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ARTICLE II.

THE BEARING OF RECENT SCIENTIFIC THOUGHT UPON
THEOLOGY.

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ALL truth is consistent with itself, and therefore all real progress in the knowledge of truth in any department must be a gain to every other department. All men honestly engaged in its pursuit should rejoice in the progress of those similarly engaged, especially in departments of truth which they cannot themselves occupy. History, however, shows that this state of things does not practically exist, and that misunderstandings and controversies are perpetually arising. Misunderstanding is peculiarly liable to arise between those whose pursuits are so different that they can but imperfectly appreciate the processes and results of each other's work; and the consequent controversy is apt to be proportioned in sharpness to the very earnestness of the parties in the pursuit of the common goal of truth. Such has been the case with considerable portions of the current literature of theology and of science. Criticisms upon science, put forth by some theologians, have been met by several eminent scientists with attacks upon theology. Able men have written and spoken not a little upon both sides, and true and important things have been said by the disputants on either part, so that the ultimate result of the controversy cannot be otherwise than useful. But in the excitement and confusion of the conflict there has naturally been less consideration of what points of truth are thus receiving a firmer establishment, and of what is the real bearing of recent scientific thought and utterance upon the most fundamental positions of theology. The question has been too little asked, What

will be the net result of a comparison of the data now accepted by all? or rather, What would it be if the conclusions now generally concurred in by scientists were equally received by theologians? It is the aim of the present Article to direct attention to this question, in the conviction that the answer will be found favorable to theology in a degree hardly anticipated by those who have not watched the course of the discussion. The theologian may wish a hearty God-speed not only to the actual researches, but even to those well-considered speculations of the scientist which often prove prophetic of the course which science will take. He may do this not only because abstractly he desires, or ought to desire, the advance of truth in every direction, but also because every such advance must assist him in maintaining and elucidating that fundamental truth of all which it belongs to his province to uphold and defend.

The word "science" will here be taken generally of physical science, but not with such exactness as to exclude either the reasonings of those philosophers who take their starting-point from the conclusions of physical science, nor those more metaphysical speculations to which intelligent scientists themselves are prone when actual observation fails them, and the thread they have been pursuing in the known becomes lost in the impenetrable darkness of the unknown.

In every branch of science this point is reached sooner or later; it is an essential of progress that some assumptions should be made in regard to the things beyond. The assumption is legitimate, if it be held only as an assumption, that the general direction of the thread in the darkness will be the same that it has all along proved to be in the light. It is conceivable, indeed, that the direction of the thread may be changed just where we lose sight of it, or at any more distant point; but a pretty strong conviction will always exist in the human mind that the direction long followed without deviation is likely to continue unchanged, especially if there are several threads, and they all point in the same way. This general conviction is greatly strengthened

by the experience of many instances in which it has been verified by the progress of observation. Certainly no man will give up such a conviction in consequence of the admonition that analogies and tendencies are very different from facts. He is aware of this ; but in the impossibility of obtaining facts will still be likely to base his opinions and form his hypotheses of the unknown by the probabilities suggested by the known. In this he is to be commended, rather than blamed, provided he distinguishes these opinions and hypotheses from facts, and holds them only with the looseness of grasp appropriate to their character. The tendency of human nature, affecting the theologian and the scientist alike, is to go beyond this, and to verify Dean Swift's definition of orthodoxy as one's own, and heterodoxy as another man's, doxy. This inevitably leads to conflict, and this conflict is increased by the fact that science in its progress necessarily comes to embrace ground which had been previously occupied by theology ; for before modern natural science arose there was much ground which had no proper owner, and which theology, therefore, as the *scientia scientiarum*, was compelled to occupy. Besides this, too, there is a vast realm of truth which has its scientific, as well as its theological, aspects. In this debatable region, common to both, scholars in either are often ready to speak quite oracularly. On the one hand, a certain class of scientists seem especially to enjoy disporting themselves in this region ; and on the other, theologians are apt to resent this as a trespass on their peculiar premises. At the same time, there is often a want of appreciation, on either side, of the position really held by the other, and sometimes a most unfair insisting by the one that certain views which they entirely disclaim, if not actually held, at least ought to be, by the other. Hence, on the one side, men whose faith in God's word has been narrowed by their ignorance of his works, have had the folly to denounce science ; and on the other, such as have received their faith without a sound foundation in their own deepest convictions and highest thought have found it overthrown. Both these

effects result from the false supposition of the inconsistency of science and theology. It is perhaps natural that a man who knows much of the one and little of the other should be led to such a supposition by the annoyance of attacks upon his own position from the lesser lights of the opposite side. But no man has a right to pronounce upon, or even seriously to believe in, such opposition, until he has a good knowledge of both, particularly when it is well known that honest and conscientious men, who have been distinguished by a broader culture in both departments, have found in them no inconsistency. Entirely without excuse are they who, with imperfect knowledge of the real teachings on the other side, go out of their way to widen the supposed breach between these two departments of truth. On the other hand, there have happily not been wanting men in both classes who have taken more comprehensive views; but their voice too often has been only indistinctly heard in the widespread clamor.

Unquestionably both theology and science have been deeply indebted each to the other in the past. Modern physical science, notwithstanding the unnecessary efforts to trace it in the vague speculations of a hoar antiquity, really owes its origin to that mental activity which accompanied a great theological reformation; and long before this the way had been prepared for it by the teachings of theology. The doctrine of the unity of God has proved to be the only sure basis for the discovery of the harmony and unity in nature. It is true that some perceptions of the existence of such harmony had suggested of old to minds like those of Socrates and Plato the idea of the unity of God; but neither were these perceptions the result of any induction which science could now accept, nor was this idea more than a mere philosophical opinion. It had no hold upon the minds of any considerable number of men, and the prevailing polytheistic belief made the true unity of nature inconceivable. The strong and firm teaching of monotheism has alone made possible that modern science which aims ever more and more to trace the unity of the cosmos; and hence the tendency of scientists who

refuse to acknowledge the one Creator must ever be not to any form of polytheism, but to pantheism. Theology, too, not only led men to seek for order and wisdom throughout all God's works, but it exalted the study of nature into a duty we owe to God. The men in the past who have been in the very front rank of the discoverers and the leaders of thought in the physical sciences—the Newtons, the Keplers, the Cuviers—have for the most part been men of faith, and have themselves been living examples that in this, as in all other departments of truth, “the fear of the Lord is the beginning of knowledge.”

