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ARTICLE I.

THE WAR OF THE SOUTH VINDICATED.

“Whatsoever,” saith the divine oracle, “is not of faith,” that is, whatever we do, as moral and responsible beings, that is not based upon a well-grounded conviction of its rectitude, “is sin.” Where there is a faithful and enlightened conscience, it will regard such conduct, whether it involves commission of what is wrong, or failure to do what is right, with self-condemnation; and the result of such a state of mind must be doubt, irresolution, and imbecility.

It is all-important, therefore, not only to act right, but to *know* that we are doing so, in order to do and to dare, to endeavor and to endure, to perform and to persevere in doing, all that, as men, we can achieve. A mind conscious of its sincerity of purpose, and of the righteousness of its desired end—of having a good cause, and justifiable means for its accomplishment—is essential to success. This alone

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ARTICLE III.

GEOLOGY AND ITS ASSAILANTS.

The progress of the science of geology has at every step been resisted with singular obstinacy and bitterness. The world opposes every new doctrine, on its first promulgation, unwilling to confess its previous ignorance. We are offended when our fixed opinions are rudely disturbed; when we are called upon to admit that we have been proclaiming as truth that which is false. And however unreasonable this may appear, if we confine our attention to the efforts made to destroy doctrines which we believe to be true, it is not unattended by valuable results; for many a false doctrine is thus detected and exposed; while every truth, before it is permitted to take rank among the clearly established and undeniable, has its real character evinced by the scrutiny to which it is subjected, and by the tests applied to it, as it never would have been, had it been suffered to pass unchallenged. But geology, besides undergoing this rigid examination, as a new comer upon the field of truth, has been assailed with unwonted vehemence. From the formation of its first provisional hypothesis, to bind together the few imperfectly known facts, down to the present time, when its leading principles must be looked upon by all who have adequately examined the subject as firmly established, it has been forced to meet and to overcome such violent, and even virulent opposition as has been made to perhaps no other science. The reason of this is, that it has been regarded as the enemy of the Holy Scriptures. These we receive as containing truths, compared with which all others sink into insignificance; and so fully authenticated by the strongest evidence of every kind, that it is impossible for a reasonable mind to doubt them, or to receive as true any

thing that is really inconsistent with them. But instead of causing such unseemly opposition to the progress of knowledge, this faith should rather lead those who are actuated by it to further all inquiries after truth ; believing, knowing, that the final result of every investigation will be to strengthen the foundations of natural religion, and to show that entire harmony subsists between every truth thus discovered and all that is taught in the word of life, whenever they relate to the same subject. It is difficult to repress a doubt as to the genuineness and strength of that faith which would check the freest search after truth in the works of God. It must often be the result of weak faith, and a secret dread that, after all, some thing may be found out, that will compel an abandonment of belief in the Bible. But in many cases it would be unjust to attribute this course to a want of faith. There is one other source of suspicion and hatred of scientific discoveries, and apparently but one : it is that while we have undoubting faith in the word of God, we have equal confidence in our ability to interpret it, and are influenced by that intolerance towards all who believe either less or more than ourselves, which is the disgrace of our kind. It is time that this virulent opposition were laid aside, and that we who know the truth of the Bible should act, neither as though we feared every moment that it may be proved to be a mythical collection of questionable traditions, nor in wicked violation of the spirit of forbearance and love taught in its pages.

Geologists have seldom taken any notice of attacks, either upon themselves or upon their science, knowing that the science needs only to be studied to evince its truth to any fair mind ; and believing that every effort to convince, by sound reasoning, those who could adopt the prevailing anti-geological hypotheses would be utterly futile ; that those who adopt their opinions without reason can not be convinced by reason. Such contemptuous neglect may seem supercilious ; and yet it is hardly to be wondered at

or condemned, so wild and absurd are many of the guesses which it would be necessary to controvert. But we think that this silence has, to some extent, been injurious to the cause of truth; for, by many who can not examine for themselves, it has been construed into an acknowledgment of the success of the attacks. Therefore we propose to consider a few of the most plausible objections which have been urged against geology. We design not so much to advance arguments in favor of the truth of the science, as to exhibit, in the present article, the character of the assaults upon it, and to point out some of the mistakes of anti-geologists concerning its nature; and, at some future time, to present specimens of the hypotheses which they would have us receive instead of the established geological theories.

