurance of their existence we must, in like manner, fall back upon this fundamental principle of the human intelligence.

We have thus endeavored briefly to point out the nature of the argument by which the existence and natural attributes of the divine Being



are established, and to show that it assumes nothing beyond what is necessarily involved in that process of reasoning by which we, in any case, pass from material phenomena to material existences; namely, that for every effect there must be a cause in character and efficiency adequate to its production. The argument itself is so simple and has, moreover, been so frequently and so fully set forth, that any attempt to impart to it additional force by new or more extended illustrations would prove but a vain endeavor. Indeed, we have long been of the opinion that in establishing the existence of an intelligent Author of nature from the manifestations of design in the natural world, little is gained by the multiplication of instances. He who should see no indication of contrivance, no proof of adaptation in the structure and appurtenances of the human eye, would fail to perceive the evidences of them in any part of the Creator's works. In this argument, moreover, the reasoning process is so short, the conclusion lies so near to the premises, that there is little room for enforcement — little need of illustration. Indeed, as most persons are constituted, we are inclined to believe that the simple phenomena of external nature presented to the understanding through the senses, affect the mind more deeply and awaken in it a stronger assurance of the Divine existence and perfections, than the most labored demonstration. It was apparently under the influence of impressions derived from this source that the Psalmist penned those memorable lines, "The heavens declare the glory of God, and the firmament showeth his handy-work. Day unto day uttereth speech, and night unto night showeth knowledge. There is no speech nor language where their voice is not heard." And again, in the same strain of exquisite beauty and unaffected piety, "O Lord! how manifold are thy works! in wisdom hast thou made them all: the earth is full of thy riches; so is this great and wide sea, wherein are things creeping innumerable, both small and great beasts. These wait all upon thee, that thou mayest give them their meat in due season. That thou givest them, they gather: thou openest thy hand, they are filled with good. Thou hidest thy face, they are troubled; thou takest away their breath, they die and return to their dust. Thou sendest forth thy spirit, they are created; and thou renewest the face of the earth." So also the sublime bard, who in 'his adventurous song' asserts 'eternal Providence' and 'justifies the ways of God to man':

"These are thy glorious works, Parent of good!  
Almighty! thine this universal frame,  
Thus wondrous fair: Thyself how wondrous then!  
Unspeakable, who sittest above these heavens,  
To us invisible, or dimly seen

In these thy lowest works ; yet these declare  
Thy goodness beyond thought, and power divine."

But while most men are so constituted as to be immediately impressed with the conviction of an Author of nature from the simple observation of her phenomena, there are some — and those, too, possessing minds by no means deficient in either the philosophical or the logical element — with whom the most cogent arguments, drawn from the evidences of contrivance and design so visible not only in the structure of our own frames, but in the arrangement and order of every part of the outward world, fail to produce such conviction. These regard the existence of an all-wise and omnipotent Creator as only one of two hypotheses, either of which will sufficiently account for the sublime manifestations of intelligence and power which everywhere reveal themselves to the senses. Not that they suppose the universe may be the work of chance — the mere accidental result of a fortuitous concourse of atoms — or that any cause or causes, acting blindly, without end or aim, can have produced it. The class of persons to whom we refer are by far too keen-sighted to admit for a moment propositions involving so monstrous an absurdity. They believe the great problem of material and spiritual existences may be as satisfactorily solved by supposing these existences themselves to be eternal, as by supposing an eternal Being endowed with attributes enabling him to create them. All the varied appearances in nature being immediately referable to such existences and solely dependent upon them, Why, they ask, should we look for anything further? Why should we attempt to trace these existences back to a cause, in which they have originated, when that cause must remain equally unaccounted for? Having created one hypothesis — the hypothesis of matter and spirit — for explaining the phenomena which we observe around us, and of which we are conscious within us; why should we form another and further hypothesis for explaining that? Or if we adopt such a mode of philosophizing, why should we stop here? Why not, as in the Egyptian and Hindoo systems of cosmogony, trace the existing order of things back through a long line of causes successively producing one another? Nay, why not suppose an infinite series of such causes? In the structure of the different animal tribes we see much, it is true, that would seem to imply contrivance and design. Each one is made up of a greater or less number of parts precisely fitted, in all respects, for the performance of certain definite functions, which functions are in strict relation to the physical conditions under which it lives. Whether we examine the internal organs upon which the vital processes are more immediately dependent, or the limbs and senses which put the animal in communication with the sur-

