Treasury of Truth No. 10

CREATION
in
GENESIS
and in
GEOLOGY

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I.—THE SCRIPTURAL STATEMENT.

THE questions involved in the first chapter of Genesis are those which lie at the bottom of the whole controversy with what men are pleased to call science in the present day. "Science," alas! and knowledge are getting to be widely separated, although originally the same thing. A mere hypothesis is "scientific" nowadays, and hypotheses are coloring, to a large extent, the very statement of what should be facts. "Eyes of faith" (to use the language of a well-known man of science,) are getting as necessary for the observation of facts as they could possibly be for the knowledge of Scripture. "A working hypothesis" is indeed a fact; what it may work is another question. To those who have their eyes open, there cannot be a doubt that men are working themselves into a delusion which Scripture has been beforehand in prophesying, and which therefore, spite of itself, must fulfill Scripture.

On looking at the questions which our subject indicates, our first business is with Scripture itself. The book of Genesis is a fact, at any rate, whatever may be its significance. It is a fact that what purports to be a record of creation has come down to us from time so far back as to antedate all other human writings of which we have knowledge. It is a fact also that the character of this record stands in the most striking contrast with all that may seem in any wise to compete with it in point of age. The various national myths which deal with this subject few would have any difficulty in dismissing as such. But al-

though there are those, no doubt, who think as cavalierly to dismiss the book of Genesis amongst them, it is easy to see that even for themselves this is impossible. The book has its hold upon them whether they will or no. *They may talk of the effect of education, no doubt,—of* the influences under which they have been brought up, and so on; but they have not found it hard to break through bands of this kind, times without number. Their very opposition to Scripture makes it evident how much they feel its power. No one thinks it worth while to fight with a Chaldean cosmogony, however ancient. They can look at and discuss it with the most scientific equanimity; Scripture they cannot so discuss. And this too is a fact in the moral realm which is worth considering.

When we turn to the first chapter of Genesis, we find nothing, at least, that wears the aspect of a myth; no obscurity; no seeming exaggeration. The style is simplicity itself, and this simplicity is sublimity. It is the style of one entirely at home with the subject of which he is speaking. Wonderful as the nature of the subject is, he is not dazed, not awe-struck; nor on the other hand reveling in mere imagination. The language is intelligible even to a child. There is no attempt at lengthy explanation, or at explanation at all. There is no argument, as having to prove any thing. The writer is above his theme, not under its power; and, when we consider what the *theme is, who is the writer? People may deny its truth*; they can scarcely deny its similitude to truth. It is the language of one who has nothing to gain by proving his point; no interest, in fact, one may say, at all, except it be an interest in man, which indeed shines out every where. The words may seem to give too human a picture of divine ways; but in it many at least have discerned the manner of One who, seeking to draw near to man, must adopt human speech, even with its defects. Can this be shown unworthy of Him?

Even for a scientific man one would think there should be interest in what, the moment he looks at it, corresponds strangely in certain of its features with what the facts of geology announce. Take, for instance, what to

a writer of this antiquity would be strange enough, the fact of the dry land emerging out of the water. No geologist doubts that all land has, in fact, so risen; but it is a discovery of later days, anticipated here before the science of geology was born. Take, again, the progress of life from the lowest to the highest—from the denizens of the water to those of the dry land, and last of all, man. Every one knows that upon this very progress have been based some of the theories most current among men of science as to the development of life. Yet the writer in Genesis, while denying the development (at least, the genetic development), is aware of the fact of progress, and states it. How many scientific men are disposed to give him credit for this? Yet is not here again a fact noteworthy for the man of science?

The Christian, who is able to go deeper, notices, on the other hand, both in Genesis and geology, how remarkably the natural typifies the spiritual, and how God has thus given witness to Himself and to His record in the very book of nature with which the man of science deals. What means this strange fact which Genesis announces and geology confirms, that creation as we now see it, is in fact a birth out of a world passed out of being? Creation to the open eye is every where indeed a type of the new creation; but we shall be able better to dwell upon this at another time.

And now, to look somewhat in detail at the history before us. History it is, if it be any thing at all; it is at least not given as a speculation. It is not an argument, as I have already said; nor is it poetry, as some assert. All the basis for this assertion is found in the grandeur of the genesis which it relates, and the simple sublimity of the relation. But it is a history, if it is not an audacious fiction. "God created"—"God said"—"God made." Such are the statements. Is not this the offense in the eyes of some, that every thing here begins with God, and every thing belongs to Him? Yet there is no attempt to make an impression. Opposition to the prevailing idolatry is only marked by the fact of every thing being made and claimed by the one God before us. The style is the

ordinary one of familiar speech, truer after all than much that may be more pretentious. It describes, one may say, appearances—phenomena; not meaning by this any thing in contrast with reality, but things as they would appear to, or be apprehended by, the mass of men. The God of Scripture seeks every where to be known by His creatures. He never affects the language of philosophers; never shuts Himself up to the learned and the wise. The greatest blessings every where (if we may still speak of blessing,) are the widest and most common,—sunlight, fresh air, water, and such like things. Whatever restrictions man may make, God means these for all. The very life we live is no better lived by him who understands the natural processes than by the man who scarcely knows that he has lungs to breathe with. These things go on independently of all our thought or intelligence about them, which may indeed often act, as the facts prove, rather as hindrances to than promoters of them. "To the poor, the gospel is preached;" for the poor, Scripture is written. The wise and learned not being excluded on this account, any more than they are excluded by sharing with the common man their sunlight and fresh air.