In the war against geology, as in most other wars, there have been many classes of combatants, and it has been waged with various degrees of fairness. A few of the assailants, perhaps, really know what the science is, but have been unable to satisfy themselves of the certainty of its fundamental principle; and have honorably attempted to destroy it, by showing that it has nothing to rest upon. We express ourselves doubtfully here; for while it is possible that this class may exist, we have to confess our ignorance of its actual existence. Another class attack it without professing to know any thing of it, except that it is charged with teaching that which is inconsistent with the Bible. Without waiting to learn whether or not the charge is true, they forthwith do what they can to expel it from the domain of the credible. We have no hesitation in saying that, if this charge could be substantiated, we would at once join this attacking party; believing that the truth of the Bible is established by evidence, external and internal, of such overwhelming strength, that whatever is inconsistent with its ascertained teachings is, by that fact alone, proved

to be untrue; just as we would pronounce that course of reasoning to be untrue, without waiting to hear any part of it, which ended with the assertion that the sum of the angles of a plane triangle is greater or less than two right angles.

Another class, with some knowledge of the subject, but this distorted, because it is imperfect, or because it has been sought not with the desire to reach the truth, but to establish a foregone conclusion, are conspicuous upon the field. Often their arguments are well constructed, of undoubted facts, bound together by undeniable first principles, and would utterly demolish the scientific claims of geology, did these involve the absurdities or depend upon the untruths thus prostrated. But, unfortunately for the conquerors, it is not geology that they have attacked, but some thing else, that they have oddly mistaken for it. The caricature receives a death-blow from the same hand that has brought it into existence, but geology remains unharmed.

But, perhaps, it has happened still oftener in the history of this conflict, that not merely has some thing different from geology been mistaken for it, but the assailing arguments have been even more grotesque than the caricature of geology assailed. For striking illustrations of this, we refer our readers to Art. V., No. 3, Vol. XIII., of this Review. And others we will give as we proceed.

Of the modes of warfare practised, some, as we have intimated, are perfectly honorable; but others, we must say, are just the reverse, unworthy of honest combatants or of a just cause. No one can or does object to the attempt to prove that geology is not a science; that its advocates are in error; that its principles have not yet been, and can not, from the nature of the subject, hereafter be established. If success attend these efforts, great good will have been effected; the cause of truth will have been promoted. If success be unattained, and unattainable, the only painful

consequence will be loss of time and reputation to the mistaken anti-geologist.

It is also quite fair to try to set aside geological principles, by showing that all known facts may be explained quite as satisfactorily, or even more so, by other theories than those advanced by the geologist. This course is attended by consequences of the same kind as in the last case; but hitherto the inconveniences have been more serious in degree; for every effort of this nature has evinced such remarkable ignorance, either of the facts to be accounted for, or of the general physical laws involved in the hypotheses advanced, that all reputation for exact scientific knowledge has been immediately lost to the author, and he has become a laughing-stock to all who are really acquainted with the subject.

Thus far, however, no moral obliquity has been manifested; nothing disgraceful has been done; no poisoned arrows have been employed. But what shall we say of the last mode to be noticed, which, unhappily, is more frequently resorted to than all others? This consists in exciting suspicion and prejudice against the geologist, by raising the hue and cry of "rationalist," "sceptic," "infidel," "atheist." Unable to refute his arguments in an honorable way, he who adopts this plan represents him as systematically laboring to prove that to be false and worthless which the Christian heart prizes above every thing in the world besides. Some times he charges him with open infidelity—with assailing the Bible without disguise; at other times, with consciously desiring to cause the Bible to be rejected as untrue, while he hypocritically professes to be a believer; at other times, with holding such loose views of inspiration, that, although his professions of belief may be sincere, his rationalistic opinions are even more dangerous, if possible, than those of the other classes. Now, that there have been geologists justly liable to these charges, we do not deny; but we protest against the generalization of

the charge; against imputing such antagonism to the Bible, in whole or in part, to geologists as a class. It is untrue; it is unkind; it is unworthy a good cause, especially the cause of Christian truth.

