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ART. I.—1. *Report of the Committee on Arts and Sciences and Schools, of the Board of Assistants of the City Government of New York, on the subject of appropriating a portion of the School Money to Religious Societies, for the support of Schools.* April 27, 1840.

2. *The important and interesting debate on the claim of the Catholics to a portion of the Common School Fund, with the arguments of Counsel before the Board of Aldermen of the City of New York.* Oct. 29 and 30, 1840.

3. *Report of the Special Committee, to whom was referred the petition of the Catholics relative to the distribution of the School Fund, together with the remonstrances against the same.* January 11, 1841.

4. *The Question—Will the Christian Religion be recognised as the basis of the system of public instruction in Massachusetts? discussed in four letters to Rev. Dr. Humphrey, President of Amherst College.*

WE know not that any subject appropriate to our pages involves more of the essentials of religion and liberty than the true relative position of Christianity in a scheme of national education. This relation has been set forth in various and opposing forms, some of which seem to us as opposite

used it. And if the trifling boon of government patronage cannot be enjoyed, but upon terms which may (and probably will) convert it into a curse, let us throw ourselves upon the principles which educated the generations of our fathers, and which educated them in reference to eternity as well as time. Fidelity to these principles will give to truth and liberty a speedy and perfect triumph.

ART. II.—*On the relation between the Holy Scriptures and some parts of Geological Science.* By John Pye Smith, D.D., F.G.S. New York: D. Appleton & Co. 200 Broadway. 1840.

IF we have not misinterpreted certain indications of the public mind, there exists, especially among those whose means of information are not commensurate with their thirst for knowledge, a strong desire to be acquainted with the progress of geological inquiries, and their bearings upon the Scriptures.

Geology has a peculiar claim upon the attention of the ministry, and the friends of revelation generally, from its professed and obvious relationship to subjects which belong to their peculiar province. What that relationship is has been warmly disputed—whether inimical or friendly or neutral—and in the issue of the dispute we are deeply interested.

We propose therefore to give a brief sketch of the origin and history of geology, and point out the indications which satisfy us perfectly of the part it has to play in settling the controversy between the friends and foes of revelation.

The observations and reasonings of geology may be traced back, with some degree of certainty, to the early part of the 16th century. In making some improvements in the town of Verona, in Italy, a large number of shells were discovered imbedded in the earth. Similar facts had been noticed before in several instances; and even so early as the time of Strabo we find him accounting for these fossil shells, by supposing them to have been deposited at the bottom of the ocean, and elevated afterwards by earthquakes. But little attention, however, was paid to the subject; and it appears to have been wholly lost sight of for a long period.

The discovery at Verona attracted the notice of the learned

men of the day very extensively; and gave rise to discussions of such warmth and interest, that the subject has never since passed entirely out of view. The questions which grew out of the discovery we have mentioned, were, first, whether these fossils were real shells, and had actually belonged to living animals; and, secondly, whether, if this were so, their deposit, in the situation in which they were found, was effected by the deluge described in the Bible. The negative of the first question was for some time the prevailing doctrine of the learned; and various theories were framed to account for the existence of these fossils. Some maintain that they were the result of a certain fat matter set in fermentation by the natural heat of the earth. Others insisted that they were nothing but stones which had received a peculiar form from the influence of the stars. The celebrated anatomist Fallopio, of Padua, taught, that they were formed by "the tumultuary movements of terrestrial exhalations," that the elephant's tusks were only earthly concretions, and that the vases and other pottery of the Monte Testaceo, near Rome, were "sports of nature to mock the works of man." A professor of anatomy at Basil referred the bones of an elephant, found at Lucerne, to a giant at least nineteen feet high; and, in England, similar bones were, it is said, regarded as those of the fallen angels! The question, however, was ultimately settled in the affirmative: and the whole force of the discussion was turned to the second query above named, viz. whether the phenomena of these remains could be explained by the deluge of Noah. The affirmative was maintained by the advocates of revelation, who were by no means sparing in applying the epithet of infidels to all who questioned the truth of their dogmas.

Almost the only good effect which followed from these warm discussions, was that men were led to investigate and accumulate facts, and thus prepare materials for sounder inductions. This disposition was increased, by the unsatisfactory result of the labours of Burnet, Woodward, Whiston, Leibnitz and others, which grew out of what they deemed the anti-scriptural tendency of geology, in constructing theories of the earth which should account for its original formation and subsequent changes, according to their understanding of the Bible, on principles which were not only hypothetical, but whimsical. We have not space to give even a specimen of these visionary theories. From the observation and accumulation of facts, relating to the surface of the earth,

sprung the science of geology, more properly so called. The first attempts worthy of mention, at generalizing and explaining these facts, resulted in the formation, about fifty years ago, and almost simultaneously, of the two great theories of Werner and Hutton, the one a Professor of the art of mining in Germany and the other a celebrated Scotch geologist and physician. These theories are more currently known as the Neptunian and Plutonian; because the one referred the formation of the earth's crust solely to deposits from water, and the other contended, that their materials were all originally produced by the cooling of a melted mass, in which state the earth was supposed to have been originally formed.

Our present design will not lead us into a more minute description of general theories, and the arguments by which they have been assailed and defended; nor will our limits permit it. We pass on therefore to give a rapid sketch of the general facts and opinions of modern geology, only so far as they are indispensable to enable the general reader to understand the points of contact with the Scriptures.

To a common observer, the surface of the earth appears broken and confused—made up of mountains and valleys, and plains, coated with soils and rocks of infinite variety, and all apparently without order and without design. When however, it comes to be examined with a close and practiced eye, and its depths explored with the torch of science, the apparent confusion admits of being reduced to order, and the whole arrangement, instead of being accidental, is referible to certain principles, as fixed as the law of gravitation. The crust of the earth instead of being a jumbled mass, is found to be composed of certain layers or strata, of given materials, whose surfaces intermingle, but which are still perfectly distinguishable; and which always follow a fixed order in their relative arrangement. Some of these strata are wanting in particular localities, and they vary greatly in thickness, but they never change places. They are like the leaves of a book correctly paged;—sometimes one, and sometimes several are missing, but they are never misplaced. The thickness of these layers as they are observed to emerge from beneath one another, "like the edges of so many cards swept slantingly aside," is commonly estimated at ten miles. This is the portion of the earth which it is the province of geology to examine; and on the observation of which, all its principles and reasonings depend. And it is only by the

outlying of the edges of these strata, in different localities, and at different elevations, that they become subjects of study. It would be impossible to perforate the aggregated mass far enough to gain information by this means of their relative position and magnitude, and the materials of which they are composed. The deepest mine in the world, so far as we know, that at Kitzpuhl in Austria, which is a little more than half a mile in depth, only burrows beneath the surface of the immense mass of these statified formations.