On the other hand, before the rise of modern physical science, theology was unable to complete its cycle of truth, except by speculation on a vast range of subjects not within its proper domain, and so speculating, without data, in many things necessarily went far astray. Such mistakes, although not distinctly on points of doctrine, yet had a distorting effect on the general theological scheme, and oftentimes caused no little misshaping of the higher truths which were thus forced to be bound up with errors into one consistent scheme. Modern physical science has stood forth as the deliverer of theology from the absurd systems of nature which it had begotten of itself. It has swept away a vast brood of errors, sometimes even fantastic, from the common acceptation of mankind; and thus, as far as it has gone, has enabled theology to fill out its circle of truth with reality, instead of error. The whole system of theology can consequently become a nearer approach to absolute truth, and so much light is cast upon the word of God by a knowledge of his operations in nature that a certain modification of statement has taken place, even of dogmas properly theological, but which had taken something of a false coloring from distorted views of physics. Pre-eminently has this aid been received from science in the right interpretation of Scripture. Theologians are sometimes sneered at by scientists for the readiness with which they modify received interpretations to meet the demands of advancing science; but interpretations thus

modified are only such as rested on no solid support, and which one who seeks to follow truth should be ever ready to exchange when he has been supplied with better data. In many cases such modifications only restore interpretations held in Christian antiquity, and abandoned not on theological, but on what were falsely supposed to be scientific, grounds.

It is unnecessary to dwell longer on the past. The process which has been going on, often most opposed by those most to be benefited, is not yet complete, and our concern now is only with the present. Yet the past is both a pledge and a warning for the future—a pledge that physical and theological science will always be in reality mutually helpful to each other; a warning lest we become so absorbed in the passing scene in which we are called each one to bear our part that we cannot rise above the smoke and din of the action, and take comprehensive views of the whole field of truth and of the broad relations of its several parts.

1. The first point which may be singled out among the many in which the progress of science is now bringing important aid to theology is in the ever firmer and firmer establishment of the conviction that there exist certain unchangeable principles by which the whole cosmos is governed. There can be no question that such actually is the tendency of scientific investigation. A scientist, indeed, like Tyndall, may tell us "Nature is full of anomalies which no foresight can predict, and which experiment alone can reveal"¹ but he must mean that these are anomalies only of imperfect investigation, and that as they are subjected to the analysis of more perfect research they will be found to be in strict conformity to one general conception of order. It is characteristic of many of the so-called "laws of nature" that they are "ideal truths towards which nature tends," but which, instead of being "realized with mathematical exactness" are "more or less false in each particular case." "Even in regard to the law of gravitation there have always been residual phenomena unexplained by the law, and so probably there always will

¹ *Heat as a Mode of Motion*, p. 101.

be, until, as we go on widening our generalizations, the last generalization of all brings us into that presence of which all natural phenomena are the direct manifestation.”¹ Confidence in the fact that all things, notwithstanding their seeming anomalies, really belong to a universal and perfectly harmonious system is the very foundation of science. If the operations of nature are capricious, man can never analyze them. All his experiments, all his investigations, all his theories, rest absolutely upon the conviction of the uniformity and unchangeableness of the order of nature. In fact, the antagonism so often erroneously supposed to exist between science and theology rests upon the assumption of the incompatibility of the fixed and universal system of order taught by science with the personality of the Ruler of all so emphatically declared by theology. Of course, no such incompatibility really exists. It is only alluded to here to show how thoroughly science is committed to the doctrine of the universality and invariableness of what is called law in nature. The time when the winds and the rains, when health and sickness, when even the development of intellectual power and greatness, was supposed to be merely capricious has passed away, or, at least, has been relegated to the philosophy of the ignorant and superstitious. Science has fully satisfied the minds of those who have any appreciation of its facts and its reasonings that all things in nature are subject to invariable law — not only the inorganic crystal forming in the precise system and angles belonging to its species; not only the plant, throwing out its leaves and branches in the order required by the law of phytolaxis; and the animal, developing from the embryo according to the law of its kind, and governed in its food and its digestion, its life, its death, and its decay by the law of its being; but even man himself, in so far as he is an animal, being governed by the laws of his animal nature, and in so far as he is an intellectual and spiritual being governed by mental and spiritual laws of invariable action. For, in view of science, man also, in common with

¹ Cooke's *Chemical Physics*, p. 301.

all other created or finite beings, is subject to law. From the highest point of the hierarchy of heaven down through all the endless ranks of animate and of inanimate nature, so far as knowledge can be pushed, no exception is anywhere found; and where knowledge fails, and the phenomena are beyond the classification of any laws or combination of laws as yet included in the range of our vision, we still rest, without a shadow of doubt, upon the ever growing basis of the vast induction of all knowledge. We believe — every intelligent investigator of nature believes, that there is still law, fixed and invariable, stretching out beyond the limits of knowledge and including all created things within its boundless grasp. This teaching of science is the more remarkable, because the disproportion between the known and the unknown is so vast. The things of which we know the law are but as the surface soil upon the crust of the earth. The actual induction is little more than the apex of a pyramid on which for the present its huge base must rest. Nevertheless, science is bold and firm in its assertion, and that assertion carries conviction to every well-regulated mind. It cannot at present be proved in the immense breadth of its generalization; but no one who has studied nature to any purpose doubts of its truth.