Near akin to this is the practice of representing the contest as one between Christians, and especially ministers, ("parsons," as the clerical writer will some times say, in order to gain the sympathy always freely accorded to the persecuted,) on the one hand, and unclerical and uninformed geologists on the other. All professional expositors of the Sacred Scriptures, whose orthodoxy can be admitted; all sound believers of sufficient knowledge and discrimination to prevent their holding, at the same time, irreconcilable opinions, are anti-geologists; while those whom they oppose are half-learned laymen, who either do not know what the Bible teaches, or do not care. Now, would it not surprise those who have been believing such representations to learn that just the reverse is true? And yet such is the fact. The leading writers on the geological side have, with few exceptions, been ministers of the Gospel, of every denomination, whose profound reverence for the whole Bible as the very word of God, has never been called in question; while the leading anti-geological writers have been laymen; some of whom have taken the most unwarrantable liberties with the sacred text, and have without scruple rejected those parts of it which would not agree with their hypotheses. This is so well known to all acquainted with the literature of the controversy, that that it might seem superfluous to substantiate it by an enumeration of the various authors. But the frequent reiteration of erroneous assertions on this point makes it necessary to give at least a few names.

Let us see, then, among the more prominent writers, who are the self-styled defenders of Bible truth, in the controversy between geology and the Bible, as this strife is incorrectly termed, and who are the infidel geologists.

Among the latter we find the ministry of every branch of the Christian Church well represented. Among the Presbyterians in Scotland, Dr. Chalmers, the champion of the Free Church, maintained so earnestly one geologico-scriptural hypothesis that he is frequently referred to as its author. It is hardly necessary to assert his orthodoxy. The geological works of Dr. David King, of the United Presbyterian Church, and of Dr. J. Anderson, of the Established Church of Scotland, must be generally known. The orthodoxy of these writers is also above suspicion. Of the Independents of England, none are regarded as sounder in the faith than the late Dr. Pye Smith and Dr. Harris. The Congregationalist Dr. Hitchcock, the chief advocate of geological views in New England, is one of the most evangelical divines in that region. And we have yet to hear the charge of rationalism or infidelity, latent or avowed, brought against Professor Sedgwick, Bishop Sumner, and Dean Buckland, of the Established Church of England, except as it is brought against all who do not adopt the peculiar views of anti-geologists. And yet all of these have maintained the infidel geological views! The only very prominent layman among the authors on that side is Hugh Miller; and his orthodoxy was so undoubted that he was chosen the editor of the organ of the Free Church of Scotland.

The chief of those who have gratified their enemies, (if they have any,) by writing books on the other side, are the laymen, David N. and Eleazar Lord, of this continent, who, we doubt not, are sincere believers in the word of God, as they understand it; and Granville Penn and George Fairholme, of Great Britain, who deliberately set aside such parts of the first chapters of Genesis as will not bend to their unscientific notions.

If we turn to the writings of those Romish and Puseyite authors who are characterized by the profoundest reverence for the Holy Scriptures, errorists though they are, we

find the same thing to be true. We need only refer to Dr. Pusey and Cardinal Wiseman, to prove the correctness of this statement. The work of Cardinal Wiseman, on the connexion between Natural Science and Revealed Religion, in which he shows how the principles of geology may be consistent with the biblical record of creation, is justly admired as evincing the most sacred regard for God's word; and, at the same time, a competent knowledge of natural science, united with remarkable philosophic fairness of mind.

When we examine the works of authors who have written in foreign tongues, the very same fact presents itself. The most thoroughly evangelical ministers of the Gospel, the professional expositors of the word of God, who most cordially and unreservedly believe in its plenary inspiration, maintain at once the truth of geological teachings and their harmony with the more precious doctrines of revelation; while many, we believe most, of the principal non-clerical writers, both believers and unbelievers, of all shades, and those who, from their training, may reasonably be expected to be imperfectly acquainted with one side of the subject or the other, deny that it is possible for both the Bible and geology to be true. For full illustration and proof of this, we need only compare the views of the theologians, Kurtz, Hengstenberg, Tholuck, and Delitzsch, with those of the laymen, Wagner, the believer, Bunsen, the rationalist, De Luc, De Serres, down to Vogt, the scoffing disbeliever.