rounding world, we find all perfect beyond the possibility of improvement. But then we also behold such beings, in countless myriads, daily and hourly coming into existence under the influence of laws which are themselves unconscious, and through the instrumentality of agents which are destitute of intelligence. Why may they not always have come into existence under the influence of the same laws, and through the instrumentality of the same agents? Why ascribe to any of them a different mode of origin — a mode of origin wholly unlike anything which we ourselves have witnessed — anything that has come within the experience of mankind? Why not suppose an endless series of generations of each of these different races of animals, dependent for their production upon the same agencies which at present minister to it? In a word, why not regard the vast system of things with which we find ourselves connected, and of which we form an integral part, as without beginning and without end, as itself eternal, forever evolving, in sublime unconsciousness, the same mighty assemblage of phenomena, organic and inorganic, spiritual and material, which we at present witness? Is such an idea more difficult of conception, or does it involve more that is incomprehensible, than the doctrines of theism?

With considerations of this character there mingle in the minds of these persons, other reflections tending towards the same result. If the universe be in reality the work of an infinitely wise and all-powerful Being, and if that Being continually preside over it, why, they ask, does He not reveal Himself by signs which cannot be mistaken, to us his intelligent creatures? Why does he remain forever concealed behind the thick drapery of physical agents and physical laws, everywhere shut out from our view by the deep folds of his own material creations? Having formed us in his own image, and made us capable of understanding him and his works, why should he thus hold himself from us? Why should no oracle speak, no voice be heard from out the thick darkness, in answer to our most passionate yearnings for a knowledge of his being and for communion with him? Why should not the dense curtain of material forms, by which he is so profoundly hidden from us, be occasionally at least drawn aside, and our eyes permitted to behold him as a present and sensible reality? Why have even the most pious of the sons of men, from the time of the patriarch Job down to the present hour, been forced to exclaim in their earnest search after him: "Behold! I go forward, but he is not there; and backward, but I cannot perceive him; on the left hand, where he doth work, but I cannot behold him: he hideth himself on the right hand, that I cannot see him."

As there is reason to believe that considerations like these not unfre-

quently obtrude themselves upon inquiring and thoughtful minds in which the moral sentiments however, are too largely developed to admit of their exerting any permanent and controlling influence, and as they lie at the foundation of the only rational form of atheism which it is possible to conceive — the only form indeed, which has the slightest claim to be regarded as in any degree rational — we have deemed it proper to state them somewhat at length, and shall devote the remaining part of our Article to their examination. The other forms of this spiritual malady, from whatever source they may arise, whether from a mind so imbruted by sensuality that it is no longer able to follow any process of reasoning, or even admit the idea of a great First Cause of all things, or from an insane determination to believe in nothing but what is made known through the senses, or from vague notions of the originating power of chance, are not of a nature to be reached by logic. The only remedy for these must be sought in the quickening and transforming influence of moral causes.

This theory, which proposes to explain all the phenomena of the universe without having recourse to the idea of an intelligent Author, involves, it will be perceived, the following suppositions: 1. that matter is eternal; 2. that the earth has always existed with the same form, the same complex arrangement of parts, and the same exhaustless provisions for the production and support of organic life, which at present characterize it; and 3. that it has always been tenanted by the same animal and vegetable tribes which now occupy it. In addition to this, we must further suppose the eternal existence of certain spiritual elements associated with the material and giving rise, in connection with them, to the manifestations of sensibility, intelligence, and will, accompanying the higher organic developments.

The first of these suppositions, the eternal existence of matter, is, we think, distinctly conceivable. It is not self-contradictory; nor does it involve any inherent absurdity. On the contrary, it is quite as readily admitted by the mind as the eternal existence of a being capable of creating matter. There are therefore no objections to it on the ground of its being impossible, or in any respect at variance with the dictates of our rational nature. Neither are there any facts, coming within the sphere of human observation, at all inconsistent with the supposition. Matter, so far as we are able to trace back its history, has always been precisely what it now is. The bodies composed of it are indeed constantly changing. They do not continue, in all respects, the same through any two successive moments. This is true not only of the organic forms and combinations of matter, but also of the inorganic. Even the solid crust of the globe itself is not exempt from this

great law of all terrestrial existences. "The mountain falling cometh to nought. The rock is removed out of his place. The waters wear the stones."

But while the bodies around us are thus constantly undergoing changes, the elements which enter into their composition change not. *They* are always and everywhere the same. Circumstances have no power over them; time does not waste them; action does not exhaust them. After having passed through ten thousand combinations and decompositions — "in each new form varying to their Maker still new praise" — they reappear with their properties unaltered, their activity undiminished, and their force unabated, ready to enter into yet new unions, and to run through yet new cycles of changes. There is nothing in any of their manifestations — in anything which we know of them, to indicate that they ever *were* or ever *will be* at all different from what we now see them; nothing which points back to a time when they began to exist, or which looks forward to one when their existence will terminate. On the contrary, they present the most perfect type of the exhaustless, the unchanging, the eternal, which it is possible for the mind to contemplate. Aside from the teachings of inspiration, therefore, we do not see that any substantial objections can be urged against the first supposition included in the theory which we are now considering.