Of the interior or central mass of the earth, of course nothing can be known by actual observation, but the prevalent belief of geologists is, that it is in a state of igneous fusion, at a depth of about thirty miles from the surface. This belief is founded on the fact, that the temperature of the earth is found to increase in a fixed ratio proportioned to the depth, so far as it has been perforated,* on certain of the phenomina of volcanoes and earthquakes, and on the evident marks of the action of fire, on the lowest series of rocks that has come under actual observation.

As it is not indispensable to our purpose, we shall not attempt to criticize, or even describe the classifications of the geological strata, adopted by different authors. It is sufficient to call attention to the immense depth of the aggregate mass, and to state that it is divisible into layers, characterized by their materials and arrangement. The well marked difference in the mineral character of these strata, was the first to attract attention, and furnished the primary grounds of their classification. The application of comparative anatomy, in the study of the organized fossil remains which abound in all except the lowest formations, marked a new era in geology. This era is due mainly to the labours of Baron Cuvier and Alexander Brougniart, in France, and

* The subject of the internal heat of the earth is extremely curious; and has received considerable attention. Numerous experiments have been made to ascertain the rate of increase in the interior of the earth. M. Aargo makes it 1 . 8, Fah. for 101, 2 Eng. feet. (Journal of Franklin Inst. June 1838,) Kupffer states the average increase in all the countries examined at 36.81 feet for each degree. (Ed. Jour. Science, April 1832.) The British Association have fixed upon forty-five feet to a degree. Important papers may be found on this subject in the Ed. Jour. Science. American Jour. Science, vols. 32 and 34, and Cordier's Essay, "Sur la temperature de l' interieure de la Terre." Those who are at home in the highest mathematics, may find the subject most profoundly treated by Baron Fourier, maintaining the existence of a central heat, and by M. Poisson, in his elaborate work entitled Mathematical Theory of Heat, in which he accounts for the facts observed on other principles entirely.

William Smith in England.* Two important results followed from these investigations:—first, that corresponding strata, in localities widely apart, could be identified with considerable certainty by their fossil remains; and secondly, by the profound anatomical skill of Cuvier and his successors in that department, these fragments of animal and vegetable remains were restored, so as to display their original and complete form, and to give data for a probable opinion as to to their specific natures and habits. These fossils, thus restored, were classified and arranged, and their relations to existing genera and species were minutely pointed out. To such a degree of perfection has this science been carried, "that from the character of a single limb, and even of a single tooth or bone, the form and properties of other bones, and condition of the entire animal, not only the frame work of the skeleton, but also the character of the muscles, by which each bone was moved, the external form and figure of the body, the food and habits, and haunts and mode of life, may be inferred." (Buckland's Bridg. Treat.) It happened in several cases, where Cuvier had restored fossil animals, on the principles of comparative anatomy, that more complete skeletons were afterward found, and in every such instance his conjectural restoration proved to be correct. See his "Recherches sur les Ossemens fossiles."

We have now brought into view, historically, all the principal elements of geological reasoning, so far as we are concerned with it at present. These elements are the extent of the formations of which geology treats, estimated at ten miles in depth, the arrangement of these formations in layers, or strata, the mineral character or the nature and materials of the rocks which form and distinguish them, and the fossil organic remains which abound throughout the whole mass with the single exception of the lowest series of all. These are the great facts that are to be generalized and accounted for. In the mere matter of classification and description, geologists are now tolerably agreed; so far as observation has furnished them actual data. The engrossing part of the business is to deduce the laws which have governed their phenomina, and to trace the history of their original produc-

* The works which gave the impulse to geology in this department, were those of Cuvier and Brougniart, "On the Mineral Geography and Organic Remains of the Neighbourhood of Paris," which appeared in 1811, Cuvier's splendid work on "Ossemens Fossiles" in 1812, and the several productions of Wm. Smith, from 1790 to 1815.

tion. It is here that they come in contact with the Scriptures: and it is only this bearing of the science with which we are concerned at present.

We propose now to state, with all possible brevity, the several points of contact between geology and revelation; and give, merely as historians, not as partizans of any theory whatever, a condensed view of the reasonings, pro and con, in relation to each.

The first and chief subject of debate, is the history of the creation of the earth, and the date and manner of that event. The issue is thus stated by Dr. Smith, in the work before us.

We ought, however, in justice to say in advance, that Dr. Smith, and indeed the great body of eminent geologists of the present day, contend, that it is not the Scriptures themselves but only a common, and as they hold erroneous interpretation of the Scriptures, with which geology conflicts.

"It is a prevailing opinion, that the dependent universe, in all its extent, was brought into existence by the Almighty power of its Creator, *within the period of the six days* laid down in the first portion of the Book of Genesis. The same conclusion is also drawn from the language of the fourth commandment: 'In six days the Lord made heaven and earth, the sea and all that in them is.' To this position the discoveries of geological science are directly opposed." Mr. Babbage, one of the most gifted minds of the age, in his work "The Ninth Bridgewater Treatise," expresses the same sentiment thus strongly:—"In truth the mass of evidence which combines to prove the great antiquity of the earth itself is so irresistable, and so unshaken by any opposing facts, that none but those who are alike incapable of observing the facts, and appreciating the reasoning, can for a moment conceive the present state of its surface to have been the result of only six thousand years of existence."

Now there must be strong reasons to induce such men, (and they only express the received doctrine of geology on the subject,) to take such ground as this. We shall try to give a synopsis of those reasons; and in doing so, shall, for the sake of brevity, and in order to do them justice, identify ourselves, for the moment, with the advocates of the doctrines in question.

It is conceded on all hands, that the strata of the earth's crust were deposited under water, as soft sediment, and accumulated layer upon layer, and hardened into rock, by a natural process. The proof of this is so manifest that it is

undisputed, except by a few who maintain with the old speculators on the subject, that these masses, with all their imbedded contents of shells, bones, plants, and animals, were created just as they are now found. This position is so unreasonable, that it scarcely deserves to be recorded as an exception to the universality of the concession, that the stratified formations are sedimentary deposits. On this concession geology bases an important part of its claim, to a vast antiquity for its operations.

First and deepest we find beds of the rock called Gneiss, composed of the same elements, essentially, with granite, on which it rests, and to the flexures and cavities of which it fits so accurately as to evince its deposit in a soft semi-fluid state. Its elements are changed in shape and disposition, from those which compose the granite, precisely as might be expected from the action of water, in suspending, floating and then precipitating them in laminæ and beds of greater thickness. Over the Gneiss, come the beds of Mica Schist and Slates, evincing the same fact, of deposit from suspension in a fluid, whose thickness, added to the gneissic rocks, is estimated at three or four miles: (Dr. Smith, p. 322.)