But however familiar the style, this must of course be implied, that if the history be from God, as such a history, to be true, must be from none other, then no imperfection of human speech must be allowed to interfere with the perfect accuracy of every statement. Scripture, if not intended to teach science, as of course it is not, must nevertheless be as accurate as any science. There is no inaccuracy in saying, for instance, that "the sun rises, and the sun goes down," for these things are always phenomenally true; and the man of science uses this language of necessity as others do, and there is no deception really in this. To us—from our stand-point, it is really true that the sun rises. It may not be the whole truth, but it is in fact that from which the truth back of it has been inferred. The sun's rising is, we may say, the primitive fact; the scientific account would be the explanation of the fact. Scripture does not and needs not to go beyond the primitive fact. Thus it is every where intelligi-

ble, and yet every where true. The men of science must be allowed to bring all they can against it if they will. If they can prove untruth, we will not shirk this by any quibbling about Scripture not meaning to teach science. God cannot be deceived; He cannot deceive. These are first principles upon which all others are built, and with which no other can be contradictory. It is in this spirit that we are to examine the account before us.

"*In the beginning God created the heaven and the earth.*"

We are here brought at once face to face with one of the great questions of the day. Was there such a thing as creation? Does the word "created" even mean that which we ordinarily take it to mean? The reverse is now commonly asserted, and this at least must be allowed, that the making out of nothing is not necessarily intended by the word which we translate "created" here. It is nevertheless used in a sense sufficiently distinct from any mere making or fashioning. These two last words have their proper representatives in the language. The first word, "*Bara*," is only used of God; He alone is "*Bore*" —Creator; and in the chapter before us alone the employment of *Bara* is very distinct and significant. In this first verse, the words "In the beginning," taken absolutely, necessitate that it should be a making out of nothing. We find it only three times used besides in the account. First, when the "living creature" is brought forth, it is said, "And God created great whales, and every living creature that moveth." Then again, when man comes on the scene, it is said, "God created man in His own image." The last place in which it is used is in the third verse of the second chapter, where, in the original, there is a distinction between "creating" and "making." The term used is really there, "created to make," as in the margin, "He had rested from all His work which God had created to make." So, justly, the Vulgate—"*Creavit ut faceret.*" Here, the making is rather the final purpose of the creating; and in the creation of the beast and of man, two other elements of being appear for the first time, which

would seem to give the word the strict force of creating.

Of course, when I say this, I found it upon Scripture entirely. Scripture asserts as to the beast that it is not merely matter, as man would make it now, however wonderfully organized, but that it has and is a "living soul." Man, again, is distinguished from the beast by the fact that he possesses, not alone a soul, but a spirit also, and by this spirit he is in connection with God, as his God and Father, as the beast is not. God is said to be the "Father of *spirits*," not of souls. Angels are spirits, and are therefore also called, as men are, "sons of God;" and if we take this "spirit," as explained by the apostle in the first of Corinthians ii. 11, as that by which a man knows human things, as the intelligent part, in fact the mind, we can easily see that God is indeed only, in a strict sense, the God of those who can thus recognize Him. The beast is necessarily without God. "Man being in honor and understanding not, is *like* the beasts that perish." Yet, as I have said, the beast is not mere organization. "Every thing wherein there is a living soul," is said, in the thirtieth verse of this chapter, of "every thing that creepeth upon the earth." Even self-direction, if I may so say, never comes from the most skillful combination merely. All the instincts, the appetites of the body even, are referred, in Scripture, to the soul. The beast which has these has therefore a soul. Man too has a soul, of course, but in him the spirit characterizes and controls (or ought to control) it. A broad distinction is thus made between man and beast—a distinction which no development could possibly bridge. God Himself came in in both these cases; first of all in the creation of the beast—the living soul, and again in the creation of man (spirit also, and not soul alone) we find this word used, inferring the distinct step upward which is in each case made. With these exceptions, the word is "made," not "created." All mouldings of mere material, in whatever wondrous way, are here distinguished from the living thing, and even the plant is thus distinguished from the moving creature.

In all this, we are of course speaking of Scripture merely.