The second hypothesis is also, we think, distinctly conceivable. We find no difficulty in supposing the constitution of our planet — including in this the entire system of causes having part in the maintenance of its interior and exterior mechanisms, and through these of the endlessly diversified conditions of animal and vegetable existence presented at its surface — to have always been what it now is; no difficulty in supposing the cycles of the terrestrial phenomena, such as we at present behold them, to be again and again repeated through all coming time; no difficulty in supposing these same cycles to have been again and again repeated through all past time; in a word, no difficulty in supposing our globe, like the elements composing it, to be eternal. There are no impossibilities, we say, no inconsistencies, no inherent absurdities, so far as we are able to perceive, involved in such a supposition.

But if the question be put as one of fact, whether the earth *actually has* always existed with the same form, the same complex arrangement of parts, and the same exhaustless provisions for the production and support of organic life, by which it is at present characterized, a very different answer must be given to it; for the discoveries of modern geology show, beyond all question, that such is *not* the case. Already, by the aid of this noble science, we are able to trace the history of our planet back to a time when its physical condition was very unlike

what it is at present; when its oceans and continents were different; when its plains, mountains and valleys were different; when the climates of its several zones were different and their productions different; when the accommodations and provisions afforded by it to the various forms of animal and vegetable life were different. The supposition, therefore, however plausible in itself, is wholly inconsistent with the facts brought to light by investigations into the former states of our globe, and cannot on this account be admitted.

The third hypothesis included in the foregoing theory, namely, that the earth has always been tenanted by the same animal and vegetable tribes which now occupy it, involves that, which if it be not absolutely impossible, is at least exceedingly difficult for beings like us to conceive. It supposes in the case of every plant and animal an endless series of generations, each springing from that which immediately preceded it, without any first term in which the series had its origin. That such a supposition is very different from that of the eternal existence of the same individual, and that it is admitted with far greater difficulty, we think every one must allow. Whether indeed it be at all admissible, we leave for those to decide who are more versed in subtleties of this nature. We simply say that for ourselves we feel by no means certain that such a series is possible.

But whatever answer may be given to this merely metaphysical question, that the different races of organic beings at present occupying the earth, *have not* always existed upon it, is capable of being demonstrated beyond all doubt. The comparatively recent origin of our own species may be gathered not only from all the earliest histories and traditions which have come down to us, but also from its present attainments in knowledge and power, in the mechanical arts, and the sciences which minister to them, and in all the means and conditions of a higher and better life, viewed in connection with the progress that has been made in these during the last few centuries. It is moreover incredible that man should have always lived upon the earth, and left no proofs of his existence at epochs more remote than that to which we are able to trace back his history.

For the most conclusive evidence on this point, however, we must look to the more extended records of organic life upon our globe, inscribed by the hand of nature herself on the rocky tables of its crust. From these we learn that not only man, but also by far the greater part of the animal tribes contemporary with him, were first introduced to the earth long after it had assumed the spherical form and entered upon its annual and diurnal motions; long after the development at its surface of the physical conditions necessary to constitute it a fit reali-

dence for living, sentient beings, long after it had actually become the abode of such beings. The animals which were first placed upon our globe, belonged for the most part to families but remotely akin to those at present inhabiting it. These primitive tribes adapted in their constitution to the state of the elements which at that time prevailed, were gradually succeeded by other and different races, holding the same constant relation in their organization to the circumstances under which they lived. In progress of time these new races in turn gave place to others, and these again to still-others, until at length in the long line of geological succession its present inhabitants made their appearance, one after another, upon our planet. Each one of all these different races, therefore, the extinct as well as the living, may be traced back to the time when it was first introduced; when the Almighty Creator visibly appearing in our world, and embracing in one comprehensive survey the entire assemblage of physical conditions, constituted that race, and sped it on the career of life and action for which it was intended. Hence, whatever may be thought of the abstract possibility of an eternal series of generations of the same animal, such a supposition in the case before us is contradicted by the most overwhelming accumulation of facts. Instead of the earth having always been peopled by the same tribes, these show that the time was, when not a single one of the species or even genera existed which now occupy it. All of them have had an origin — have been called into existence, formed, and organized by an omniscient and all-powerful Creator. In the constitution of each, we see what has been especially demanded, we see the curtain of material forms withdrawn, the drapery of physical agents and physical laws cast aside, and the Divine Being appearing as it were in person, and with his own hands forming out of the dust of the earth one of the innumerable beings conceived by him from the beginning, but for whose destined existence the requisite conditions had not till now arisen. And this we see not once or twice but again and again, as often as in the almost endless succession of types each new species makes its appearance upon our planet.