In the selection of the above named authors, we have endeavored to bring forward those who fairly represent all the principal writers on the subjects involved: a full enumeration, we believe, would lead to the same conclusion. Thus is demonstrated the serious (yet, we hope, unintentional) mistake of anti-geologists, who are so fond of classing geologists with infidels, or with those who know little of the Bible and its teachings, or care little for them.* It

* It is true that the names of many ministers might be given who have, in pamphlets, etc., denied the possibility of any agreement between geology

must not be supposed that we regard the point at issue as one which can be settled by vote, or by the authority of the learned and godly Christian ministers to whom we have referred. But we do think that the opinions of such men ought to silence the cry of "infidel," "rationalist," etc., which many are so ready to raise against all who believe the doctrine of the earth's antiquity. We think, too, that we are entitled, as ministers, to no special privileges in our discussions with geologists. If there is a contest, it is not between "parsons" and geologists; and we must not falsely assume, if we attack geology, that we go forth as standard-bearers of the Church against infidelity, or to sustain the doctrines of the Church; when the Church catholic, during the last forty years, has given forth the opinion, as far as can be learned from the writings of its leading spirits, that the Bible no where teaches any thing that is inconsistent with modern geology.

The first mistake of anti-geologists concerning the nature of the science which we will notice is, that they generally suppose it to be cosmogony, or, at least, geogony; a history of the origin or creation of the universe, or, at least, of our earth. Accordingly, if it fail to give a satisfactory account of the creation, to demonstrate in what state matter first appeared, and what were all the successive steps, from the very first, by which the earth assumed its present form and condition, it is held to be worthless, and to have failed in all that it proposed to do. This shows an entire misappre-

and the Bible: as the Rev. Mellor Brown, Dr. Dickinson, Prof. Baden Powell, and others; and we would be sorry to deprive such excellent laymen as Dennis Crofton, Dr. R. Poole, Gibson, Pattison, and others, of the credit which they deserve as defenders of the truth of both the Bible and geology. But this does not affect the truth of the assertion, that most of the professional expositors of the Scriptures who have written at length upon the subject, during the last half-century, in every branch of the Christian Church, have believed that the doctrines of geology are in no way inconsistent with those of sacred writ.

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hension of its character and its aim. No reasonable geologist has ever claimed this for his science. He regards it as a history of those changes which have distinctly left their record in the earth's crust. Many of these records are now read as easily, and with as much certainty as to their meaning, as state papers in government archives relating to the events of the last century; while others resemble rather the faded and tattered fragments of ancient documents, in almost obsolete tongues, from which we can with the utmost toil learn only the leading characteristics of the ages to which they refer. In tracing the history of any nation towards its origin, we at length reach a point where historical truth begins to be mingled with doubtful traditions; still beyond this, we are either left wholly to conjecture, or are dependent for a few glimpses of possible truth upon fabulous legends. Thus, in Roman history, we gradually pass from the certain, through the period of Curtius's self-sacrificing leap, the divine origin of Romulus and Remus, and their preservation by the she-wolf, to the wanderings of Æneas and Iulus. We trace with considerable confidence the history of Egypt to the time of the great Rameses Miamun, whose predecessors we see with increasing dimness, as far as the looming figure of Menes, beyond which all is lost in the night-gloom of fabulous reigns of gods. So it is in geology. We trace with perfect distinctness the general course of events, through the comparatively recent period of the tertiary, through the stirring times of the secondary, and almost to the beginning of the ancient fossil-bearing primary strata. During this time, it is true, there are many events over which doubt hangs, as in other histories; but this does not affect the truth of what we know. Our knowledge becomes more fragmentary beyond this point, as we penetrate the non-fossiliferous strata, because they are marked with but few characters now legible; nearly all that we understand having been obliterated, if they ever existed. When we reach the unstratified rocks,

we can learn nothing from them, except here and there an isolated fact. Of the changes which these may have previously undergone, we *know* nothing. But just as speculations concerning the possible meaning of the story of Romulus, or the possible basis of fact which Egyptian mythology may have, do not invalidate the truth of succeeding history, so speculations concerning the possible previous condition (if such there was) of the oldest unstratified rocks, do not affect the truth of the account of succeeding events that lie within the geological historic period. Hence the assaults upon the nebular hypothesis, upon the assumption that the earth was at one time a molten globe, and even upon the doctrines of central heat and metamorphism, do not touch geology; and if it could be demonstrated that these conjectures are wholly unphilosophical and untrue, the scientific history of the earth, as presented to us by the geologist, would be no more rendered doubtful than would the history of Julius Cæsar, by proving that he was not descended from Iulus; or the existence of Rome, by proving that Mars was not the father of Romulus, and that a wolf was not his foster-mother.