Men may deny the truth of it, but Scripture at least is self-consistent throughout; and such self-consistency, in view of the facts, is surely the self-consistency of truth.

The first verse, then, speaks of a primal "creation," which, as to its *general* character, the six days' is not. We find elsewhere that "in six days the Lord *made* heaven and earth, and all that in them is." It does not say "created." The first statement is that He "created," and not "made;" and this primal creation is surely distinguished plainly enough from the six days' work itself. The first day begins with the calling forth of light. But before this, the earth is already in being, but "waste and desolate" (as the words "without form" rather mean), lying in darkness, and buried under the waters. The second verse thus points out the state of ruin into which, through causes unexplained, the primitive creation had lapsed. It is not chaos, according to the old idea which Milton has popularized for us. The earth, buried under the waters, comes up upon the third day at God's bidding. It had existed all through. The six days' work was but calling it into new order, not into being. It has been said that this is but a fiction to meet the facts which geology has brought out. It is so little so that it has been advocated by others before geology was even in being. But I would rather appeal to the record itself. Scripture *never says that the earth was created in six days.* And the *first* day begins—where? *Not* with the chaos, as some would make it. The "evening" of the first day still implies, what the account necessitates, that light was there when it began. "God called the darkness *night*," but "*evening*" is the darkness already modified by light.

Besides, on the first day God evidently calls forth the light only—but where? Certainly with reference to a particular scene, a place from which it was absent. In the second verse, no hint of any act of creation is to be found. The words "waste and desolate" imply ruin, not creation. *We must go back to the first verse to find this last.* But the moment we do this, we find what Scripture itself assures us cannot be connected with the ruin into which it afterward lapsed. "For thus saith the Lord that created

the heavens, God Himself that formed the earth and made it; He hath established it, He created it not in vain"—not "*tohu;*" the very word translated in the second verse of this chapter as "without form." God did not, then, create the earth in the chaotic condition which the second verse describes. That is not a primitive state, but a lapse; and the six days' work is a new fashioning—a bringing out of this state of universal ruin—universal, I mean, as regards the earth itself, and which is carefully distinguished from one affecting the heavens. "God created the heavens and the earth." "The *earth*," not the heavens, "was [or became] without form" or waste.

It is quite true that on the second day we find the firmament made, and called "heaven," but this is plainly a different "heaven" from the first spoken of. It is the heaven of the earth simply—the atmosphere, as to which we shall see more particularly when we come to it. The lapse is proved, then, a pre-existent state before the six days' work began; and a state in which, according to Scripture itself, it had not been created. No apology is therefore due here from revelation to science. The Bible, whatever questions may be raised as to its chronology, does not assert that the earth is but six thousand years old; nor does any statement imply, on the other hand, the antiquity of *man* to be more than about six thousand. How long this state of ruin continued, how many changes the earth may have passed through before this waste and desolate condition came about, we have no knowledge of from Scripture. Science may come in and supply the void in whatever way it will. Scripture says nothing for or against; nor is it a failure on the part of revelation to leave a void. Its object is not science, but moral and spiritual dealing with the spirit of man.

The agents in the six days' work are the Spirit and Word of God. "The Spirit of God moved [or brooded] upon the face of the waters; and God said." This language is anthropomorphic, if you will; we have spoken of that before. God, if He would gain man's ear, must use man's language. But the terms are simple enough as to their import. In the first place, it is no natural birth, this

genesis. Just as the Spirit and Word unite in order to give life—true life to man individually, so the Spirit and Word unite here in order that there may be a renewal of the face of the earth. There is no energy of this kind inherent in matter. The evidence of science itself also is all the other way. There are plenty of signs of wearing out—*extinction* of species, not origination of them. To produce a *cosmos*, a world of form and order, an organized whole, in which part should be fitted to part in proper harmony, there must be the working of *mind*. I do not dwell on this here, for at present we are only occupied with the Scripture statement, not with the scientific one. Scripture asserts, as plainly as possible, that if a state of ruin were "natural," the interference of God was necessary to bring out of the ruin.

Thus comes the first day and light. Observe how simple are the terms used. It does not say, God *created* the light, nor even "made" it. It does not speak of light as a substance in itself. "He said, 'Let there be light,' and there was light." The words do not even show that the thing, "light," was first originated here. It is manifest only with reference to the scene before us. "Darkness was upon the face of the *deep*"—locally *there*. Every thing through the universe was not necessarily in darkness when God said, "Let there be light." Thus there is no ground whatever for the assertion that Scripture would confine the being of light to six thousand years or so. It makes no such statement. The light clears up the darkness which was upon the face of the deep. This may seem with some to lower the statement. They have been accustomed to attach to the words the idea of a primal creation of what was brought into being this first day. But whatever our thought may be, Scripture must be judged by its own statement.