The same observations apply to the numerous beds of silicious, slaty, and limestone aggregates, (known as the silurian system, since the publication of Mr. Murchison's work upon it,) the united depth of which is about a mile and a half. Above, in the ascending order, we have several thousand feet in depth of old red sandstone,—the series of rocks commonly known by the term Oolitic, half a mile in thickness; masses of chalk and its accompaniments, of a thousand feet or more, then a succession of beds, clays, sands, and limestones, occupying some six or eight hundred feet in height; and finally beds of detritus and alluvium, which have till recently been regarded as the results of the deluge, and the action of the causes since that date. Now combining in a single view this immense series of deposits, and assuming that they are, what they have every appearance of being, sedimentary precipitates, and the natural conclusion would force itself strongly on the observer, that a long period of time must have been consumed, in accumulating ten miles thickness, or even half of that depth, over so large a surface as these deposits are found to cover.*

* From the measurements made by Prof. Rogers in his survey of Pennsylvania, he estimates the rocks that contain animal and vegetable remains, from the coal strata downwards, at 40,000 feet, or more than seven miles and a half in depth. Report on the Geology of Pennsylvania, for 1838, p. 82.

In order to preserve distinctions between the strata, (and they are divisible into hundreds of distinct series,) it is almost inconceivable, on the known laws of matter, that there should not have elapsed periods of time, corresponding to these separate formations. If they were the result of sudden and violent disruptions, they must, one would suppose, have been piled together in wild confusion, instead of being disposed in regular distinct layers, composed of specific materials.

The probability of this inference is greatly strengthened, when any portion of the mass is subjected to minute examination. Take for instance the old red sandstone formation. A large portion of this rock is composed of pebbles from the size of coriander seeds to that of birds eggs and much larger, which bear demonstrative evidence of having been broken from the deeper rocks, rounded like other pebbles by rolling under water, then subsiding into the loose sand, where they are agglutinated by mineral paste, into masses called "conglomerate." "Let any one," says Dr. Smith "first acquire a conception of the extent of this formation, and of its depth, often many hundreds and sometimes two or three thousand feet, (but such a conception can scarcely be formed without actual inspection;) then let him attempt to follow out the processes, which the clearest evidence of our senses show to have taken place: and let him be reluctant and skeptical to the utmost that he can, he cannot avoid the impression that ages innumerable must have rolled over the world, in the making of this single formation." p. 328.

In still farther confirmation of the doctrine under discussion, (for the argument is of the kind which Dr. Paley calls cumulative,) geology adduces the proofs of a quiet and gradual, and therefore immensely long continued, deposit of these miles deep of strata. One of these proofs is furnished by the amazing accumulation of organic remains with which some of the strata are loaded. A large proportion of their entire substance, in some cases, is composed of myriads of comminuted shells. The formation termed "Mountain Limestone," for instance, consists almost entirely of shells and corallines, imbedded in a deposition of carbonate of lime; and is often a thousand feet and more in thickness. In other strata the presence of countless myriads of unbroken corallines, and of fragile shells, having their most delicate spines still attached and undisturbed, shows that the animals which formed them, lived and died upon or near the spot, where these remains are found. Besides minute examination dis-

closes, occasionally, prodigious accumulations of microscopic shells. Some idea of their numbers and diminutive size, may be formed from the statement of Soldani, who collected from an ounce and a half of stone, 10,454 microscopic chambered shells. Immense numbers of them would pass through a paper in which holes had been pricked with a needle of the smallest size. In the district of Auvergne, in France, there is a formation at least seven hundred feet thick, to the marly beds of which the remains of the genus Cypris, give a foliated appearance, in consequence of their immense number, and create divisions in the marl as thin as paper. (Buckland's Bridgewater Treatise).

Ehrenberg, a Prussian naturalist, assures us that in one place in Germany is a bed of rocks fourteen feet thick, made up of the shields of animalcula, so small that it requires 41,000,000,000 of them to form a cubic inch! In Andover, Massachusetts, is a bed composed of the silicious shields of infusoria, of a somewhat larger size than those mentioned above, fifteen feet in thickness. And similar beds occur all over New England and New York. (Hitchcock's Geology and Am. Jour. of Science, vol. 35).

This prodigious accumulation of such remains, and the existence of ten of the most fragile of them, in an unbroken and undisturbed state, are offered in evidence of the lapse of long periods of time. The argument from these facts, is twofold:—1st. from the immense number of animals required to produce such masses of remains: and 2nd. from the evidence which their position is supposed to furnish, that they must have lived and died in numerous successive generations, in the spot where they are found accumulated. All the facts of the case taken together, go to show that these formations were not due to any violent and sudden accumulation of the materials which enter into their composition.

But the facts most relied upon in proof of the immense antiquity, and successive formation of the strata of the earth, are those which have been brought to light by the application of comparative anatomy, in determining the specific character of animals and vegetables, whose remains are imbedded in those strata. We have already mentioned, that Cuvier gave to geologists a clue, by which to explore the windings and recesses of the earth's crust, a key by which to decypher the inscriptions written upon the ruined monuments of other ages, and other generations. Whether this clue and this key are the true ones, is a disputed point, but we

proceed to give in brief the result of their application, and then state with equal candour, what has been alleged in opposition.

By the consummate skill of modern science the fossil organic remains of the geological strata have been sufficiently restored to enable us to make out their original forms, to classify them in families, genera and species, and ascertain with almost entire certainty their characteristic natures and habits. From a laborious comparison of these fossils, thus restored, with each other, and with the animals and plants now existing on the earth, the important principle has been deduced, that the deeper we descend into the earth, the more unlike, in general, are the organic remains to existing species. Nearly all the principal classes of organized existence both animal and vegetable; are found represented throughout the whole series of strata, but species and genera differ more and more in proportion to the depth. The most numerous class of remains by far, consists of the shells of mollusca, which abound in all the fossiliferous strata. In these there is manifestly a steady change, both of genera and species, from the lowest series upwards, and it is not till we have passed the chalk, and reached the most recent tertiary formations, that we find a single species now alive on the earth. The same is true of the fossil fishes, the remains of which are next to the mollusca in point of number. Of reptiles, no trace has been discovered, in ascending through the great mass of the strata, till we reach the new red sandstone, where we find a few sauroid or lizard-like animals, and next those appalling monsters of this family, which may be found figured and described in Dr. Buckland's Bridgwater Treatise. These again pass out of existence, and are superceded by existing species of lizards, crocodiles, &c. Of the class of birds, the first vestiges are found as high up as the sandstone formation, and consist of tracks or foot marks of about twenty species, which seem to show that these sandstone rocks, whose place in the series of strata, is at a depth of several miles, were at the time they received these marks, soft clay; and that they once formed the surface of the earth, on which animals lived and moved;—and consequently that they could not have been formed by the sudden accumulation of the masses which compose them, by the action of a deluge, or any other violent convulsion of nature. It is only in the late formations of the tertiary period, almost at the top of the geological mass, that we find well ascertained re-

mains of mammiferous animals, and they are all exceedingly different in their magnitude, their form and their habits from existing species and even genera. Finally, in the formations immediately preceding our own, we find animals falling into existing genera, but specifically different; and as they gradually cease, our present species succeed to their places.