It will be seen, from these considerations, that the greater part of every anti-geological argument at once tumbles to the ground, as soon as it has been ascertained what geology professes to be. No part of the doctrine of the earth's hoary antiquity rests upon what we may term the mythical period of the earth's history—that antecedent to the formation of the oldest stratified rocks. And the semi-historical period of the non-fossiliferous strata might also be omitted, without at all endangering it.

This limitation of geology to its proper sphere might have been expected to mitigate the violence of its assailants; but when one of its most distinguished founders ventured to disclaim for his science the power of seeing back to the first moment of creation, or of looking forward to the final consummation of all things, saying that he could

“see no traces of a beginning, or indications of a coming end,” a reserved guard of anti-geologists denounced him as an infidel, who flatly denied the truth of the biblical account of the creation, and of the predicted end of the world; his modest disclaimer of omniscience concerning the entire history of the earth, was distorted into an atheistic assertion of the eternity of matter. And to this day, the luckless Hutton is the standing illustration of the atheistical tendencies of natural science generally, and especially of geology. The unhappy science is thus placed in this dilemma: if it attempt to go beyond its admitted boundaries, and to approach nearer the mysteries of creation by means of probable conjecture, it is frowned upon as impiously presumptuous, and it is falsely represented as requiring its conjectures to be received as certainties; on the other hand, if it modestly confine itself to rigid reasoning and ascertainable truths, it is angrily driven away as grossly atheistic.

Another mistaken view of the science—quite a favorite with anti-geologists—is, that there is nothing settled in it; that its votaries do not agree on a single important point, except in asserting the antiquity of the earth. The following extracts from Lord’s *Geognosy* will show how this is presented:

“That so mistaken a system should have gained the assent and advocacy of so large a body of studious and talented men, is truly a matter of astonishment. The fact, indeed, that they universally and unhesitatingly concur in assigning a vast period to the formation of the strata, is sometimes alleged as a proof of the validity and amplitude of the evidence on which their judgment is founded. The unanimity and ardor with which they maintain it, and the disquietude, and not unfrequently discourtesy, with which they receive a doubt of its truth, are certainly remarkable. The concurrence, however, is seen to be entitled to but little weight, when it is considered that it is almost absolutely confined to this branch of their speculations;—that there is not another question in the whole range of their system in regard to which they do not entertain a wide diversity of opinion. They are not agreed, for example, whether the world, at its creation, was in a gaseous or in a solid form. They are not agreed in respect

to the processes by which granite, gneiss, schist, and the other primary rocks were produced. They are not agreed in respect to the point at which the secondary series commences, the order of the strata, the sources from which some of their elements were drawn, nor the agencies to which they owe their peculiar structure. They differ in respect to the point at which vegetable and animal life commenced, and the forms which it first assumed. They entertain the most diverse and absurd opinions respecting the origin of limestone, coal, gypsum, chalk, magnesia, iron, and salt. They hold conflicting views in regard to the state of the globe at the epoch of the different formations, the forces by which the strata were dislocated, the causes by which the mountains were upthrown, the period at which land animals were first called into existence, and the origin of the races that now inhabit the globe. They differ, likewise, to the extent of countless ages, in regard to the period that has elapsed during the formation of the strata. In short, beyond the simple facts, that the strata have been formed since the creation of the earth, that chemical and mechanical forces of some kind were the principal agents in their deposition, and that the fossilized forms that are imbedded in them once belonged to the vegetable and animal worlds, there is scarce a topic of any moment in the whole circle of the science in respect to which they do not maintain very diverse opinions; there is scarce a solitary point so fully ascertained as to be placed beyond doubt."—Pp. 303, 304, 305.