This light is of course without the sun. It is no partial breaking through of what, in its source, was hidden; it is *not* sunshine. The sun, if not created, is certainly "made," on the fourth day. Light, apart from sunlight, on this first day of the week, is plainly asserted. However unscientific he may have been, Moses—if no higher—stands

responsible for this statement; and if it be no higher, it is strange that even a "Hebrew Descartes" should have made a needless difficulty in this manner. To the nations of antiquity, light would seem much more inseparable from the sun than the discoveries of science will allow us now to believe; and there can be conceived no reason for the idea that is here given, if from a human source only. Truth might require it to be stated, but only truth.

On the second day, the "firmament" is made, or the "expanse." The word, after all quibbling about it, simply means that. I need scarcely pause to explain what has been so often explained. People have imported into a very simple passage ideas which have, at least, been elsewhere gathered. There is nothing at all about any thing solid. It is that in which the "fowls fly." "The way of the eagle is in the heavens." The clouds are "the bottles of the heavens." Nay; "the heavens are stretched out as a curtain." This word, "curtain," being so called, as Gesenius remarks, from its tremulous motion. All this is simple language, easy to be understood. It is not the common man who would make any mistake about it. The birds do not fly in a solid vault; nor do winds blow in it, or the clouds belong to it. And these clouds—not any holes in a crystal sphere, or any thing of that kind—"drop"—according to the sacred writer and the common man alike—"drop and distill upon man abundantly." The reservoir of the waters is therefore not, in Scripture, considered to be above the expanse, but in the expanse itself, and the clouds which float in the expanse.

Talking of the clouds, a remarkable witness to the science of Scripture has just come into my hands. There are two words for "fine dust," which are used in connection with the clouds. In Hebrew, *abaq* is, "small dust," such as is fine and light, easily driven by the wind; hence distinguished from *gnaplar*—thick, heavy dust. In Nahum i. 3, we find, "The clouds are the dust of His feet." In the case of the other word, it is not a comparison merely, but the word for cloud itself. *Shachaq* is, "dust, finely divided." It is used in Isaiah xl. 15 for the "small dust of the balance;" yet it is the word commonly used

for "*clouds*," and also for *sky*. Is this any thing more than a figure of speech? One might have supposed not, but a recent discovery of science seems, however, to put it differently. *Mr. J. Aitken*—as quoted in a recent number of "*Nature*," in an article on "Dust, Fogs, and Clouds,"—remarks, "These would seem to have but little connection with one another, and we might think they could be better treated of under two separate and distinct heads; yet I think we shall presently see that they are more closely connected than might at first appear, and that *dust* is the germ of which *fogs* and *clouds* are the developed phenomena." From experiments with filtered and common air, he deduces,—"First, that whenever water condenses in the atmosphere, it always does so on some solid nucleus. Secondly, that dust-particles in the air form the nucleus on which the vapor condenses. Thirdly, therefore, that if there was no dust, there would be no fogs, no clouds, no mists, and probably no rain; and that the supersaturated air would convert every object on the surface of the earth into a condensor, on which it would deposit itself." Also "it is suggested, and reasons are given for supposing, that the blue color of the sky is due to this fine dust."

This is but by the way. As to the nature of the work on the second day, it is as plain as possible. The expanse that separates the waters from the waters is not even exactly the atmosphere itself. It is *by* the atmosphere, no doubt, that it is produced; but that is a different thing. The words give, in truth, a description of a fact, not of what causes the fact; and the waters above the expanse are but the clouds themselves. There is no hint, as strangely suggested by some, of watery bodies (such as Jupiter, etc.) being intended. The whole applies, not to occult matters of science, but to a simple and intelligible phenomenon, of immense import, however, to us.

The third day accomplishes a similar division between the land and the water. The waters under the heavens are gathered together in one place, and the dry land appears. Nothing is said here as to the elevation of this land, much less as to the fashioning of the mountains.

The thought is not mountains being raised, but of the water, one would rather say, subsiding. In the one hundred and fourth psalm, which has been called "The Psalm of Creation," the language, too, is similar—"Who laid the foundations of the earth, that it should not be removed forever. Thou coveredst it with the deep as with a mantle; the waters stood above the mountains. At Thy rebuke they fled; at the voice of Thy thunder they hasted away. They go up by the mountains; they go down by the valleys unto the place which Thou hast founded for them. Thou hast set a bound that they may not pass over, that they turn not again to cover the earth." Here, plainly, the mountains are already formed while yet the waters stand "above" them. The eighth verse has been taken rather to say that the mountains go up and the valleys go down, but this is against the plain sense of the passage. "The place which Thou hast founded for them" is plainly the "one place" of the first of Genesis, and is the place for the waters, not for the valleys. The following verse, again, plainly applies to the waters, and not to the land. Thus the whole connection seems to show the application to be to the waters themselves. No attempt is made to explain by what agency this gathering of the waters is effected. The dry land appears,—that is all that is said about it; and this dry land God calls "earth," a fact which, as has been remarked by another, may well help to explain the difficulty that some seem to find in the earth having foundations. It is the *dry land*—"earth" in that sense—which has them, not the earth as a whole.