The last circumstance which we shall stop to notice, in this connexion, and on which the geologists rely with much confidence, is that no trace of human existence has ever been discovered in any portion of these strata, of 50,000 feet in depth, crowded with the remains of other living beings. The controversy respecting fossil human bones, we may notice in another connexion; but we believe it is not pretended by any one at present that the remotest indications of such fossils have yet been discovered, in any of the older formations.* Now if the creation of man was contemporaneous with the other classes of animals, why is there no vestige of his remains entombed among the deep ruins of the world, which owes its destruction to his wickedness? Those ruins embalm the most delicate creatures which existed at that awful period, even to the most fragile microscopic shells, and that in countless multitudes, then why not man? And if the flood did this destruction, why are there no monuments of God's wrath against the guilty race, while the remains of inconceivable myriads of creatures, who could not sin, attest the fearful catastrophe? The answer commonly alleged is that investigations are yet too limited to allow inferences of such importance to be drawn. To this geologists rejoin, that at least ten thousand distinct species of fossil animals have been discovered, embracing countless numbers of individuals, so that if human remains existed at all, the strong presumption is, that some fragment would have come to light. And besides, it is not only man, but all his living congenera, that are wanting, in all except the mere surface of the fossilliferous crust of the earth. Among all the creatures whose remains people the old deep strata, there is no single species identical with existing races. The difference is as entire as if they belonged to different creations. All analogy, therefore, as well as all actual observation, is against

* The deepest locality contended for by any geologist, is the upper surface of the tertiary rocks, designated by Mr Lyell, "the newer Pliocene strata;" and even this is disputed by many.

the probability that human fossils ever will be found. Not only is there a distinction thus marked between the oldest animal remains and existing genera, but it is alleged that there are several successive changes of animal races, indicated by the sepulchral monuments of geology. Instead of being huddled together, as might be supposed if their destruction had been the work of one single overwhelming catastrophe, "fresh water productions with salt, land animals with fishes, present with extinct genera or species, they lie as methodically in regard to their general arrangement, as the shelves of specimens in a cabinet." Formations of the same age, or (to speak without presuming on the truth of the theory implied,) formations which hold the same relative place in the series, contain, in general, the same animal remains, though widely separated in locality, so as to be idenfied much more readily by their fossil than their mineral characteristics. This regularity of change and distribution in the character of organic fossils, it is contended by geologists, renders the discovery of human remains about as improbable as that the polar bear will yet be found among the unexplored jungles of Bengal, or the Iceland moss vegetating on the rocks of some tropical island. They claim therefore, (with how much justice we pretend not here to say,) the whole benefit of the argument, that human remains do not exist in any but the superficial, or, as it is commonly called, diluvial gravel, and in formations manifestly more recent than the deluge itself.

Such is a condensed view of some of the facts and reasonings, which have led geologists to reject the old hypothesis, that the whole mass of the strata of the earth, with all their contents, was due to the action of the flood; and to place the date of the "beginning" of the formations, as they have done ages before the creation of man.

Without expressing any opinion of the truth and conclusiveness of these facts and reasonings, we have only to say, as a matter of history, that we know of no practical geologist, of any school whatever, at the present day, who refers the formation of the geological strata *solely* to the action of Noah's flood. The opinion we know is held by many highly intelligent persons of all professions; but not, so far as we can ascertain, by any one who has studied practically the science of geology. Great as is the diversity of sentiment on almost every other point, this, we believe, is conceded by all. As this hypothesis is maintained, therefore,

on other than geological grounds, whatever may be our own opinion of its merits, it does not fall properly within the sphere of this article.

The leading theory which undertakes to explain the phenomina of geology, in consistency with the common interpretation of the Bible, which includes the primeval creation of matter, and all its subsequent changes within the period of 6,000 years, is that maintained by Granville Penn, in his work, "A Comparative Estimate of the Mineral and Mosaic Geologies," and by Fairholme, in a work entitled "The Geology of Scripture." According to this theory the chief part of the stratified formations, were deposited during the interval between the creation and the deluge, placing the former event at a period about 6,000 years back, and the remainder of the strata are due to the action of the diluvial waters. It follows, of course, that the dry land and the ocean must have changed places at the deluge. Accordingly the advocates of this theory suppose that it was the submerging of "the earth that then was," and the corresponding elevation of the bottom of the ocean, into a "new earth," which caused that destructive catastrophe. The gentlemen whom we have named, are the prominent, and perhaps the most scientific advocates of this hypothesis. Professional men deny that either of them can lay claim to the character of practical geologists; but while it is undeniable that the materials of their arguments have been derived less from actual inspection of geological phenomina, than from the observations of other writers who maintain a different doctrine, yet the works of both are interesting and ingenious, and that of Mr. Fairholme, in particular, extremely plausible and imposing.

The commonly assumed 'facts' of geology are admitted by these writers; and their mode of argument, so far as it is geological, is to select some of the inferences considered by their opponents as established truths, and endeavour to show that they are erroneous; and then "if such inferences prove erroneous, in some extensive and most important instances, it must be held as a fair ground for withdrawing our confidence from others, which may appear, at first sight, equally plausible.*" In pursuance of this mode of warfare, they select the most vulnerable points of the opposing argu-

* See a paper over the signature of A Layman, (who, if we are not greatly mistaken is Mr. Fairholme himself) in the Christian Observer, (London) August, 1834, together with very able notes in reply, by the Editor.

ment, and bring the whole force of their artillery to bear upon it, and if a breach can be effected, they propose to enter by it and take possession of the whole works of the enemy. Accordingly they have arrayed against the doctrine of the slow and gradual deposit of the strata, certain facts which are very unmanageable on that theory, and they have taken active and skilful advantage of certain other facts and principles which are yet in dispute.