We have selected this, because it is an exhaustive enumeration of the discordant opinions which prevail. It is certainly a formidable one; and with the exception of the clause respecting the "order of the strata," it is correct. But as far as the *historic* period of geology is concerned, these discordances are of little importance. The arguments which are supposed to prove that the earth and its earlier inhabitants were called into being more than ten thousand years ago, are not touched by a single point in the enumeration. We say ten thousand years; for if this period be admitted, it matters little, as regards any imaginary connexion with biblical chronology, whether the time of creation was ten thousand or ten thousand million years ago. If even the numbers six thousand or seven thousand be abandoned, it must be on the ground that the Bible does not fix the time of the creation. Therefore, the only point which, at first sight, seems to bear materially upon the question at issue, does not really affect it; for, after "differ-

ing to the extent of countless ages, in regard to the period that has elapsed during the formation of the strata," all agree that the shortest possible period immeasurably exceeds ten thousand years. The whole argument rests upon "the simple facts that the strata have been formed since the creation of the earth, that chemical and mechanical forces of some kind were the principal agents in their deposition"—forces ascertainable from an examination of the strata and their contents—"and that the fossilized forms that are imbedded in them once belonged to the vegetable and animal worlds." It is not pretended that there is a want of agreement as to these facts; and the chronological question is settled by them. And even the great majority of those who have begun to study them with the sole design of showing that they do not prove the earth's antiquity, have soon become convinced of that which they set out to overthrow.

We have already said that the diversity of opinion among geologists is of little importance. It no more weakens the confidence due to the science as a whole, than the differences among British historians make us doubt the principal facts of British history. And yet, what a startling list of discordant views and statements might be given! They are not agreed, for example, whether Great Britain, when first visited by man, was an island or a part of the continent of Europe. They are not agreed in respect to the origin of the races by which it was first peopled. They are not agreed in respect to the time when the Cymry obtained possession of the island; whether their settlement was opposed by wild beasts or human beings; or when their power was finally broken, and they were forced to yield to the Teuton. They entertain the most diverse and absurd opinions respecting the origin and design of the so-called runic inscriptions, the remarkable circles of stones near Stonehenge and elsewhere, assigning them to the Phœnicians, the British Druids, and to the Romans.

They differ in respect to the point at which parliaments began to assemble, and the forms and powers which they at first assumed. They hold conflicting views in regard to the social condition of the people at different epochs, the moral forces by which society was convulsed, and even in regard to the causes of the last revolution—whether they were political or religious. They differ, likewise, to the extent of many centuries, in regard to the period when the Phœnicians first visited their shores. And so the enumeration might proceed indefinitely. But who regards British history as rendered thereby so uncertain that it would be unsafe to say that the Celts, the Saxons, and the Romans successively governed the island, and that it has certainly been inhabited for not less than two thousand years? Of no greater weight are the objections urged against geology from this source.

We might here leave this objection, were it not for the deep impression which it has made upon the popular mind; from the incessant reiteration of the assertion that there is nothing settled in geology, and of the advice to wait until it has settled itself before an effort shall be made to settle its relations to revealed truth. Even if there were serious differences among geologists—which, as we have seen, is not the case in respect to the question at issue—it would be unwise to conclude that the subject is worthy of no consideration on the part of sensible men, until these differences are adjusted. This principle would prevent our giving our attention to any subject whatever, or believing any thing whatever, except, perhaps, our own existence. We could not believe in the existence of a material world; how often has its existence been denied by learned philosophers! We must refuse our assent to the truths of mathematics, astronomy, optics, chemistry, electricity: to what must we not refuse it? Mathematicians are not agreed even as to the definition of a straight line. Astronomers hold the most conflicting views respecting the nebulæ, double stars,