We now come to that which is more really a *new* production,—grass, herb, and fruit-tree springing out of this dry land. Again, if we look at the words, we shall find no scientific division,—no care for science, in fact, but abundant care for man. It is that which is conducive to his welfare that God is considering and speaking of; He is furnishing man's earth for him.

Distinctness of kinds, however, let us observe, *is* here asserted: the proper distinction of species. Let science overthrow it if it can. It is not the place, however, to

discuss this; and the words are so simple, we may pass on.

On the fourth day, God furnishes the heavens with "luminaries." The word is perfectly distinct from that for "light," as on the first day. These luminaries are candlesticks, so to speak, to hold the light; and here, again, with direct reference to man, and for his blessing; not only to divide the day from the night, but to be for "signs and for seasons and for days and years." The mention of *signs* shows, of course, that man is in question. *The seasons themselves may have reference to the* animal creation, or even to the vegetable, but not the "signs," and we shall have to look at the importance of this on a future occasion. So they are for "luminaries in the expanse of heaven, to give light upon the earth." That is the great point. They may serve a multitude of other uses. These are not denied, but they are not in question here. God has His eye on man. The two great lights, of course, have reference to him. The words are phenomenal again. No scientific measurement of distant orbs: they speak of what is plain to every common eye, and in the *proportion of importance which*, with regard to man, admits of no controversy. The moon, to us, is of infinitely more importance than Sirius.

"The stars also," appended to the account of the two great luminaries, is the only notice that we have with regard to the other heavenly bodies. They are introduced in a way which defines little. They are connected, evidently, with the preceding statement, as giving light upon the earth, along with the sun and moon. It is not said, even as to these, that they are now for the first time created. The sun is made a luminary at this time. Its body may have before existed—nay, *may have given light before*. Our knowledge of variable stars gives us more than a hint as to the extinction and lighting up again of *such bodies*. *But at any rate, the sun is no more created* on the fourth day than the earth upon the first; and the words translated "set them in the firmament of heaven" are, "*gave* them in the firmament of heaven," and that for a specific purpose—to give light upon the earth. If this be so as to sun and moon, still less is any creation of

stars asserted here. The sentence, in fact, seems purposely left vague, doing nothing more than connecting these small luminaries, as such, with the larger ones.

On the fifth day, however, we come, as already noticed, to what is strictly "creation." "The living soul" is introduced. The words literally translated are, "And God said, 'Let the waters swarm with swarms—the living soul; and let the flier fly over the earth in the face of the expanse of the heavens;' and God created the great sea-monsters, and every living soul that moveth, wherewith the waters swarmed after their kind, and every winged flier after its kind; and God saw that it was good." There is a still more precise statement in the thirtieth verse, to which we may here refer, in which it is stated, "As to every moving thing upon the earth, wherein is a living soul." Thus every animal, even to the lowest grade, is called "a living soul," and for this reason, that a soul is in it. It is characterized by its higher part. Bodily organization is one thing; it is very far from being the whole thing in this case. Not merely is it a soul, but a soul is in it. In other words, the soul is not confounded with the body, but expressly distinguished from it. The soul, too, is definitely *what lives;* the body, of course, permeated by it, is alive also; but the source of its life is the soul. All Scripture shows this. The words for "soul," both in Hebrew and Greek, are the words for "life" also. Yet there are abundant passages which show that this is not merely what we call "vitality," but a life which is, in fact, dependent upon the presence of a soul. There are other uses of these words, (whether *nephesh*, as the Hebrew, or *psuche*, as the Greek,) derived from these. Into this I need not and cannot enter here. The Scripture is plain, that *in* the bodily organism is that which, distinct from it, animates and governs it.

Man, too, is a living soul, as the animal is; but man has a spirit also, as the beast has not. The distinction of these in Scripture furnishes the real key to that distinction between man and beast which is so puzzling the naturalist. To the spirit of man Scripture ascribes (1 Cor. ii. 11.) the knowledge of human things. Spirit and mind are thus

far identical; while soul stands for what we ordinarily call (speaking figuratively, of course) the heart. But the soul is more than this. It is not only the seat of the affections; it is the seat also of the instincts and appetites of the body—things which are never referred to the spirit; while with the spirit, God connects Himself, as the "God of the spirits of all flesh," and the "Father of spirits." To have said, The Father of souls, would have made Him Father of beasts also; but it is man who alone is made in His image, and is "His offspring." Angels are also spirits and sons.