Now this doctrine of the universal prevalence of a fixed order and system in nature, which is thus one of the firmest positions of science, is also one of the fundamental data of a just theology. That this has always been recognized by the great masters of theology as alike the plain teaching of Scripture and the necessary conclusion of reason is shown by “the judicious” Hooker in his magnificent treatment of law in the second and third chapters of the first book of his *Ecclesiastical Polity*, with the abundant references there given. A single quotation may serve to recall the whole passage. “All things that are have some operation not violent or casual That which doth assign unto each thing the kind, that which doth moderate the force and power, that which doth appoint the form and measure of working, the same we term a law. So

that no certain end could ever be attained unless the actions whereby it is attained were regular, that is to say, made suitable, fit, and correspondent unto their end by some canon, rule, or law. All things, therefore, do work after a sort according to law; all other things according to a law whereof some superior, unto whom they are subject, is author."¹ Firmly, however, as this position in regard to the universal prevalence of law has been held by the masters of theology, it is nevertheless a position which it has been exceedingly difficult for them to establish in the convictions of mankind generally. It necessarily follows, indeed, from the abundant scriptural declarations of the unchangeableness of the Ruler of all; it necessarily follows from the reasoning of metaphysical theology. But for all this, revelation, in order to make itself intelligible to man, has so largely expressed itself in anthropomorphic language, and philosophy has so little succeeded in making clear, popularly, the distinction between what is intended by the term personality, and that other thing which is called arbitrariness, or capriciousness, that the powerful aid of natural science here becomes most welcome to the theologian. This truth is one chief weapon upon which true theology must rely in combatting those false and pernicious notions which would represent the Divine Being as a capricious Ruler, such as he was pictured to be by the heathen. It is the very foundation of our confidence that all things in heaven and on earth are concurring together to work out ultimately the definite purposes of his will. Or considered practically, it is the final ground on which must rest every obligation of duty and every hope of reward. Take, for an example, prayer; this truth constitutes the only basis on which we can cherish any rational trust in its efficacy. For, as the chemist could make no experiment in his laboratory, the farmer could plant no crop in his field, the physician could have no hope for his patient, man, in all his varied activity, could do nothing except under

¹ See the references given throughout this passage, especially to Augustine, *Civit. Dei.*, xix. 13; *Confess.* i. 12. Thomas Aquinas, I. 1. 2. 9. 93, Art. 4, 5, 6. Bacon, *Adv. of Learn.*, Bk. ii.

the conviction that there are laws of nature which will work out his purposes if he can but rightly avail himself of their action; so the intelligent believer could offer no prayer except in the confidence that he is hereby introducing a factor which, under the divine law, — the ordinance of the Supreme Ruler, — must as certainly have its effect as any force in the natural world which man bends to do his bidding. He could not truly pray, nor could he truly believe in the reiterated gospel assurances of the absolute certainty of the answers to prayer, if he thought the Being to whom he addresses his prayer was simply capricious, and might or might not hear him. No! as when the physicist arrests the light of the sun upon his mirror and turns it aside to lighten the darkness of his chamber, or to be decomposed in his prism, or to be transformed into heat or into some other correlated force upon the blackened surface of his thermopile, so the Christian seizes that spiritual force which is ever flowing out from the Sun of Righteousness, and transforming it into prayer, knows that under the operation of invariable law that force must have its spiritual effect, whether it be manifested to him in an answer which shall be the exact thing he sought, or whether under the law of infinite love it shall be transformed into some correlated blessing of a higher spiritual value than he had dared to look for. The same principle is equally essential to every act of the Christian life and to every article of the Christian creed.

Such a view has sometimes been unthinkingly supposed to militate against the true personality of the Supreme, and to make him, too, the subject of law. But law itself in a higher view is simply a convenient word to express his will; it is unchangeable only because his infinite perfection is itself unchangeable. Could we suppose it otherwise, could we suppose his will subject to change, then either that which went before or that which followed after the change would not be the best that could be, and this is impossible. In speaking of the Infinite Being whose thoughts are not as our

thoughts, nor his ways as our ways, it becomes us to speak most cautiously, and with the consciousness that our best reasonings must fall far short of the realities of his existence. Yet of this truth we may rest assured, for the supreme teaching of the Bible is his unchangeableness; and the operation of an unchangeable will is what we are accustomed to express by the term *invariable law*. Scripture, here as elsewhere, is found to correspond with the highest results of thought, and meets and satisfies the deepest intellectual requirements of the thinker.

Without such law nature would be chaos, and religion would be—as some scientists would seek to make it—simply emotional; a vague, subjective thing, having no real objective value, and only better than bald scepticism because the experience of all ages has abundantly proved that man with his high faculties is incapable of existing for any long time and on any large scale without the support of some sort of religion. But, as already said, although the theologian might and did, many centuries ago, arrive at the conviction of the universality of law according to the plainest teaching of Scripture concerning the character of the Omnipotent, “with whom is no variableness neither shadow of turning”; yet to the popular apprehension of this great truth, to its firm hold upon the minds of all men, it is already, and it will be increasingly, indebted to the teachings of science. Here, then, is one great point in which the bearings of modern scientific thought are most favorable and most important to theology.

2. A corollary from this truth is the theological doctrine of the immanence of the Creator in his works. In primeval times everything that occurred was referred to the immediate action of God. It was He that scattered the hoarfrost like ashes and cast forth his ice like morsels, who also sent out his word and melted them, who caused his wind to blow, and the waters flowed. From the begetting of the drops of dew to the guiding of Arcturus, everything on earth and in the heaven above was referred by the inspired Hebrew •

seers to the immediate divine action. Among the heathen this idea became corrupted; and in the multiplicity of deities a separate god, at least in the popular belief, was assigned to each manifestation of the divine energy,—a god of the brooks and of the forests, of the sea and of the cloud, of birth and of death. Science, with a rude hand, has brushed away this beautiful dream of man's poetic youth, and has replaced it all with inexorable law; but when it refers for the source of that law to the Unknowable, to the inscrutable Power above and yet within all natural phenomena, it leads us back again to the Hebrew conception as the highest and truest of all. For when natural law has once been identified as the expression of the unchanging will of the Supreme, we find that there is nothing but him in nature. All is his action; He is present in all, and does all things according to his will; He is all in all.