the nature and orbits of comets, the origin of meteors, and the condition of interastral space. Philosophers have wrangled without ceasing over the questions, whether light is material substance, or the effect of mere motion; whether the so-called elements are simple substances, or compounds; whether matter is infinitely divisible or composed of atoms; whether the phenomena of electricity are due to one fluid, two fluids, or none. But who, for this reason, says that he will wait until they are settled, and then he will listen to the conclusions reached? Before deciding that it would be wise to avow or advise such a determination, it would be well to observe the force with which the principle might be turned against us, when we are seeking to win the attention of unbelievers to our holy religion. Scarcely any objection to pure and scriptural Christianity is oftener upon the lips of its opponents. The work of the eloquent Bossuet, *Histoire des Variations des Eglises Protestantes*, ought to be regarded as conclusive against protestantism, if such a principle satisfy us. And how shall we answer, when we are called upon to state what one point in the Christian system is settled? To what extent is the book containing its principles to be received as true? Is it alone sufficient to reveal to us the whole will of God, or do we need the traditions of the Church besides? Does it teach that God exists in one person, or in three? What was the design of Christ's death? What is taught as to the future state of the wicked? What is the scriptural system of Church government? And so the objector proceeds. Let the advocates of Christianity, says he, settle among themselves what their principles are, and then it will be time enough for us to look into the matter. If we condemn such cavils as weak and foolish, in this case, let us not expose ourselves to similar condemnation. We can not heed the advice to wait until there shall be no cavillers. And if we proclaim the untruth of geology, let it be after a candid examination of the evidence by which it is supported, and not because

we have found that there are differences among its votaries, on some points on the outskirts of the science.

In the next place, the combined influence of preconceived opinions and imperfect knowledge on the part of anti-geologists, is strikingly exemplified by their misconception of arguments in the proper domain of geology. It is not that they have not examined the subject; but that they have examined it with the predetermination to find nothing but absurdities and contradictions. An admirer and intimate friend of the most prominent anti-geological writer in America once said to us, when an apparent want of knowledge was attributed to him, "He has studied more works on geology than any man in this country; I know he has read a pile that would more than reach from the floor to the ceiling of this room." To what purpose all this reading and study have been, let one example show. Geologists hold that the materials of which the stratified rocks are composed were derived from the disintegration of previously existing rocks. On this doctrine, this author remarks:

"The strata of the earth are held by geologists to be, on an average, about ten miles in depth. To maintain, therefore, that their materials were derived from continents and mountains of granite, and were borne from them by torrents and rivers to the ocean, is to imply that these granite continents and mountains, even if they covered as large an area as the strata now occupy, were at least ten miles above the level of the ocean; and if the mountains from which it is represented the matter of the strata was chiefly drawn, were of but half or two-thirds the extent of the strata that are supposed to have been formed from them, then they must have been elevated at least fourteen or fifteen miles above the level of the ocean. But mountains elevated to such an enormous height, and extending over vast areas, could never have been disintegrated by the action of the air, water, and heat. There would have been no air, except of the most attenuated kind, and no water at all, probably, at such an elevation. On the supposition that vapors could have ascended to such a height, and fallen in the form of snow, they would for ever have remained congealed. No heat could have been developed there sufficient to dissolve them. No rivers, therefore, could have flown from them, and consequently no

detritus could have been borne from them to the sea, to be distributed over its bottom, and form layers like our present strata."—Lord's *Geognosy*, pp. 21, 22.

Now, in the first place, no geologist holds that "the strata of the earth are, *on an average*, about ten miles in depth." They do hold it as an indisputable truth, that the combined thickness of overlapping strata, which have certainly been formed successively, is ten miles or more; but not that all the strata making up this thickness occur in any one place, much less in every place. It is clear, from a consideration of the manner in which the strata were formed—by deposition from water—that they could not have been formed simultaneously over every part of the earth; and further, many strata and parts of strata have been removed by denudation. In the next place, these continents ten miles high, and these mountains fourteen or fifteen miles high, where there could be no air and no water, are required by no geological theory, but exist only in the imagination of the anti-geologist. Daily observation teaches us that the surface of the earth does not stand at a fixed level, but, on the contrary, that it is sinking here and rising there. And the absurd hypothesis of the geologist is, that changes like those in progress now have always been going on; and that as at present, so during the past, detrital matter has been conveyed from such parts of the earth as have been for the time elevated, to such as for the time have been depressed. Thus does this anti-geologist, after all his study, show how ignorant he is of the most familiar principles and facts of the science he would overturn.