But may not the hypothesis under examination be generalized so as to include these facts, and at the same time meet the other demands which are made upon it? May we not suppose these different races of animals to have sprung each from that which preceded it, the first and lowest term in the series having its origin in a mere accidental concurrence of molecules? Most of the larger and more highly endowed species, it is well known, are capable of undergoing important changes in form, size and character, from the long continued influence of circumstances. This fact is especially striking in the case of those

animals which have been taken into alliance by man. The several varieties of the dog, although distinguished by peculiarities so strongly marked that they might at first be supposed to belong to different species, are nevertheless believed to have sprung from a common progenitor. The same is true of the horse, ox, sheep and hog. All of these accompanying their master and companion in his wanderings, from the diversity of climate and condition under which they have existed, have come like him to exhibit a wide variety of character. Now if so great differences in form, size and color, in physical qualities and mental endowments have resulted from the influence of circumstances, why may we not suppose the wider differences which separate species from one another to have had their origin in the longer continued influence of these same circumstances? Why may we not suppose the lower orders of the animal kingdom in this way to have gradually passed up into the higher, as the states of the earth favoring the transition have one after another developed themselves?

As such an idea has lately been put forth by the author of the "Vestiges of Creation" with much array of learning, and supported by many apparent analogies, it may be worth while to pause a moment for its examination. In this work, it should be remarked however, the doctrine is not presented in its relation to the question of an author of the universe, but simply as a general theory designed to connect and explain the otherwise isolated facts of the organic creation. Although having a manifest bearing upon that question, and, if admitted, in reality undermining the whole argument for the Divine existence, it is only in the latter connection that the writer considers it.

The inadequacy of the causes proposed by this theory to account for the production of the different tribes of organic beings, might be inferred from the fact, that in no instance have these causes been known to originate a single new animal. However numerous the varieties which have been produced in this way, or however greatly they may differ from one another, they all come within the not easily described indeed, but nevertheless, well defined limits which mark the boundaries of species. This is apparent from an examination and comparison of their anatomical structures. It is further shown by the fact that these varieties, even those which are separated most widely, mingle as freely and give rise to an offspring as permanent as individuals of the same variety; while such unions between different species take place with extreme rareness, and even then never result in a lasting progeny. The comparatively slight and superficial character of the modifications occasioned by the mere influence of circumstances, is also seen from the readiness with which they disappear when the causes producing



them have ceased to operate. The horses and oxen which escaped from the first colonists of South America, and spread themselves over the pampas of that continent, lost all their distinctive peculiarities, exhibiting after a few years, that uniformity of color, size and proportions by which animals of the same species in their undomesticated state are always characterized. The former of these are at the present time in no way to be distinguished from their brethren of the original stock which still wander over the steppes of Tartary.

But yet stronger objections to this theory present themselves, if we turn our attention to the remains of the various extinct races, which preceded in the order of creation the existing families. Had the lower types of organic existence been gradually changed into the higher, through the continued influence of modifying circumstances, we should expect to meet with the evidences of it in these remains. Commencing with the oldest fossil-bearing rocks, and ascending through the strata which lie above them, we should expect to observe the successive forms passing into one another by insensible gradations. There should be no break, none of those strong lines of demarcation, which bound on all sides the existing orders, families and genera, but from the most ancient to the most recent species there should be one continued series of intermediate forms, separated from one another by differences scarcely perceptible. Such, however, is not the case. On the contrary, the very reverse of all this is true. In the oldest divisions of the fossiliferous strata we indeed find the remains of only the humblest animals. But these tribes so long as they last, undergo no change. What they are at the time of their first appearance, they continue to be until that of their replacement by other and in general more highly endowed races. These in like manner preserve their identity in all respects during the period of their allotted existence, when they in turn give place to still others; and so on through the entire series. Instead of one genus gradually passing into another, or one species into another, the lines of separation between both genera and species are as broadly drawn and as absolutely unchanging as those observed between the corresponding groups of living animals. The new races, therefore, successively making their appearance among the inhabitants of our globe, were not gradually developed through the continued action of new physical conditions upon the races which preceded them, but at once created with organizations and instincts suited to these new conditions. The theory referring their origin to the former source, is not only without support from the changes which are observed to take place in existing species of animals, but directly at variance with all that is known of the extinct races. This generalized form of the hypothesis designed to ex-

plain the phenomena of the universe, without having recourse to the idea of an intelligent author, cannot therefore be admitted. Like the supposition first considered, it is contradicted by every page of the entire history of organic life upon our planet, as we find it written in no doubtful characters on the rocky strata of the earth's crust.