“Cujus sensus, totum nosse;
Cujus virtus, totum posse.”

3. Closely connected with this is another correlative truth: that however fixed and invariable may be the natural laws of the universe, their results, and consequently the course of nature, may be largely modified by the intervention of intelligence and skill. If ordinary theologians are wont to dwell less upon the former point, scientists are less earnest in drawing attention to the latter. Yet both facts must be admitted by both. On the one side, as already said, the fixedness of law is at once the firmest of all conclusions of scientific induction, and is also the necessary theological deduction from considering law as the manifestation of an unchangeable will; and, on the other, all processes of scientific investigation in which a knowledge of the special laws of nature is sought by the isolation of their effects, and all progress in the arts of life attained through the teachings of science, constitute a living and ever-multiplying proof that man may modify to a large extent the operation of natural laws to the advancement of his own purposes and the improvement of his own condition.

This proposition is too obvious to require enlargement. Of course man can have no power over the effect of any natural law except by bringing other natural laws to bear upon it; but this he can do with stupendous results. The present state of the earth, in which marshes and lakes have been drained, rivers curbed or made to flow in other channels, waterfalls trained to do man's work, steam harnessed to his bidding, the fauna and flora of one land made to flourish in another, the very lightning itself forced to become the instantaneous bearer of his despatches across continents and oceans; in a word, the whole face of civilized society shows that natural laws do a very different work when left to themselves than when guided and controlled in their operation by human intelligence. Often the effect under such guidance is even the opposite of the result which would otherwise have been produced. The proverbial impossibility of making water run up hill is accomplished in every aqueduct, and scientific experiments make us familiar with lenses of ice, by means of which combustibles are set on fire, and with the freezing of mercury in red-hot crucibles. But setting aside these, and taking only the broader view, the greater part of the change produced in the face of the earth by the agency of man is attributable to the progress of science. Hence the fact of the modification of the course of nature under the uniform operation of the laws of nature by the intervention of intelligence may be classed among those truths which it has been the office of science to make familiar to the minds of men.

The gain to theology hereby has been very great. If human and finite intelligence can do so much to modify the course, without disturbing the laws, of nature, it must follow that the infinite Intelligence can modify that course to an inconceivably greater degree without being inconsistent with himself or changing those principles, which we call laws, because they are the expression of his own unchanging will. This covers the whole of the long and hard-fought ground of the possibility of miracles. In view of what science has

done and is doing, it is no longer necessary to call these suspensions of the laws of nature, or, in other words, of the divine will. It is evident that without any change in that will, infinite Intelligence may yet modify the results of its action to an extent far beyond our power to limit or define. Christian apologists have invented many curious devices for bringing miracles into harmony with the operations of natural law. One of these, which, in various modifications, has obtained considerable currency, is that proposed by Babbage in his "Ninth Bridgewater Treatise." This would make miracles but a part of the natural laws themselves, laws of such vast generality that these particular effects are only manifested at intervals too remote for human observation to determine them to be the consequences of those laws. This explanation is true enough if by law we understand simply the will of the Ruler of the universe — that from the first it was his will that, at certain periods, miracles should be manifested. But then the explanation needs this explanation, and has not itself helped to remove the difficulty. Understood in any other sense, it ignores (without, however, necessarily denying) the personality of the Author of miracles, and it still leaves their cause, as deviations from the ordinary course of nature, totally unexplained, except by an hypothesis of which there is no proof. It has always been unsatisfactory both to the receivers and to the impugnors of miracles. Certainly the reason for the occurrence of miracles constantly set forth in Scripture, and the only possible logical reason, is for the manifestation of the presence and power of God. How this could be accomplished consistently with the divine unchangeableness, how even the Infinite could thus modify and even reverse the ordinary course of nature without interfering with the laws of nature — the unchangeable expression of his own will — this science has helped theology to understand and explain by exhibiting as close an analogy as the finite can furnish to the infinite, in the interference of human intelligence with the course of nature. The microcosm throws its light upon the macrocosm.

In this explanation, moreover, we find something of the limitations of the universal reign of law giving room and scope also for the attributes of personality.

All this is based on the supposition that there is, beyond and above and distinct from nature, an unchangeable Being; and that this Being is not a blind force, not a mere abstract cause, but a living, intelligent, and infinite Being. This theology has always taught, and, from its very definition, must always continue to teach. It is upon this fundamental point that the bearing of modern scientific thought is most important.

4. It is not very long since the tendency of scientific thought was quite generally supposed to be in direct opposition to this conception. The positivist had taught that all our knowledge is confined to phenomena, and that we can affirm nothing beyond. Time was, and that within the memory of the present generation, when scientists who had cut themselves loose from revelation thought they might find nature complete within itself, and that it was unnecessary to seek for any cause or power beyond. Such a disposition may linger still; but in the advancing rank of scientists, even of that portion of them who most utterly refuse any regard to the Scriptures, we recognize everywhere the reference to "a Power inscrutable to the human intellect,"¹ to an "Unknowable"² beyond and above nature, whose existence must first be posited before there can be a nature at all. In the dim groping of even unbelieving scientists after this Being there may be much that is painfully astray, and Paul might say to them as he did to the worshippers of the "unknown God," "Whom ye ignorantly worship, him I declare unto you"; but yet we thankfully recognize that they have arrived at the conviction of the existence of something beyond the realm of nature. They may not recognize in him that character which, for want of a better term, we express by the word *personality*; they may shrink from the use of the personal pronoun, and maintain that for the finite to have any knowl-

¹ Tyndall's Belfast Address.