The beast has no God. It can have no knowledge of God; no real knowledge of itself. Reflection, moral judgment, conscience, have no place with it. Perfectly fitted for the sphere for which it is made, it exhibits a capacity within certain limits which may seem to outdo reason itself; but the very perfection of this shows its character. As there is no failure, so there is no improvement. The wasp lays up food for an offspring that it never sees, and can have no knowledge of. Reason in it would be unable to accomplish this; but it is not a power higher therefore than reason, but lower. It is what we *truly call instinct; and in spite of the poet, reason and* instinct are very far asunder.

Man, too, has instincts, for he has a soul; but in him, these are subordinated to a higher purpose, and he is left to exercise the intelligence God has given him, and improve it by the exercise. The dependence of the psychical powers upon organization merely is very easily disproved. The brain of a baboon is far inferior to that of the higher apes; yet their so-called mental manifestations are exceedingly similar. The bees and the ants, of a comparatively low order of life, manifest surprising powers, *which those of their own kind, somewhat higher in* organization, cease to manifest. But it is, of course, impossible to enter into details upon this subject here. I have already said that when we come to the living soul, we find the use of the word which from the first verse on we have not found hitherto—the word, "creation." God created the heavens and the earth at the beginning;

on the fifth day, He created the living soul. What is indicated by this is, that a new element of being was introduced here, as implied in the word, "created." Of these creatures, again, there is no scientific classification. It is wholly impossible to gather such from the words, "The waters swarmed with swarms—the living soul." The flying creatures are not at all distinguished, as to whether birds or insects or what else. Nothing of this kind is needful to the completeness of a revelation such as Scripture gives us. The whole earth is God's, and from God. On the other hand, it is for man, subordinated under his hand by God, as we shall find expressly stated presently.

For on the sixth day there is another "creation;" as such, carefully confined to man, although upon that day the *earth* brings forth "the living soul after its kind, cattle and moving thing and wild beast of the earth after its kind." Of these it is said, God *made* them. But though He says, also, "Let Us make man," He adds to that, "in Our image, as Our likeness," and He terms it "Creation."

Here, therefore, the spirit of man, which God "formed within him," as the prophet says, is a new element introduced. God is a Spirit, and spirit alone is in the likeness of spirit. The words here are, as often remarked, really poetry—the first poetry of Scripture. It is as if God's heart rejoiced over His new creature, as we know it did; we know that His delights are with the sons of men. Alas, for what this favored creature—dropped out of knowledge and thought of all this love—has become!

Man, then, exclusively, is formed in the likeness of God upon earth; and under him is subjected "all fish of the sea, and the flier of the heavens, and cattle, and all the earth." That he is to have them in subjection, implies, on his part, a control which shall keep them so. In point of fact, man, seduced by a beast, or what appeared such, vacated his place and lost it. He is now in a world of adverse influences, which God's mercy indeed may and does temper to him; and where, of course, divine grace can make, for the objects of it, "all things work together for good;" but where now God's interference, so to speak,

is necessary for this. The miracles, which man denies, are thus the necessary tokens of the grace which would deliver him from the fruit of his own way.

Let us notice yet, what has been so often noticed, the pains with which God would impress man with the sense *of his importance to Him.* He takes *counsel as to man's* creation; He says, "Let Us make man." And, when we come to the more detailed account of His creation in the second chapter, we find God breathing into his nostrils the breath of life, and thus man becomes a living soul. His body had been formed before. His organization was complete and perfect. It was that which coming from God, not from the ground, and by that actual inspiration which, however anthropomorphic the language may be, speaks surely of a more direct communication from Himself:—it was that by which he became a living soul. We have seen that the animals also are living souls, and man, it may be pleaded, is only on common ground with them. It does not follow indeed that the soul of man is just what the soul of the beast is; and its connection in him with the spirit, which the beast has not, would alone go far to prove its higher nature. But a "living soul" he is. It is this which distinguishes him from the pure spiritual beings, which Scripture shows us also as God's creatures and His sons. Still, I repeat, it is by that which comes from God in a way his body does not that he becomes this; his life is higher than the beast's, and much more than the result of the superior bodily organization that is his. With this, then, we may close our preliminary examination of the scriptural statements, which I have separated as far as possible from questions called scientific, in order that we may arrive at a simple and unprejudiced apprehension of what it is that we have to compare with, and test, if you please, by science. We need not fear the result of testing. The pure gold will stand the refiner's fire and show no dross.

II.—THE SCIENTIFIC ASPECT.