But may we not conceive a still more generalized form of the atheistic hypothesis which shall comprehend and harmonize all the phenomena to be explained, the past as well as the present, the facts relating to the extinct as well as those pertaining to the existing orders of creation? May we not suppose the spiritual and the material throughout the universe to be so blended together and to have such relations to each other that their successive developments are constantly in harmony; that portions of each, either spontaneously or through the influence of external causes forming a part of the general system, enter into new combinations, and give rise to new forms of organic life as fast as provision is made for them by the unfolding of new physical conditions upon the surface of our globe? Back of those laws of matter and of spirit which we see governing their ordinary manifestations, may there not be a higher law by virtue of which the production, at the proper time and place, of new genera and new species of plants and animals is as naturally determined, as subsequently that of their successive generations? That we have never witnessed its actual operation is no argument against the supposition, as the circumstance may be sufficiently accounted for by the very brief period over which our observations have extended. Numerous instances might be adduced of an analogous character, of laws manifesting themselves at certain epochs, or on the arising of certain conditions, while during the intervals between these there is nothing to indicate their existence.

This theory of the constitution of the world and of the consequent origin and development of organic life, is set forth with great clearness in a volume published a few years since by Charles Babbage, Esq., under the title of the "Ninth Bridgewater Treatise." The work, which is fragmentary in its character, is evidently the production of a mind to which the highest generalizations of science are as familiar as household words. It presents throughout, the most sublime conceptions of the material and spiritual phenomena of the universe, clothed in language of unsurpassed clearness and beauty. The design of that part of the work to which we especially refer is not atheistic. On the contrary, it aims to awaken in the mind more exalted ideas of the wisdom and power of the Almighty, by placing before it the universe as one complete whole, including from the beginning all the provisions necessary for enabling it to accomplish the various objects of its creation without any subse-

quent interposition of the Divine agency. This view of its constitution he illustrates by the operation of his own wonderful calculating engine. "Let the reader imagine that he sits down before this engine and observes a wheel, which moves through a small angle round its axis, at short intervals, presenting to his eye successively, a series of numbers engraved on its divided circumference. Let the figures thus seen be the series of natural numbers, 1, 2, 3, 4, etc., each of which exceeds its immediate antecedent by unity. Now, reader, let me ask how long you will have counted before you are firmly convinced that the engine, supposing its adjustments to remain unaltered, will continue whilst its motion is maintained, to produce the same series of natural numbers? Some minds perhaps, are so constituted, that after passing the first hundred terms, they will be satisfied that they are acquainted with the law. After seeing five hundred terms, few will doubt; and after the fifty-thousandth term, the propensity to believe that the succeeding term will be fifty thousand and one, will be almost irresistible. That term *will* be fifty thousand and one; the same regular succession will continue; the five millionth and the fifty millionth term will still appear in their expected order; and one unbroken chain of natural numbers will pass before your eyes, from *one* up to *one hundred million*.

True to the vast induction which has thus been made, the next succeeding term will be one hundred million and one; but after that the next number presented by the rim of the wheel, instead of being one hundred million and two, is one hundred million *ten thousand* and two." "The law which *seemed* at first to govern this series fails at the hundred million and second term. That term is larger than we expected by 10,000. The next term is larger than was anticipated by 30,000, and the excess of each term above what we had expected forms the series of triangular numbers, 1, 3, 6, 10, etc. each multiplied by 10,000.

If we still continue to observe the numbers presented by the wheel, we shall find that for a hundred or even for a thousand terms, they continue to follow the new law relating to the triangular numbers; but after watching them for 2761 terms, we find that *this* law fails in the case of the 2762nd term.

If we continue to observe, we shall discover another law then coming into action, which also is dependent, but in a different manner, on triangular numbers. This will continue through about 1430 terms, when a new law is again introduced, which extends over about 950 terms; and this too, like all its predecessors, fails and gives place to other laws, which appear at different intervals.

Now, it must be remarked, that each number presented by the engine is greater by unity than the preceding number, which law the observer

has deduced from *an induction of a hundred million instances*, was not the true law that regulated its action; and that the occurrence of the number 100,010,002, at the 100,000,002nd term, was *as necessary a consequence* of the original adjustment, and might have been as fully foreknown at the commencement, as was the regular succession of any one of the intermediate numbers to its immediate antecedent. The same remark applies to the next *apparent* deviation from the new law, which was founded on an induction of 2761 terms, and to all the succeeding laws; with this limitation only — that whilst their consecutive introduction at various definite intervals is a necessary consequence of the mechanical structure of the engine, our knowledge of analysis does not yet enable us to predict the periods at which the more distant laws will be introduced.”