One of the arguments urged by the able writer last quoted, is based on the singleness of the series of strata. "It is admitted," he argues, "that we have but *one* series of strictly similar strata in the superficies of the earth; but *one* great coal series; but *one* oolitic series; but *one* formation of magnesian limestone; but *one* chalk deposit: whereas if the earth has existed for such vast periods as are assumed by geologists; and if during these periods, as they likewise assume, there have been endless convulsions and changes from land to sea, and from sea to land, and consequently similar marine deposits in progress during all these periods; if this has been really the case, why should these deposits be so regular in their relative situations? Why should we not have the whole variously mixed up, and repeatedly alternating, in correspondence with the numerous convulsions by which seas and lands are said to have changed places? If a hundred, nay a thousand such changes have occurred, with long periods of time between the supposed natural convulsions by which they were brought about, why should not we find a hundred, or a thousand distinct coal series, and as many formations of magnesian lime stone, and of chalk?"

The strongest fact for their purpose, adduced by these writers, is, that tall trees have in several instances been found in an upright position, and intersecting several successive strata. It is argued with great force, that the strata thus pierced cannot have been slowly deposited, for then trees of fifty feet in height, could not have been held in this upright posture, by a few feet of sediment slowly thrown about their roots; nor would they have stood the action of either water or air, while strata of sufficient depth to bury them entirely, were deposited by the slow natural process, contended for by geologists. "It is thus shown that many of these strata must have been deposited with vast and preternatural rapidity, so as to inclose and cover up in an upright or inclined position, entire stems of very tall and bulky trees, with their branches torn off, and otherwise demonstrating

a shattered state and a violent mode of transport." This fact together with the amazing accumulation of vegetable matter necessary to form the vast beds of coal, and the existence of this immense formation but once in the series, are held as conclusive evidences that the coal measures where the work of the deluge, and of course therefore all the strata that overlie them.

The hypothesis which has been set forth to account for phenomina, in the short space of six thousand years, which seemed to geologists of the other school to demand countless ages for their production, is this. The disruption of the earth, incident to that command of Omnipotence which prepared a bed for the primeval sea, and caused the dry land to appear, furnished abundant materials for the deposits known as the transition series of rocks. Their position at the bottom of the stratified formations, and the absence of all organic remains, are urged in proof that they were produced prior to the creation of all animal and vegetable existence, and correspond in this respect with that first mighty disturbance to which the forming earth was subjected, viz: the formation of a bed for the ocean. The action of air, water, and other agencies upon the primitive soil, furnished the debris, which was carried into the ocean, and distributed over its bottom by the power of currents and of tides, and thus formed the lower division of the secondary rocks, giving evidence as they do, at first scantily, but with constantly increasing abundance, of the remains of "the living creature that moveth, which the waters brought forth abundantly." The remainder of the strata were formed simultaneously, by the stupendous action of the diluvial waters;—and the whole mass then heaved up by the hand of Omnipotence, to constitute the "new earth" for the abode of man, "the earth that then was, being destroyed," and now forming the bottom of the sea.

Mr. Sharon Turner, in his "Sacred History of the World," suggests a modification of this theory, by supposing that the stratified formations, from the lowest up to the highest secondary, were produced in the 1656 years from the creation of man to the deluge, and the tertiary by the deluge itself. Other writers of considerable ability, but no very great celebrity, have advocated the same general views. It must be confessed, however, that this theory has not met with that degree of favour from scientific men which might have been anticipated from its ingenuity, and the ability of its ad-

vocates. Whether this is to be regarded as an evidence that it is really untenable, or is to be set down to the account of scientific prejudice, as its advocates contend, we shall not undertake to decide.

Aside from the geological considerations which bear against it, there is alleged the grave objection, that the Bible undertakes to give, with great precision, the geography of the garden of Eden;—while, according to the theory in question, it must lie at what is now the bottom of the sea. The force of this objection may be seen from the fact, that while the leading object of these writers is to vindicate the scriptures against the encroachment of geologists, they are obliged to reject the whole passage which describes the locality of Eden as spurious, and to contend without any critical evidence whatever, except what arises from their own theory, that it was originally an explanatory gloss in the margin, and introduced into the text by some ignorant transcriber.

As the grand objection to the system of geology which attributes to the earth a much greater antiquity than to man, is, that it contradicts what the Bible is understood to teach, in relation to the date of the creation, we return to consider the answer, which Christian geologists have given to this objection. And here the unanimity, which characterized their vote in relation to the doctrine itself, ceases entirely, and we have several widely different opinions as to the mode of reconciling it with the scriptures.

We cannot but express our regret that one so distinguished in the ranks of science as Mr. Babbage, should have avowed an opinion at once so untenable and so dangerous, as that it is impossible for us, at this distance, to determine the meaning of the Hebrew, with sufficient accuracy to decide what the Bible really teaches on the subject. This strange hypothesis is accounted for however, by his candid declaration, that he is unacquainted "with the language in which the sacred volume is written."

Others, among whom we are sorry to find Rev. B. Powell, Prof. Geom. Oxford, has allowed his neological partialities to permit him to regard the passage in Genesis, "as not intended for historical narrative," but only to set forth the creation "in the language of figure and poetry," and in "the form of dramatic action," for "the better inforcement of its objects." We need not offer a word of comment on such an unwarrantable hypothesis.

But the theory which was for a long time exceedingly current among geologists, was that originated about thirty years ago, and maintained by Cuvier, Professors Jameson, Silliman and others, and which regards the six days of creation, not as literal days of twenty-four hours, but as long periods of time: understanding the word in its figurative sense, as designating a portion of time, marked by a continuous series of events. Thus we speak of "a day of prosperity" —"the day of salvation," &c. Prof. Jameson of Edinburgh, as a modification of this theory, suggested that the revolution of the earth on its axis, was at first inconceivably slow, and thus the days of creation while they were natural days, i. e. comprising one alteration of light and darkness, may have been of long duration. This hypothesis has been advocated by Bishop Horsely and Dr. Keith.

But to this whole theory of demi-urgic or indefinite days it has been objected that it is manifestly forced and unnatural, a desperate resource of geologists, to avoid conflicting with the authority of Scripture. Admitting that the word 'day' has, in certain cases, this figurative sense, yet the passage in hand is evidently not figurative at all. It is a plain narrative; and the whole context requires it to be so understood. Besides, the same thing is explicitly taught in the fourth commandment, where the creation in six days is made the reason for devoting six days to labour, and resting on the seventh. If the word day designates "a long period," in this commandment, in the clause, "for in six days the Lord made heaven and earth," &c., then must it also in the previous clause, "six days shalt thou labour," &c.: and even if we were to concede the propriety of changing the meaning of the leading word, in the two immediately adjoining clauses of a sentence, the reason for the appointment of the day of rest, would then be a complete non sequitur. Let any one read it, and see.