Turning now to consider the scientific aspect of these questions, there is one thing that I would say, however, *by the way of preface. We must not think that Scripture* is waiting upon science to get its credentials thence. Thank God, for many it has proved itself so thoroughly to their souls that no scientific issue could possibly affect its authority for them. This the men of science themselves cannot with any justice object to. It is only saying, with an emphasis proportioned to the importance of the subject, what they themselves would say with regard to the different branches of scientific research. Connected as these are, they have their independent proof, which no one hesitates to take as proof, apart from all other testimony whatever; as well as their margins in which they overlap each other. No scientists refuse to consider any point established because all possible connections with every other point have not been ascertained; and it would be entirely too much for any one to imagine that Scripture is to be tested, as if for the first time, by the discoveries or the theories of the nineteenth century. If Scripture be a revelation from God at all, there must be some nearer way to ascertain its truth than by the slow and devious one of geological research—a path, moreover, which is open to the few alone, and not to the many; which excludes altogether the more simple and less educated, except as they may be supposed to take for granted the conclusions of others. But this would be no proof. It would be that very faith in authority which people now deprecate.

Scripture, written for all, appeals to all. It refers for its proof to man's own heart and conscience. It offers itself as that which, as light, manifests itself to those who have eyes to see; as truth, to those who are of the truth; as a revelation which reveals; and he who has used the light knows for himself the power of it. "He that believeth on the Son of God hath the witness in himself." This is not credulity; this is not blind confidence in authority. Light is its own evidence, and it is the evidence

which faith in Scripture hath in abundance to justify itself to us.

But I pass from this. It is not my purpose now to dwell upon Scripture-evidences; while the very examination that we are upon will furnish, I do not doubt, many. Let us now take up the main points in which scientific teaching may be thought to come in collision with the Mosaic account of creation.

1. Creation.

And here the first point will necessarily be the fact of creation itself; although we are continually told that we may choose it as a hypothesis, if we will. It must be, however, at the cost of all reputation for wisdom. For as Prof. Tyndall tells us, "as far as the eye of science has hitherto ranged through nature, no intrusion of purely creative power into any series of phenomena has ever been observed." We shall be glad to learn from him how it could be. Scripture certainly knows nothing of creation as a process now going on. It declares that "the works were finished from the foundation of the world." The products of creation are alone, then, what science can deal with; and it would be interesting to know just what amount of proof of such a fact Dr. Tyndall would require.

Yet the only objection to the Scripture-statement seems to be that "it invokes forces and processes" of which science can give no account. Natural causation, therefore, is preferable, by reason of its greater simplicity; and as to the sufficiency of natural causation, Mr. Huxley has told us it is presumptuous to doubt it. To deny its sufficiency, he says, "It is obviously necessary that we should know all the consequences to which all possible combinations, continued through unlimited time, can give rise. *If* we knew these, and found none competent to originate species, we should have good ground for denying their origin by natural causation; until we know them, any hypothesis is better than one which involves us in such

miserable presumption." "The hypothesis of special creation," he remarks, therefore, "is a mere specious mask for our ignorance." And this is the usual plea. Evolution, in the non-theistic form of it, is nothing else, in fact, than natural causation. But here we may be permitted to appeal to what Prof. Tyndall speaks of as *vorstellung-fuehigkeit*, a term which he says, as used by him, means the power of definite mental presentation; of attaching to words the corresponding object of thought, and of establishing these in their proper relations without the interior haze and soft penumbral borders which the theologian loves. He will be the last, of course, to blame us for insisting upon this here.

What, then, is nature?—this word upon which men of science ring such countless changes? Nature is what is *natus* (born)—the inherent quality of a thing. To use it in Mr. Huxley's sense may be poetical enough, it surely is not scientific. The penumbral borders are deep and broad enough for any theologian. Nature is the nature *of* something; it is dependent and derived; it is no creator. It could never produce the thing of which it is the nature. If you mean by it the nature of the universe, you postulate the prior existence of the universe by the very term. If you mean, in fact, the nature of any primary atoms, these must be postulated; and nature cannot add the smallest atom to their company. The penumbra here, it would seem, is not a "border" merely. Was life among these primary atoms? Dr. Tyndall perhaps would tell us, —nay, he has told us, as to the earth, that "the elements of" it were there, which grouped themselves together into their present form as the planet cooled." Does he know any thing—does science—of these elements? All is confessedly hypothesis here. But it is plain that Dr. Tyndall could not account even for these elements of life by natural causation. He must have the elements first, before he could have the nature at all.

Is natural causation, then, the simpler thought? It is well that it should be understood here what scientific men deem to be the duty of science. I quote from no writer of extreme views when I quote the following: "It may

sound strange to some of our readers to be told that it is the duty of the man of science to push back the great first cause in time as far as possible; nevertheless, this accurately represents the part in the universe which he is called upon to play." A very important part this, no doubt, but this is the best reason that can be given why we are bound, for instance, to prefer the gradual condensation of a solar system from a nebula, to its immediate production by the hand of God. When theistic writers commit themselves to such principles, it is no wonder that many may be found to carry them to their legitimate result; and having been able from the very commencement of things to do without God, should propose to do without Him altogether.