“The engine we have been considering is but a very small portion (about fifteen figures) of a much larger one which was preparing, and is partly executed; it was intended, when completed, that it should have presented at once to the eye about one hundred and thirty figures. In that more extended form which recent simplifications have enabled me to give to machinery constructed for the purpose of making calculations, it will be possible, by certain adjustments, to set the engine so that it shall produce the series of natural numbers in regular order, from unity up to a number expressed by more than a thousand places of figures. At the end of that term, another and a different law shall regulate the succeeding terms; this law shall continue in operation perhaps for a number of terms, expressed perhaps by unity, followed by a thousand zeros, or  $10^{1000}$ ; at which period a third law shall be introduced, and, like its predecessors, govern the figures produced by the engine during a third of those enormous periods. This change of laws might continue without limit; each individual law being destined to govern for millions of ages the calculations of the engine, and then give way to its successor, to pursue a like career.”

The application of this is obvious. As the calculating engine is constructed in such a way as to cause these different series of numbers to be presented one after another, without the alteration or readjustment even of any of its parts; in like manner, that larger and more complex machine which men call the earth, is so contrived that the different organic races make their appearance upon it, in due order and time, without the interposition of any higher agency in the formation of new species.

But if we are at liberty to make a supposition of this kind with reference to the world considered as the work of an all-powerful Creator, why may we not further suppose it to have always existed with the

same constitutional endowments, and thus avoid all necessity of having recourse to the idea of an intelligent author? It is this highest and most generalized form of materialism — this last defence behind which a philosophical atheism can entrench itself — that we have to consider. In examining it, we shall confine our attention to the new element involved; to this great law of succession among races by which all the phenomena of life upon our globe are supposed to be satisfactorily explained.

That the actual operation of such a law has never been observed is not of itself, as we have already said, a sufficient reason for denying its existence. Indeed, unless there be other objections to it, this cannot be urged with any considerable force. But are there not other objections? Does not the law involve that which is impossible or contrary to reason or at variance with universally admitted facts or in conflict with great and wide-spreading analogies? These are questions that must be considered before we can decide upon the admissibility of the supposition.

In the first place, then, we remark that the above law supposes the *actual production* of organized beings adapted to the circumstances under which they come into existence. Now we behold nothing in nature analogous to this. Her powers are only reproductive. She is continually repeating her own forms. She originates nothing. This is substantially true even of inorganic nature, but it is more especially so of organic. Here we behold reproduction constantly going forward in every variety of mode and under ever changing circumstances; but we see no production. The organic types already in existence are repeated over and over again through hundreds and thousands of generations, but no new types come into being. The supposition, therefore, that the different living and extinct races of animals and vegetables, have had their origin in the simple powers of nature, is contrary to all that we know of those powers and consequently in the highest degree improbable.

Neither is the case of the calculating engine designed to illustrate the supposed law, in all respects parallel. In that, each of the successive terms of the different series of numbers, is presented independently of those which precede it, by the direct working of the engine. The several terms are related to one another only through their common relation to the mechanism by which they are evolved. The successive generations of the different species of plants and animals on the contrary, have no immediate dependence upon the structure of the earth or any of the physical arrangements connected with it. These latter furnish the conditions necessary to their continued existence, but have no direct

agency in their production. This is provided for in the constitution of the plants and animals themselves. Each generation derives its being from that immediately preceding it, without which it could not have birth. The phenomena of the calculating engine find their true parallel in the successive phases presented by our globe during the progress of its physical development, all of which were provided for in the composition of the original mass. Beyond this, all resemblance fails. No light is thrown by this wonderful achievement of ingenuity and skill upon the probable origin of the different organic races.