Professor Bush, we believe, is the only writer who has attempted to make out, on philological grounds, that the word 'day' in Genesis, most naturally means something else than a natural day of twenty-four hours.* But we deem it unnecessary to go further into the history of this theory. It has had its day; and is now nearly abandoned by geologists themselves. Dr. Buckland, while he contends that the in-

* For an examination of Prof. Bush's reasoning, see Biblical Repertory, for April 1839, p. 279.

terpretation is philologically allowable, concedes that it is unnecessary. (Bridgewater Treatise.) Professor Sedgwick goes further, and urges that it is contradicted by geological phenomina, instead of reconciling them, as was at first supposed, to the Mosaic account. We are told, by the inspired historian, that vegetables were created on the third day, and animals not until the fifth. Hence about one third of the fossilliferous rocks, reckoning upwards, ought to contain only vegetables; whereas, in the lowest group nothing but animal remains has yet been found. Dr. Smith and Professor Hitchcock, the two latest writers on the science, regard it as given up by the leaders in geology. Even Mr. Faber, one of the most thorough of its former advocates, has abandoned the doctrine.

"The theory of interpretation which is now the most extensively adopted among geologists, supposes that Moses merely states that God created the world in the beginning, without fixing the date of that beginning; and that passing, in silence, an unknown period of its history, during which the extinct animals and plants found in the rocks might have lived and died, he describes only the present creation, which took place in six literal days, less than 6,000 years ago." (Hitchcock's Geology, p. 270.) According to this hypothesis it is only necessary to consider the first verse of Genesis as a general announcement, "that there was an epoch, a point in the flow of infinite duration, when the whole of the dependent world was brought in being: not from pre-existent materials, nor by fortune, chance, or accident, but absolutely and solely, by the will, wisdom, and power of the ONE AND ONLY GOD." Having vindicated by divine testimony this peculiar act of Omnipotence from the theories of false philosophy and scpticism, the sacred writer then proceeds to the consecutive history of man and his congenera; without stopping to give an account of the gradual process by which the earth was prepared for the habitation of the human race, or of the races that lived and died upon it, during the protracted period of that process. All this was foreign to the subject, and therefore passed by in silence.

Dr. Smith, in the work before us, propounds a modification of this hypothesis, which we believe is original with himself. He proposes to interpret the word "earth," in the second and subsequent verses of Genesis, as expressing only *"the part of our world which God was adapting for the dwelling of man, and the animals connected with him:"*

defending this restriction of the term, on the principle that "the practical understanding of the phrase, in conformity with the ideas of the people who used it," would thus limit its meaning. In illustration he cites passages where it manifestly designates the land of Palestine. The portion of the earth meant in the history of the creation, he conceives to have been "a large part of Asia, lying between the Caucasian ridge, the Caspian Sea, and Tartary on the north, the Persian and Indian seas on the south, and the high mountain ridges which run at considerable distances on the eastern and the western flank." It is to this region that he confines the description of all the transactions of the early bible history, including even the deluge. "This region was first, by atmospheric and geological causes, of previous operation under the will of the Almighty, brought into a condition of superficial ruin or some kind of general disorder. This may have been produced by volcanic agency, occasioning the subsidence of the region, as has since occurred in various districts upon the earth's surface. Extreme darkness has often been known to accompany such phenomina. These changes are designated by the descriptive phrases "without form and void," and "darkness was upon the face of the deep." Under the formative hand of the Almighty, "the atmosphere over this district had by the fourth day become pellucid: and had there been a human eye to have beheld, the sun would have been seen, and the other heavenly bodies after the sun was set." Animals and vegetables were produced by immediate creation in the order indicated in the Scriptures: but only that portion of these two kingdoms, which were peculiar to the region above specified. He maintains, on the principles of natural history, that all the families of plants and animals could not have been derived from one centre of creation: that those intended fer the extreme polar and equatorial regions, could not have been formed in or near Eden, which "was in the finest part of the temperate zone," that they could not have subsisted in that latitude, and that if this point were conceded, "the further inquiry presents itself, by what means the respective races could make their way to congenial climes; some to the regions of fierce equatorial heat, others to those of eternal ice: that such a transmigration would require an entire change "in the forms and functions of their bodily structure internal as well as external: and that in point of fact, "the flora and fauna" of certain regions are "so completely dis-

tinct from those of any other" as to indicate demonstratively a distinct creation from that which occurred in Eden. And of course it is only this latter, associated with man in paradise, which forms the subject of scriptural history.

We feel strongly tempted to depart from our prescribed task, as historians, and express our own opinion in relation to this novel theory. But as we have not space to do so satisfactorily, and as the theory is purely hypothetical, and not an inference from geological facts, strictly speaking, and more especially, as we do not conceive that it is very likely to compromise the authority of revelation, we dismiss it as undeserving of criticism.

To the objection, against the whole system of the geologists, that the scriptures expressly ascribe the creation of the heavenly bodies to the work of the fourth day, while according to their theory, the whole planetary system must have been in existence for ages, it is replied:—That it is manifest from the inspired history itself, that it is not the absolute creation of those bodies, that is described in the narrative of the fourth day; but only the appearance developed at that period of time. The light which it is their province to supply, was in existence on the first day, and the alternation of evening and morning, produced as it is by the movements of the complete planetary system, and existing as it did, from the very first, is proof that that system was already in harmonious operation. The heavenly bodies are therefore represented not as being *created* on the fourth day, but "*made*, (i. e. constituted or appointed to be) luminaries." They existed before, but they were then appointed to the office of furnishing light and standards for the division of time, to the new inhabitants of the earth, (see Gen 1: 14, 15.) This whole passage is considered as furnishing a strong case, in proof of the principle, contended for by geologists, that "it was not the purpose of revelation to give a view of creation according to the physical reality," but only to describe what occurred, as it would have appeared to one who could have witnessed the sublime spectacle. "Hence the sun is mentioned as the greatest luminary, the moon as the *next* in magnitude, and the other shining orbs are grouped together as if they formed, even when all combined, the least object of importance." "It is most evident, that any person not acquainted with the true system of the world, would after his most careful study of this portion of the Bible, rest in the conclusions, that our earth is not in moral importance only

but in physical magnitude, by far the greatest of the Creator's works; and that the entire furniture of the heavens is solely a provision for our convenience and comfort. Yet the actual truth is, that if not our earth merely, but the entire solar system, were to be blotted out of existence, it would be no more missed in the aspect of the universe, except to the glorious Creator's eye, than a grain of sand blown away from the sea shore." Smith, pp. 236-7.