² Herbert Spencer.

edge whatever of this Infinite is impossible. Still, for all this, the main point is gained; the acknowledgement, the necessary assumption of a power outside of nature. Logically, such an assumption cannot remain a mere barren assumption. It has its corollaries and its consequences, and they, sooner or later, must be acknowledged also. In fact, some of them are apt to accompany, more or less unconsciously, the statement of the primary postulate. Herbert Spencer himself in the very act of declaring the ultimate cause of all things to be unknowable, One of whom nothing *can* be known, actually predicates of him omniscience, omnipotence, eternity, and, by necessary inference, intelligence. From these philosophy might deduce all his other attributes; but it is unnecessary. The description of the Supreme in Spencer's philosophy as "Unknowable," or in Tyndall's account of evolution as "a power inscrutable to the human intellect," is more just than the congeries of attributes sometimes bestowed upon him in metaphysics; more just because in more exact accordance with his own teachings in Scripture. There he presents himself to man as One whom no searching can find out; One who dwells in light which no man can approach; One whom not only no man hath seen, but whom no man can see. The absolute unknowableness of God in his own essence has been nowhere set forth more plainly or more powerfully than in the pages of Scripture. Here, then, are two most important points of accord between the thoughts of advancing science and theology. There is a Power above nature, and that power man can never find out — nay, even if he were revealed in his true essence, such is the difference between the finite and the Infinite, it would be impossible for man to receive the revelation. This accord is of peculiar value in its bearing upon the prevailing tendency of the unbelief of our time. Burnouf, himself carried away by it, has shown in his "*La Science des Religions*" that this tendency is towards Pantheism. Pantheism has been the outcome of Oriental philosophy in Buddhism and Brahminism, and Pantheism is undoubtedly the goal towards

which unbelief is turning in Continental Europe. It commends itself to the intelligence of the Aryan races, because it is in some sort comprehensible; it makes of God something which can be understood. Therefore precisely here the present position of scientific thought is helpful to theology, because it not only represents the Primal Cause as above nature and apart from nature, but as himself unknowable.

And theology is not only thus aided by scientific speculation in establishing these truths in the minds of men, but it is also restrained in its natural tendency to make of God but an omnipotent man. Such a tendency is indeed abundantly rebuked in Scripture, but has ever remained a sore danger to theology. Man, indeed, is created in the image of God. He bears such God-like features as no creature below him can bear. Yet even for him there can be no approach to, and no communion with, God, except through a Mediator who can form a link between God and man by himself partaking of the nature of both.

5. Beyond these truths, and necessarily flowing from them, there is another, not considered by science, because science, as such, has nothing to do with it; but which, nevertheless, is a logical consequence of the position towards which scientific thought is tending. The Supreme Being may have revealed himself, not indeed in his own absolute essence, which Scripture and philosophy alike declare to be impossible to man's comprehension; but partially, as man is able to bear it, and in terms adapted to man's capacity. The very name "Unknowable," the very term "Inscrutable," necessarily admit the possibility of this. If the Supreme be that which these adjectives imply, then it must be impossible to deny to him any possibility. He may have revealed himself; only if this revelation is to be of any value to man it must be only partial, and it must be anthropomorphic. Precisely such a revelation Scripture purports to be. Whether it be in fact a revelation at all will now remain simply a question of evidence. Certainly to theology in its battle with unbelief this is such an immense advance on the position of a bygone gener-

ation that the victory almost seems already won. Let the question once be brought fairly to a question of evidence, apart from all assumption of *a priori* improbability, and there need be no doubt as to the decision of intelligent men generally. The analogies of science are helpful even further than this. If nature proceeds from a Supreme Being, then nature itself is in some sort and to some extent a revelation of him. It is a revelation which man can at least partially understand, although hedged about on every side with inscrutable mysteries. If such a revelation has certainly been given in nature, it becomes the more probable that it may also have been in Scripture. Moreover, nature, as Butler has so well shown, is a revelation containing difficulties of precisely the same sort as we encounter in the written word; and it is a revelation which becomes more and more plain precisely as we study its teachings in an honest and good heart, and give ourselves up without cavilling to its guidance.

6. The above considerations, too, remove from theology all the opprobrium once sought to be attached to it, from the fact that the revelation contained in the Scriptures is anthropomorphic; for it is seen that, to be a revelation at all, it must necessarily be so. It removes also the objection drawn from the dimness of the earlier as compared with the growing brightness of the later parts of revelation, because it shows that revelation of God to man can only be made according to man's capacity to bear it; and yet, that man might not thereby be misled, it declares distinctly and emphatically that the revelation is only partial and adapted to human weakness; that God himself cannot be known, that no man by searching can find him out. To man seeking to see his glory he ever, as to Moses in the mount, hides the face which man cannot look upon, and shows him only his uttermost parts. He has revealed himself through a Mediator, and apart from him can neither be seen nor known.

7. We pass now to what may be considered more doubtful ground—the doctrine of evolution. In speaking of this the subject must be separated into two very different ones:

logical and material evolution. The first means simply that the universe is a *κόσμος*, that its several parts are connected together in an orderly way, most intimately related one to another, and result in a harmonious whole. In a word, that there is that in the universe which finds human expression in the phrase *unity of thought*. Theologians from the time of Augustine, and before, have always insisted upon this, and in modern times it has been shown by science to be much more than a mere speculative belief. It is the correlative truth to the universality of a fixed and orderly system of nature. It is quite in accordance with this that there should have been from the outset of material things a constant progress, which we have no reason to suppose is yet arrested. We may look back to an original nebula, to the *tohu* and *bohu* of Genesis, and to the first springing forth of light, and then on through all the stages of increasing condensation and growing heterogeneity, until the earth has assumed its present varied surface, and vegetable and animal life in its ten thousand forms has appeared upon it, with man as the present — but, in his earthly state, not the ultimate — apex of its vast pyramid. All this was taught of old in the primeval revelation with as much distinctness as the receivers of that revelation were able to bear; and when men became fitted for more, they were also fitted to understand the indications of nature, and to gather from nature so much of additional information as was needed. This having been taken in, in the same way more, much more, will doubtless yet be learned. But all this implies only a logical evolution. It states only that in the order of the cosmos the homogeneous, to make use of Spencer's terminology, is ever succeeded by the heterogeneous, that the general is ever followed by the more special. To this great fact in the constitution of the world all evidence points. It is true of everything as far as it has been possible to ascertain the truth at all, and every new progress increases the breadth of the basis for the vast induction. Here again the "Unknowable" makes himself somewhat further known in the unity and the character

of his operations. So far, then, as related to the past, science here comes forward as the direct and explicit upholder of the teachings of theology; and, so far as relates to the future, on which science refrains from speaking with assurance, all her analogies point in the direction of that higher and more perfect stage of existence which is the very hope and stay of the believer in revelation. If the question now be asked, how is this brought about? we are led at once to the other branch of the subject — material evolution.