Such misconceptions of geological reasoning are not confined to this writer. Illustrations might be multiplied indefinitely; but we will content ourselves with only one more. Many efforts have been made to estimate approximately the length of time necessary for the excavation of the gorge below the falls of Niagara, and for the formation of the

delta of the Mississippi, two of the most recent events in geological history. Lyell, after pointing out the great difficulties in the way of reaching any trustworthy result, conjectures that perhaps thirty-five thousand years may have been required for the former, and one hundred thousand or more for the latter. Now, anti-geologists have spent much labor in repeating the statements of geologists, that the data on which these calculations are based are not perfectly determined or determinable; and not unfrequently they point out additional grounds of doubt, which are somewhat amusing. They have intimated, for example, that the transporting power of the Mississippi is usually greatly underrated, inasmuch as the water near the rough, uneven bottom of the channel, flows more rapidly than that near the surface. It is to no purpose to refer to the principle in hydraulics, that the velocity varies inversely as the friction, and therefore that the velocity must be greatest near the surface; for, in this discussion, the opinions of illiterate boatmen, who have no means whatever of testing the accuracy of their impressions, are always preferred to the most careful measurements of engineers and men of science, and even to a well-established law in physics. When, by these means, it has been shown that such calculations, confessedly only conjectural, can not determine the exact number of years required by a given series of events, it is maintained that the worthlessness of all geological reasoning concerning time has been demonstrated. It is forgotten or unknown that the geological argument is cumulative; and that it might be admitted that, instead of one hundred thousand, or thirty-five thousand years, only one thousand or less may have been occupied with these events; and yet that the proof remains irresistible that the time required for these, together with other events necessarily anterior to them, was ten thousand years or more.

It is some times assumed that if men of acknowledged ability, and of well-trained reasoning powers, fall into such

palpable errors, after much study of the subject, the fault must be in the subject; it can not possess the scientific character claimed for it. There might be some weight in this objection, if it were true that *classes* of educated men, after due examination, fail to comprehend the principles of geology, and to acknowledge the validity of the evidence by which they are sustained; but this has not been asserted of any class except that of ministers; and we think we have shown that it is not true of it. We hope we have effectually freed the class to which we belong from this aspersion upon its intelligence and its ability to reason. That there are individuals of this and other classes who reject the teachings of geology—individuals, too, of the highest attainments, and whose judgment we value most highly in other directions—is admitted. We do not profess to explain these cases, except so far as they can be fairly referred to the influence of a predetermination to reach a certain conclusion, whatever facts may oppose; and we do not feel called upon to explain them, any more than to say why it is that many intelligent, honest, and learned men, who have spent their lives in studying church government, prefer prelacy or independency to presbytery; or why even honest and learned men, of confessedly high logical powers, prefer popery to protestantism. The difficulty is certainly not in the science; for the labors of modern geologists have so simplified it, and have placed the evidence of its leading principles in so clear a light, that in order to acquire a knowledge of it, no very great amount of study is needed. It has not yet reached that degree of simplicity that its principles, and the evidence on which they rest, can be fully presented in an evening lecture, any more than a course of Christian theology, and the evidences on which it rests, can be similarly compressed. But it has reached such order and simplicity that it is with propriety included among the subjects of study in all our higher seminaries of learn-

ing. That, unlike all other sciences, it will ever be able to force conviction upon the unwilling mind, can hardly be expected. This has been done, and can be done, by no system of truth, not even by Christianity itself.

ARTICLE IV.

RELIGION AND POLITICS.

That religion and politics should be separated, the one wholly divorced from the other, is a popular fallacy so assiduously cultivated by a certain interested party, and so widely disseminated, that it may be justly termed one of Lord Bacon's "idols;" that is, an erroneous impression universally received as a self-evident proposition, without investigation or contradiction. Of the many popular fallacies that are generally afloat in society, there is perhaps none that is deeper rooted or more damaging in its effects than the one just stated. How it originated, and became so deeply implanted in the popular mind, it may be rather difficult to explain. It is, however, a modern notion. The records of the past do not recognize that absolute divorcement between religion and politics required by the fallacy in question; not certainly in Adam's immediate family, until the wicked Cain drew off and set up for himself; not in the family of Noah; not in that of Abraham, or his descendants; or even amongst the ancient pagans. Priests and kings were at first identical. The father was both priest and king of his family. The Roman Emperor was at the same time the Pontifex Maximus. The fact is,