Another leading point of contact between geology and revelation, is, that the doctrines of the former imply "the dominion of pain and death over the animal creation," ages before the existence of man: while the latter is generally understood to teach, that, "before our first parents fell from innocence and happiness, death and its harbingers had no place in the inferior animal creation."

It is urged in reply, that it is only in relation to the human family, that "death and its harbingers" are ascribed in the Bible to the introduction of sin: that their previous existence is supposed in the very threatning which guarded the forbidden fruit, for otherwise that threatning would have been unintelligible; and that the law of propagation, established in connexion with the countless tribes of animals, necessarily implied the existence of death, for otherwise they would soon have exceeded in multitude, the limits of possible subsistence. The same thing is argued from the existence of carnivorous animals. It is one of the established fundamental principles of comparative anatomy, that the character and habits of animals are displayed in every bone and muscle of the body. To suppose that the lion, e. g. was not carnivorous before the fall of man, would require not only a change in the form of its teeth and the structure of its claws, but that the functions of its stomach, its nutritive powers, the form and size of its bones the strength and fastenings of its muscles, in a word almost every fibre of its body, must have undergone, not modifications merely, but radical alterations. It would in fact be tantamount to supposing that carnivorous animals were created since the fall;—of which the Bible gives us no intimation, although they form so large a portion of the brute race. The argument is still strengthened by the consideration, that animal subsistence, even upon vegetable food, is impossible without amazing destruction of animal life. Every one knows that vegetables of all sorts swarm with insects, and even the very juices of plants, and the water we drink are full of animalcula. These must have

perished in countless myriads, before the fall of man, on any theory we can adopt, unless they too, were a subsequent creation. The common impression on this subject, therefore, has other facts to grapple with than those of geology, and the geologists are not alone in the difficulty.

The connexion of geological discoveries with the scriptural history of the deluge, is a topic of great interest. But we have already gone far beyond our intended limits, and must therefore omit for the present the important facts which we had thrown together. The history of opinions on this subject is peculiarly interesting: but much as they would conduce to the impression which we wish to make in our closing paragraphs, we must forego their introduction.

Our object in preparing the preceding sketch, has been, in the first place, to furnish a condensed view of the principles and reasonings of the geologists, for the benefit of those who have not free access to the sources of such information, or the time to explore them; and secondly and mainly, to dissipate "the ill-defined and shadowy apprehensions," occassioned by the vague impression, which we have reason to know is far more general than it should be, that science is found arrayed against the scriptures. In stating the arguments we have held back nothing that has been alleged, from a fear of the consequences. We have put the case as strongly as could be fairly done for the geologists: and yet after all how little there is to cause a moments uneasiness to the enlightened friend of revelation. Dr. Wiseman quotes Justin Martyr and Gregory Nazianzen, in favour of the opinion, "that an indefinite period elapsed between the creation of matter, 'in the beginning,' and the first ordering of all things:" and Basil and Origin both adopt the view of modern geologists, as to the existence of the heavenly bodies from the beginning, "yet so as that their rays were prevented by the dense chaotic atmosphere from penetrating to the earth; that this was on the first day so far rarified, as to allow the transmission of the sun's rays, though not the discernment of its disk, which was fully displayed on the third (fourth?) day." There can not, we think, be much ground for apprehension from the prevalence of opinions advocated by some of the most enlightened Christian minds, including eminent biblical scholars of our own age. We are not much afraid, for instance, for the evidences of revealed religion, when they are in the keeping of such men as Dr. Chalmers.

For ourselves we do not mean to express at present, any opinion on the theories we have described. We could show, as we believe, good reason, from the present state of geology, for not committing ourselves on either side of its prominent hypothesis. We think no impartial mind can examine all their pretensions carefully and without professional enthusiasm, without a feeling of uncertainty, to say the least, which does not belong to the exact sciences. The history of the science, for the last fifty or twenty, or even ten years, is enough one would think, to inspire caution. And as our duties lie mainly in another direction, we propose, without entering into the discussion ourselves, to give a full and candid hearing to all that can be said on both sides of the great questions that may rise by those who are best qualified to discuss them, and then adopt whatever theory we conceive to be best established by evidence and reasoning. The time for making up an ultimate opinion on the whole subject has manifestly not yet arrived, even in the opinion of some of the best geologists themselves.

We have no faith whatever in the a priori arguments for the antiquity of the earth. The only thing which weighs with us, in settling this controversy, is the exhibition of facts, which are totally incompatible with the belief, that the material of the earth was created only a few days before man and his congenera. If such facts are clearly made out, we will promptly receive the inference, without a single fear either for the truth or the plenary inspiration of the sacred record. And in estimating the value of these facts we are far from admitting the explanation of all the phenomina, by the action of natural causes, without the intervention of miracle. We are free to avow, that an examination, conducted without prepossession or prejudice, has failed utterly to convince us, notwithstanding the plausible reasoning of Playfair and Lyell, that these causes are competent to such mighty results, however long the time allotted to their production. We agree perfectly in the conclusion reached by Mr. De La Beche, after stating strongly the facts to be explained:—"It is useless to appeal to time: time can effect no more than its powers are capable of performing. If a mouse be harnessed to a piece of ordinance, it will never move it, even if centuries on centuries could be allowed: but attach the necessary force and the resistance is overcome in a minute." We see what strikes us, as incontrovertible proof, that mighty forces have been in play, under the agency of

the Almighty, in producing the fearful results which appear in the present state of the earth.

While we say this, we cannot help thinking that some of the zealous friends of revelation bring discredit on themselves, and the cause they have so much at heart, by the excessive jealousy with which they regard geological inquiries, and by the spirit with which they sometimes treat men distinguished for their conscientious regard for religion, as well as their scientific attainments. We are often pained to see the exhibitions of a spirit, which the calm spectator will attribute either to narrow bigotry or to the consciousness of having a bad cause. It is too late in the day to put down these investigations by authority, or to decide them by ridicule.

If we are sure that the scriptures are true, we are equally sure, that the real facts and true theory of geology cannot conflict with their inspired teaching. There can be no contradiction between what God does and what he says. If any one is confident on scriptural grounds, that geology must be wrong, let him grapple with its alleged facts and deductions; and show that the former are incorrectly observed, and that the other do not follow by logical sequence. This surely can be done, if such be the fact. But if he shrinks from the contest on the field of geology itself, and takes refuge behind the bulwarks of revelation alone, however boldly he may send forth his challenges of defiance, the world will ascribe the victory to the enemy.