Having premised these general observations we proceed to a more particular examination of this last and most subtle form of atheism. By a law growing out of the essential constitution of things, each of the several tribes of plants and animals, it is said, come into being whenever there is developed at any point of the earth's surface, the assemblage of physical conditions necessary to its existence. What, we would ask, are the instrumentalities by which this law is carried into effect? It cannot execute itself; and all external influence is from the nature of the case excluded. How then shall we suppose the different plants and animals to have originated? In what manner shall we imagine the first oak, pine or elm, the first horse, ox, elephant or man to have been organized? Did the necessary elements, come together of their own accord, at the proper time and place, and spontaneously assume these several organic forms? Do oxygen, hydrogen, carbon and nitrogen possess powers enabling them to do this? Is there aught in their manifestations that affords evidence of it, or would in any manner indicate it? Is not such an idea, on the contrary, at variance with all that we know of the properties of these bodies? Is it not especially inconsistent — wholly irreconcilable with that '*vis inertiae*, that character of passivity which is a universal attribute of matter? Or if we suppose the elements at certain epochs or on the arising of certain conditions to take on these powers — a supposition which no sane mind can for a moment entertain — why should they not, at such times or on such occasions, all enter into organic combinations and assume organic forms? Why should not the whole exterior of our globe under the influence of this new impulse, be suddenly transmuted into trees, horses, elephants and men? No one we think, will be disposed to contend for the production of the first individuals of the different species of animals and vegetables by the spontaneous coming together of their constituent molecules. Such a doctrine would be but one remove in absurdity from that of the fortuitous concurrence of atoms to which we adverted in the earlier part of our essay.

To what other mode of development shall we then look? Shall

we suppose that each new species is an advance upon that which immediately preceded it, in the same way as the chrysalis is an advance upon the caterpillar, and the butterfly upon the chrysalis; that the different plants and animals, extinct as well as living, have been successively evolved from one another by virtue of an organic law embodied in the constitution of the first individuals of each? That in consequence of this law, after a certain number of generations — a hundred or thousand or million it may be — the pine turns into the oak, the fish into the frog, the horse into the elephant, the monkey into the man? Shall we explain in this manner the origin of the innumerable organic beings which everywhere surround us, or whose fossil remains are so thickly scattered through the outer portions of our globe?

But even allowing this to be a satisfactory account of the multiplication of orders, genera and species, how shall we suppose the primitive forms to which they are thus traced back, to have originated? In what manner did those first and simple structures which furnished the starting point to this mighty series of developments come into existence? Between the humblest animal or even plant, and the most complex inorganic body, there is a chasm, not so wide or deep perhaps, but as absolutely impassable as that which separates man himself from the brute matter around him; and as well might we suppose the latter with all his wonderful corporeal and spiritual endowments, to have been formed through the mere operation of natural laws, as attribute the former to a like origin. From what source then did these first organic beings, these original progenitors of all the different families and tribes of such beings, derive their existence?

But passing over this difficulty, we say that the explanation which is given of the subsequent multiplication of genera and species is by no means satisfactory. Nay, it would be hardly possible to conceive of one less so. It is in itself wild and extravagant to the very borders of absurdity. It is moreover in direct violation of the great law of reproduction — the law by which throughout the organic world like everywhere produces like — from which not a single departure has been known from the epoch of the earliest observation down to the present time. Nor is the explanation supported by any real analogies. The illustration drawn from the calculating engine, as we have already seen, fails to meet the case. Neither are the metamorphoses which many insects undergo in arriving at their perfect state, at all more in point. Within the envelopes of the caterpillar may already be detected the germs of both the chrysalis and the butterfly. And even in those more remarkable families, such as the aphides and the cercaria where the cycle of existence is completed only in many successive

generations, several of these generations may be seen inclosed within the same general covering. When animals of different species, instead of individuals of the same species, in different stages of their development, shall be found thus wrapped up within one another ; when the embryo of the frog shall be discovered in the fish, of the elephant in the horse, and of the man in the monkey ; then, and not till then, can the transformations of insects be adduced in support of the remarkable theory which we are now considering.

Nor is this all. Besides the extravagant character of the supposition, besides its incompatibility with one of the best established laws of nature and its entire want of support from any known facts or even analogies, we say it is, further, not in harmony with discoveries made concerning the extinct races which have peopled our globe. The transformation of the caterpillar into the chrysalis is attended by the disappearance of the caterpillar, and the transformation of the chrysalis into the butterfly is attended by the disappearance of the chrysalis. In the same way, when in accordance with this theory one species, after a certain number of generations, is converted into another, the former of these species should no longer be seen ; or in other words, the introduction of every new plant or animal should be accompanied by the disappearance of one of those which had previously existed. Now such is by no means the case. As we ascend from the deeper to the more superficial layers of the earth's crust, new species on the one hand make their appearance while the old still remain ; and old species, on the other, cease to occur, without their place being supplied by new ones. There is no such correspondence between the two classes of phenomena as to afford ground for the belief, or leave room for the supposition even, that they are in any manner dependent upon one another. That the same changes in the physical condition of our planet which caused the destruction of the extinct races, prepared the way for their living successors, is undoubtedly true ; but beyond this, there are no indications of any connection whatever between them. The theory of the transmutation of species cannot therefore be maintained. It is directly at variance with the universal experience of mankind ; and even were it ever so perfectly in accordance with that experience, it fails to account for the facts which it is specially designed to explain.