At present the theologian must speak somewhat hesitatingly concerning this. It is a purely scientific question, with which he does not wish himself to intermeddle. When he turns to scientists for information, he receives, as yet, a somewhat uncertain answer. By a large and undoubtedly increasing majority of scientists, and emphatically of those whose specialities particularly lead them to the study of the question, he might be told that scientifically the matter was settled; that material evolution, or the actual development of one kind of being from another, was the accepted doctrine of scientific men; Huxley would even say that the hypothesis was already demonstrated, and rests upon as firm a basis as the Copernican system itself. From others he would receive a different answer. Not to speak of Agassiz, who, dying, left unfinished his argument against it, Dawson devoted a long and able address at the Detroit meeting (1875) of the American Association for the Advancement of Science to its overthrow. Some of the most eminent men of science, as Dana, consider it to be a true account of the ordinary progress of life, but failing at certain important epochs, and notably at the introduction of man upon the earth. Wallace, the simultaneous originator of Darwinism with Mr. Darwin himself, a few years ago very earnestly contended against the application of the hypothesis to man. He has now (1876) so far modified his position as to say, "Hardly anyone capable of judging of the evidence now doubts the derivative nature of man's bodily structure as a whole"; but he adds, "although many believe that his mind, and even some

of his physical characteristics, may be due to the action of other forces than have acted in the case of the lower animals.”¹ Few, if any, scientists now receive “natural selection” as a sufficient agent for its accomplishment. Some, as Cope, suggest some other agency; many, as Mivart and Dana, do not yet see any sufficient natural method, although some of these look forward to the possibility of the future discovery of such a method. This view is substantially what has been described above as logical evolution, except that it goes beyond it in the expectation of future discovery; but it demands, as the ultimate source of evolution, a force beyond nature. The theologian, therefore, looking at science from the outside, cannot tell whether or not, or how far, to accept material evolution as its teaching. He is uncertain whether the fullest statement of the doctrine, or whether only a part of it, and what part of it, is to be considered as belonging to the secured domain of scientific conclusion. This embarrassment is increased by the fact of the extreme newness of the prevalence of the hypothesis; for, as Wallace justly remarks at the conclusion of the address above referred to, “However great may have been the intellectual triumphs of the nineteenth century, we can hardly think so highly of its achievements as to imagine that, in somewhat less than twenty years, we have passed from complete ignorance to almost perfect knowledge on two such vast and complex subjects as the origin of species and the antiquity of man.” The theologian, therefore, almost bewildered by the rapidity with which science has changed its position, naturally waits to see if this change is permanent and final. Nevertheless, as the hypothesis is so evidently growing in favor, and as its main features, at least, are already so generally accepted by scientists, we are called upon to inquire what bearing it has upon theology. Directly, absolutely none; except as it gives us higher and nobler views of the Creator, and establishes a closer analogy between his various

¹ Address as President of the Section of Biology at the Glasgow meeting of the British Association, 1876.

works. For theology the question between evolution and anti-evolution is simply a question between mediate and immediate creation; and even this, in view of the immanence of the Creator, becomes little more than a question of the human mode of conception of his work. It is well known that the tendency of theological thought in ancient times, before there was any disturbing influence of science, was decidedly in favor of the mediate conception of creation. The idea of a self-evolution of the cosmos would indeed be destructive to theology; but this need not be feared as the result of scientific thought. Its tendencies are quite in another direction, and lead us, as already said, to the recognition of an inscrutable Power from whom and under whom evolution has been accomplished. The only form of self-evolution, if it can be called a form at all, which attempts to hide itself under the cloak of science, arises from the refusal to think at all as soon as the range of sensible phenomena is passed. The doctrine of evolution as proceeding from and guided by a Power above nature has nothing in it in anywise inimical to theology. On the contrary, nothing can bring us nearer to the old view of the Hebrew seers, that God is everywhere, and that all that is done on earth or in heaven or under the earth is done by him, than this latest stretch of scientific thought, that all is the effect of evolution, but that this evolution must take place under a Power "inscrutable to the intellect of man."

This remains true in the extremest possible view of that hypothesis. Bastian, partly by experiments, partly by reasoning, attempts to trace the molecules of matter from their more simple aggregations in the more stable forms of the crystalloids to the more complicated ones in those which are less stable, and then to those still more complicated and still less stable in the colloids, and thence, with still increasing complication and still lessening stability, to the simplest living forms, thinking that he had himself actually followed the changes of matter from the one to the other, and thence still onwards in the same direction to somewhat higher forms

of life. These experiments and conclusions are understood to be generally rejected by scientific men, and especially negated by the researches of Tyndall. But if they were generally accepted, and if Tyndall's confession that he "prolongs his vision backward across the boundary of the experimental evidence, and discovers in matter the promise and potency of every quality of life," were not confessedly a speculation beyond the boundary of evidence, but were a reality of experience; and if Huxley's expectations of what may be hereafter, but has not yet been proved — if all these were assured realities, they would but show the necessity of a more comprehensive view of creation than was formerly received, and prove the theory of mediate, as opposed to immediate, creation. They would not militate against any theological tenet. The theory of evolution may be taken to include man, and that not merely as an animal, but as an intellectual and spiritual being, and, although some theologians stand aghast, nothing has been proposed to shake one iota of the faith. All men of the present and of the past generation have come into being through natural processes, but they remain, nevertheless, moral, accountable, and immortal beings. This is obviously true of the body, and it is shown by inherited gifts and idiosyncrasies to be also true of the intellectual faculties. If we would separate the soul or spirit from these, and confess entire ignorance of the mode of its origin, it yet remains true that each particular soul comes into being with each particular body, and never under any other circumstances. Whatever be, therefore, its origin, the invariable conditions of that origin, without which it never appears, and with which it always appears, are these same natural processes. The same thing is true of all past generations of man; why should we be shocked at the supposition that it may be true also of the first? Neither is such a view more antagonistic to the letter of Scripture than the teachings of geology or of the Copernican system — both of which were once thought utterly subversive of the words of revelation, but which have long since been accepted by all