We have no patience with that sceptical spirit, which investigates the phenomina of science, for the purpose of finding arguments against a revelation which it hates, and magnifies every appearance of discrepancy between the facts of the two systems. It is as far removed from the spirit of true philosophy, as from that of true piety. But on the other hand, it will not do to stigmatize geology as essentially anti-Christian, and launch indiscriminate anathemas against its cultivators, on the ground that in trying to develope its principles, they are fighting against God. On the contrary, it is of the utmost importance that in receiving its form, and taking its position among the accredited sciences, it should be moulded by pious hands. It is well therefore, that the distinguished Professors in both the great English Universities, where it receives so much of its character, are both warm and enlightened friends of revelation. Instead of goading them with taunts and reproaches, let them rather be encour-

aged to maintain their commanding position, prepared to wrest every weapon from the hand of scepticism, and baptize with the spirit of Christianity, and thus secure as a servant of the church, this young and important science. Surely they have done no unimportant service, in driving from the field, the whole host of continental theorists, and securing an acknowledged triumph to the party, stigmatized by Humboldt, as "those Hebraising geologists, whose efforts to connect the chronology of Moses with the phenomina of nature, cannot but be unavailing."

In making these remarks, it is far from our intention to take sides with any party in the contest. If Penn, and Fairholme, and Gisborne, and Comstock, and the champions of that school in geology, should succeed in making good their position;—well. If truth is on their side, we wish them success: and success they will undoubtedly obtain in the end. Magna est veritas. But we cannot allow their claim to the advantages which they have sought, as we think to an undue extent, by representing their opponents as infidels in disguise, or as misguided friends, who are really fighting under the opposing banner. We protest against the use of "the argumentum ad invidiam," in settling a question of pure science. Let us have the truth—the whole truth, and nothing but the truth. The more clearly it is brought out, the more fully will it harmonize with, and throw light upon the truths of revelation rightly understood. The day is coming in all probability, when we shall wonder how any one contrived to find any thing to perplex him in the case.

The case of astronomy should teach us a lesson. There is not, we confidently believe, the smallest probabillity that geology will ever make good its demand for a greater change in the received interpretation of the scriptures, than did the Copernican system of astronomy: nor have harsher denunciations been dealt out against modern geologists, than were poured upon Galileo by the misguided friends of religion. Let us profit by the instructions of history.

Before we lay down our pen, we wish to suggest a similar caution on the other side of the question. Philosophers, we are compelled to think, show a strong tendency to generalize too hastily, and to speak too confidently of the truth of their hypotheses. Thus, for example, we begin to hear it assumed, and the assumption laid at the foundation of other theories, that the nebular hypothesis suggested by La Place is the true theory of the universe. This we need hardly say

is going too fast and too far. Sometimes those very conclusions which appear most beautiful and most satisfactory, are disproved by the discovery of some new element, for which they had made no provision. Thus La Place supposed he had demonstrated with all the certainty of the most exact mathematics, that the revolutions of the heavenly bodies were under laws that would preserve them from confusion forever, by correcting the periodical oscillations to which they were subject. But this striking and beautiful conclusion appears to be involved in great doubt, by observations made upon the body known as Encke's comet; which seem to show that there is a resisting medium in the planetary spaces: and if there be, however rare it may be, it would first retard, then derange, and finally, however remote the period, throw into confusion and ruin the whole planetary system. Now we could wish the geologists to be less confident, in stating as ascertained truth, that which is only ingenious and plausible hypothesis; and to remember that the discovery of some new element, so simple a thing as a fossil human bone, for instance, in some unexpected deposit, may materially modify if not overthrow all the deductions of geology, as to the age of the earth's surface. What we wish, is to have all parties to this controversy imbued with the spirit of that charming prayer of Kepler, appended to one of his astronomical works. "It remains only that I should now lift up to heaven my eyes and hands from the table of my pursuits, and humbly and devoutly supplicate the Father of lights. Oh! Thou, who by the light of nature, dost enkindle in us a desire after the light of grace, that by this Thou mayest translate us into the light of glory, I give Thee thanks, Oh! Lord and Creator, that Thou hast gladdened me by Thy creation, when I was enraptured by the work of Thy hands. Behold! I have here completed a work of my calling, with as much of intellectual strength as Thou hast granted me. I have declared the praise of Thy works to the men who will read the evidences of it, so far as my finite spirit could comprehend them in their infinity. My mind endeavoured to its utmost to reach the truth by philosophy; but if any thing unworthy of Thee has been taught by me—a worm born and nourished in sin—do Thou teach me that I may correct it. Have I been seduced into presumption by the admirable beauty of Thy works, or have I sought my own glory among men, in the construction of a work designed for Thine honour! Oh! then graciously and mercifully forgive me;

and finally grant me this favour, that this work may never be injurious, but may conduce to Thy glory and the good of souls."

Samuel Tyler

ART. III—1. *The Mathematical Correspondent, Edited by G. Baron*, New York, 1804.

2. *The Analyst, Edited by Robert Adrain*, Philadelphia, 1808.

3. *The Scientific Journal, Edited by W. Marratt*, New York, 1818.

4. *The Ladies' and Gentlemen's Diary, Edited by M. Nash*, New York, 1820.

5. *The Mathematical Diary, Edited by Robert Adrain and afterwards by Mr. Ryan*, New York, 1825.

6. *The Mathematical Miscellany, Edited by C. Gill*, New York, 1836.

"SCALIGER, who was very far from being overburthened with piety, (says Harwood in his preface to Bailey's Dictionary,) whenever lexicographers were mentioned, is said very devoutly to have thanked God, that of his infinite goodness, he had endowed some men with the spirit of Dictionary-making. This celebrated hypercritic deemed the task of compiling lexicons and dictionaries to be so tedious and toilsome an office, that he thought it was impossible that any man would voluntarily choose such a profession either as an amusement or occupation, who had not a mind peculiarly formed by Heaven for collecting words and measuring syllables, and that had not by a special decree been ordained of old to this condemnation." And doubtless Scaliger would have been strengthened in this opinion if he had lived to see Walker in his Dictionary working himself into a passion about vowels and consonants, and contending with all the heroic zeal of a general defending the capital of his country from a besieging foe, against the tendency in the English language to place the accent on the antepenultimate syllable, in "words which come down to us whole from the Greek and Latin;" and with a heart overflowing with grief pointing to "orator, auditor, senator, cicatrix, &c." as having fallen victims to this awful tendency; and exclaiming with alarm, that "abdomen, bitumen and acumen," would have