In what other way, then, may we suppose the different organic races to have originated, without having recourse to the idea of an intelligent and designing Creator ? One other, and so far as we can see only one other, can be conceived. It is the existence somewhere in connection with our planet, in air, earth, or water, of a special organism fitted for elaborating the different forms of animal and vegetable life, and send-



ing them forth as fast as the earth becomes prepared for their reception. But where is this wonderful organism, this literal womb of nature? Who has ever seen it? If it really exist, why has it not been discovered? Why has the geologist, in all his varied explorations, never fallen upon it? Or if it be situated in the interior of the earth, or in mid air, or mid ocean, how, at each successive birth of nature, do her progeny find their way to the several places which they are destined to occupy? For here, be it remembered, we cannot evoke miracles; all such aid is necessarily excluded by the very supposition upon which we are proceeding. How then, we ask, are the beings formed in this unknown recess of the earth, conveyed to their respective stations upon its surface? The whole idea is grotesque and absurd in the extreme. It is altogether too preposterous for serious consideration. No man in his sober senses can, for a moment, entertain it.

And thus it is with all the different modes of explaining the origin and development of life in our world, independently of an intelligent Author. It is only in the shape of vague generalities that such explanations seem plausible. The moment they are made to assume any definite and precise form, their verisimilitude vanishes. We then detect in each, as it passes before us, some element of absurdity which causes the mind to reject it. There is but one adequate hypothesis — one which will, at the same time explain and harmonize all the facts of the universe, and satisfy the requirements of our intellectual and moral natures — that of an eternal, self-existent, all-wise and omnipotent Creator. To this, everything around and everything within us points; in this, the great problem of material and spiritual existences, with all their diversities of form and endowment, finds a simple and satisfactory solution. God has made the world, and his attributes are written upon every portion of it. Wherever we turn our eyes, we behold the evidences of his wisdom and his power — the proofs of his handiwork. The little and the great, the minute and the comprehensive; the tiny insect, sporting in the sunbeam, and the mighty orb of day, enthroned in the centre of our system, and dispensing light and heat to its uttermost borders, alike tell of him. The physical arrangements of our planet, its oceans and its continents, its mountains and its valleys, its rain and its sunshine, the alternation of day and night, the vicissitude of the seasons, all of these, together with the ever-varied and yet ever-adapted forms of life, to whose support they continually minister, speak the same language. These complex frames of ours, so elaborately and so curiously wrought; each organ, limb, and member, with all the wonderful provisions of structure and properties by which they are fitted for their several offices, utter the same voice: a voice

which is not only echoed and reëchoed by all external nature, but finds a still deeper response in every faculty and power of the soul — nay, in that consciousness of derived being which lies behind these powers and faculties — that voice is God.

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## ARTICLE VI.

### TRANSLATION AND EXPOSITION OF THE SECOND PSALM.

By Prof. C. E. Stowe, D. D., Cincinnati.

#### I. MESSIANIC APPLICATION OF THE PSALM.

1) *Testimony of the New Testament.* Acts 4: 24—27. The whole company of the apostles ascribe this psalm to David, quote the first two verses, and affirm that they are a prophecy of the Messiah. Acts 13: 38. The apostle Paul, in a discourse at Antioch quotes the 7th verse as a proof of the resurrection of Christ. Heb. 1: 5. The author of the epistle to the Hebrews quotes the 7th verse to prove that Christ had a nature superior to the angels; and again, Heb. 5: 5, the same author cites this verse to prove that the Messiah was appointed to his work by God.

The idea of *accommodation*, in this application of these passages, is out of the question, for the sacred writers do not adduce them as mere illustrations, but as direct proofs; and if the psalm were not originally intended to predict the Messiah, the passages quoted are nothing to their purpose. This is sufficient to prove the Messianic character of the psalm, with those who acknowledge the divine authority of the New Testament. Just before our Lord's ascension to heaven, he pointed out to his disciples those passages of the Old Testament, and particularly of the Psalms, which referred directly to himself (Luke 24: 27, 28, 44, 46); and immediately after his ascension we find them applying this psalm to him, undoubtedly on his own authority.

2) *Jewish testimony.* The older Hebrews always regarded this psalm as a prophecy of the Messiah, and never thought of giving it any other application, till they were brought into difficulty by the use which Christians made of it to prove the messiahship of Jesus of Nazareth. This is frankly acknowledged by one of the most eminent of their commentators, Rabbi Solomon Jarchi, in the following remarkable passage: "Our rabbis have always interpreted this psalm of the king