intelligent men, and have proved to be in perfect harmony with Scripture. But all this is said not with reference to anything which science has yet attained, but only of that to which some of the students of science look forward. All actual investigations into the origin of life have as yet been baffled. Every effort to elicit living from lifeless protoplasm has come to a generally acknowledged defeat. The mystery at the boundary of life is as yet impenetrable by actual experiment or by actual evidence. But if it were not so; if the theories and analogies which seek to strike across that boundary be admitted as satisfactory,—as to many minds they undoubtedly are,—still theology, except in the necessity of revising the expressions of some of its students, remains wholly unaffected.

The bearing of the doctrine of evolution upon theology may therefore be thus summed up: Logical evolution is thoroughly in accordance with theological teaching, and helpful in many ways in giving it firmness and strength in the convictions of men. Material evolution is as yet too recent and too little defined as an accepted truth of science to understand precisely what its bearings may be, except negatively, that they cannot be harmful. We can conceive that if the theologian dared accept the doctrine as absolutely true he might find in it a glorious realization of the teaching that the facts of nature are but the thoughts of nature's Lord; that the actual outer processes of nature are in harmony with the inner and formative thoughts thereby disclosed. Fresh strength might be gained for his view of the unity of the cosmos, and fresh power in teaching, therefore, the unity of the Author of the cosmos. But it is needless to speculate on what may be hereafter. Suffice it for the present that theology receives no harm from either aspect of evolution, but from the former great gain.

8. The position of theology has always been that no *vera causa* could be found in the realm of nature itself, but must be sought for above and beyond. Philosophical theologians, while insisting upon the existence of a true casuation, have

come to teach that we know nothing of the real relations between the natural phenomena commonly described as causes and effects, except that they are invariable antecedents and consequents; while the only modifications of the course of nature giving evidence of the intervention of a true cause have come about by the intervention of beings possessed of life. To some small extent such true causation may be seen in the action of the lower animals; but this sinks into insignificance in comparison with the effects produced by man. Now, whatever theories may be held by either theologians or scientists as to still more remote causes by which the human will is itself predetermined, the fact remains that human consciousness testifies to its ultimate power of choice, and that all ages have recognized a moral responsibility in man which can only exist on the basis of his originating action. In such origination we recognize a true cause, and the only cause of which we have knowledge in earthly affairs. It is of no importance to consider the question here whether a true will may also be found in some embryonic stage of development in the lower animals. If so, the argument will remain the same; but it is enough that it exists in man. Effects have been and are now produced by it on a considerable scale upon the earth, upon its flora and its fauna, and upon man himself. But man is surrounded on all sides by effects, by trains of antecedents and consequents of far more stupendous magnitude. In the midst of the vast forces of the cosmos his power of physical causation is as nothingness, and his strength to produce spiritual effects is of permanent avail only as it coincides with the working of a higher Power. What causes, then, are at work beyond and above him? We know of no cause but will, and human will is manifestly and utterly insufficient for the solution of the problem. Analogy, therefore, points to the existence of a higher than human will. We are thus brought again to the same point with which we set out — the existence of a power beyond nature and distinct from nature, — but now with the attribute of will, the essential and distinctive mark

of what we call personality. It may at first seem rash to speak of this conclusion as sustained by the recent progress of scientific thought; yet on reflection it will be seen that it is so sustained most emphatically, and in a way which has not been heretofore done. There are scientists, indeed, who would deny the existence of the human will in any true sense of that word. The essay "Are Animals Automata?" not only goes so far as to make of man "a conscious automaton," but has the marvellous effrontery to attribute this opinion to Augustine, Calvin, Jonathan Edwards, and other predestinarian theologians — a position which can only be excused from disingenuousness on the supposition of an ignorance of theological subjects which ought to debar its possessor from the expression of any opinion whatever upon them. But however any of us may differ from the peculiar ideas of that school of theology, we may safely trust to history for their vindication from such an absurd travesty of their opinions; and however subtle may be the reasoning which would deprive man of a will we may safely trust to human consciousness for its overthrow. But apart from this, it is clear that the most advanced school of scientists have come to recognize, expressly and emphatically, and in every variety of statement, that the ultimate causes of nature's action lie beyond all scientific ken. This was long ago recognized in the laws of motion. The argument has been admirably stated by Dr. Hill, in his "Geometry and Faith." The first law of motion is this: A body in motion, free from external influence, moves with uniform velocity in a straight line forever. And then comes its consequent: A body at rest, free from external influence, would remain at rest forever. From these laws follows by necessary logical consequence the proposition "that the cause of all motion in the universe is something else than matter." The argument is clear, the premises are admitted, and the conclusion is irrefragable; but it has exercised little influence over the minds of men. It is too abstract; and, moreover, the minds of most men are easily bewildered in the mazes of an ex-

ternal force exerted by other matter upon the particular matter under consideration, and on that again by still other matter, and so on, endlessly, until the attention is wearied before it is seen that if the proposition is to be met in this way matter itself must be infinite — not indefinite merely, but absolutely infinite. It is therefore a great help to theology, to truth, that physical science on all sides should be declaring with one voice, through the mouths of many votaries, that there must be a causation outside of that nature with which it is their specialty to deal. For example, Huxley refuses to be ranked among atheists, because “the problem of the ultimate cause of existence is one which seems to me to be hopelessly out of reach of my poor powers”; Tyndall would make void the charge of his being a materialist, because evolution presupposes “a power inscrutable to the intellect of man”; Herbert Spencer (who, though not, strictly speaking, a physicist, must yet always be included in describing the opinions of the coterie of which he forms so prominent a leader) at every turn of his philosophy leads us for the ultimate cause of what we know to the “Unknowable.” Indeed, so fundamental is the existence of the Supreme to Spencer’s philosophy that one could almost wish that philosophy itself was not so vulnerable.¹ These names are selected

¹ The generalizations of Spencer’s philosophy are so fascinating that one would be glad to refer to it for higher purposes than that of simply evidencing the drift of a certain class of thought. Many of its weak points have been often and ably pointed out; and it has one fallacy which is especially fundamental. It professes to be a philosophy of the whole cosmos, and makes the fundamental principle of that cosmos to be progress from the diffused, the homogeneous, and the general to the condensed, the heterogeneous, and the special. All this is attended with a constant dissipation of force. Yet he shows that this force cannot be annihilated. What then becomes of it when it is dissipated from the universe? Correspondingly he teaches that when this process has reached its ultimate stage and an absolute equilibrium been attained, it will be reversed, and the opposite process go on with a constant absorption of force. From whence is this force to be derived, seeing it is not in the universe? Clearly either the cosmos must be duplicated, and one process must be going on in one and the reverse in the other, like the two buckets in a well, in which case the philosophy of integration is not that of the universe but only of its half; or else there must be a Power above the universe, from whom all force proceeds and to whom all force returns. In other words, the powers and forces of nature are

because they are those of men who have shown the greatest abhorrence and contempt of theology, as men often do of things of which their knowledge is limited; but it is well known that the list might be indefinitely enlarged. It is plain that science is day by day, in every branch of its widely extended pursuits, and wherever it is cultivated, pointing with more and more emphatic clearness to some causation beyond nature as the cause of nature, to a power above all natural forces as the source of force, to a *vera causa* not included within the range of nature's antecedents and consequents.

9. And the necessity of such a cause applies not only to the origin of nature but to every causation in its progress. The advance of science makes more and more evident not only that nature could not have come into existence, but that it could not continue to exist as it is, but for a cause beyond its boundaries. There is thus brought before us again, and from another point of view, the highest idea we can form of the divine connection with the universe; it is an instant and all-pervading connection presenting God to our thought as the cause of all that is. This was abundantly expressed in the imagery of the old Hebrew poets; it was fully set forth in the apostolic teaching, that "in him we live and move and have our being," and that "by him all things consist." But as we have grown in knowledge we have imagined that we have found secondary causes coming between us and God, and removing him far off from us. Now science in part shows, in part suggests, that these secondary causes are at once everything and nothing; everything in that they describe the apparently universal method of God's working, nothing in that they are nothing, and can accomplish nothing, except as they depend upon and are energized by his power.

Here, then, are several of the great points of the teaching but the manifestation of the will of the Most High. Nothing is gained to his argument by the theory that the cosmos is finite and enclosed by nothingness, and that the force which is dissipated from any point in it is therefore reflected back from its limits. On this supposition again, his philosophy can relate only to that part of the cosmos from which force is being dissipated; it must be gathering again in the other parts.

of recent scientific thought. In regard to one phase of one of them, material evolution, we hesitate yet how far to accept it as the certain conclusion of science; but it fully accords with the highest and best theological teaching, and opens to us ennobling views of the divine presence and activity in the world from which an earlier stage of scientific progress threatened to shut us out. If the hypothesis prove true, theology will be the immense gainer whenever it feels itself authorized to accept this doctrine from science. Aside from this the other points remain, taught with ever-increasing vigor of assertion by advancing science and scientific speculation; the universality of fixed order in nature, the modification of the course of nature, consistently with this fixed order, by the intervention of intelligence; the insufficiency of nature either to originate or to continue itself, and the unsearchableness of the Power above it, together with the impossibility of his being revealed to man otherwise than according to man's capacity — in other words, partially, and in an anthropomorphic fashion, except as man gains a higher and unutterable knowledge through a real union with a Mediator who is both God and man; the doctrine of evolution, logically considered, as showing the unity of the world and a *nexus* between its parts which bespeaks the unity of the Source from which it proceeded; and, finally, the necessity of seeking the *vera causa* of the things that are, beyond them, or of positing the existence of a Cause distinct from the cosmos, and eternal, intelligent, and omnipotent; together with the immanence of this cause in its causation — the perpetual, abiding presence of the Creator in his works, the ever active energy of God in all things.

These are all fundamental points for theology. They are, perhaps, nearly all the points which natural science, as such, could be asked to teach; or, at least, they lead on, by logical consequence, to all. Beyond these the theological argument must rest mainly on historic and on subjective evidence from which it has no serious dangers to encounter. The subjective evidence always has been, and probably will

always continue to be, the most immediately satisfactory, and, to those who can properly appreciate it, is overwhelmingly convincing. But intellectual conviction must rest chiefly upon historic evidence. There is, indeed, a certain pseudo-historic and antiquarian learning, which dogs the progress of the true, in which the audacity of the falsifications of history and of discovery is only surpassed by the malignant ingenuity of its attacks upon revelation. But honest historic investigation and sound archaeological research are continually adding such fresh and powerful testimony to the faithfulness of the Scripture record as to replace in our day something of the value of the miraculous attestation of old. That destructive criticism which has made so many minds indisposed to receive the historic evidences of the faith, has reached its culmination, and is yielding before the results of excavation and deciphered inscription, and it may also be added, before the exposure of the illogical consequents to which it was leading. The "humanities," as they develop, continually broaden the foundation for our faith. Only the historic evidences, as well as the subjective, in many quarters, have had no chance of acceptance, because there was a foregone conclusion contradicting the truths to which they testify. Science is busily at work in removing those foregone conclusions, and the result must be that "wisdom shall be justified of all her children."

As true theology, the interpreter of the revealed word of God, should be honored by the student of his works, so science, the knowledge of the works of God, should be hailed as the natural and exceedingly important ally of the study of his word.