This is, in fact, the benefit which such a writer as Mr. Huxley almost openly professes to be derived from Darwinism. Mr. Darwin "has rendered a most remarkable service to philosophical thought," he says, "by enabling the student of nature to recognize to their fullest extent those adaptations to purpose which are so striking in the organic world, and which teleology has done good service in keeping before our minds, without being false to the fundamental principles of a scientific conception of the universe." He has explained the difference a few sentences before:—"Far from imagining that cats exist in order to catch mice well, Darwinism supposes that cats exist because they catch mice well; mousing being not the end, but the condition of their existence." Again, "For the teleologist, an organism exists because it was made for the condition in which it was found; for the Darwinian, an organism exists because, out of many of its kind, it is the only one that has been able to persist in the conditions in which it is found." This is, of course, the annihilation of design, and, at least, of all proof of a designer. I only quote it to show what he considers to be an important service to science. We can understand now why natural causation should be the more "scientific" thought, but it is scarcely the simpler for all that. Once admit God, and you have admitted all that is necessary really to the complete existence of the cosmos as it

is; *admit natural causation*, and *every step toward this is* accompanied with further difficulties. The competent thought is simpler than the incompetent, assuredly.

Spite of the Darwinian theory, design, however, is evident; and Scripture appeals to it as such.—"For the invisible things of Him from the creation of the world are clearly seen, being understood by the things that are made, even His eternal power and Godhead; so that they are without excuse." This is not only Scripture, it is notorious fact. They would scoff at the idea of some chipped flints not being a sufficient proof of man's existence. *Like any other mortals, they would speak of design* in their formation, and be teleologists in the ordinary and *not in the Darwinian sense*. *If you spoke to them* of natural causation, and of its sufficiency to account for all things, they would rebuke you on the other side with the same confident assurance they ever possess. They have no doubt that in this case they have the work of mind, and can detect it without mistake in the very low forms in which they supposed it to have existed in the anthropoid animals whose existence may be indicated. Here they seem to allow what we contend for. But on the other hand, *if these flints were only able to make other flints*—if the design in them were only by a good many degrees *higher in quality, then they would at once reverse their* decision, and see nothing but laws of matter and natural causation, incompetent to make the lower forms. The consistency here is possibly too profound for an ordinary mind to apprehend it, or the *vorstellung-faehigkeit* is at fault, and cannot present it to the ordinary mind. In either case, the result is the same. We shall go on to suppose that we find design in nature, and take comfort in the idea that physicists can favor the cool retreat of penumbral borders as well as theologians.

Nay, there is a revolt in the ranks of science itself. *People are beginning to speak now of an intelligence* which they qualify (very penumbrally) as "*unconscious intelligence.*" *A popular philosophy in Germany at the* present time is, the "philosophy of the unconscious;" which, for Hartmann and his followers, is what the "un-

knowable" is for others amongst ourselves—a kind of God that can be owned or disowned at a breath, and whose worship being, "for the most part, of that silent sort," will not interfere with the researches of the devotee of science. It is hard to know what is unconscious intelligence, and more hard to realize how, by any inductive process, man arrives at the unconsciousness. Just as hard as it is to realize the "unknowable" of Spencer, or how he can exhibit such very precise knowledge where he proclaims none attainable.

If design, then, proves a designer, faith in creation may have grounds to justify it, even apart from Scripture; and Scripture boldly claims it as a matter of faith, and nothing else. "By faith we understand that the worlds were framed by the Word of God." The time is past when even *naturalists can afford to sneer at faith*. Huxley's faith in natural causation we have seen. In the discovery of those very chipped flints of which we have spoken, the discoverer professes to have been guided by "eyes of faith." Nor need we speak more of miracles on the one side than on the other. Creation cannot be against natural law, or at least against any known, for there is none known. The evolution of life as we find it now is invariably from life. Its elements do not group themselves together according to any law that Dr. Tyndall can make evident; nor is natural causation as competent now, in the days of its decrepitude, as Mr. Huxley knows it to have been in the days of its lusty youth. Why should we not, then, believe in creation? The faith of the Christian is not built on what he gets by induction from accumulated facts. That, the truth of which he has proved so well, and is daily proving,—the Word of God, as he surely knows it, is to him above all the groping of reason in the things transcending it. But when he proclaims his belief, nothing that can be truly called science, has one word of dissent to utter.

2. Life in its Various Grades.

The next question that will come before us is that as to

the nature and introduction of life upon the globe. The nature of life is the great puzzle with the physical school. At present they are determined to classify it, if possible, as part of the universal "force" which they recognize as pervading nature. From the crystal to the living organism, they agree, is but, at any rate, a very small leap; and in the region of the unknown from which they get so many treasures, they can as well as not hypothecate some combination of molecules by which this leap may be effected. Hypotheses are scientific enough, and imagination, as we have been told at full length, has its lawful place in connection with science. It is more simple to assume natural causation than divine; and this at once settles the matter in favor of the molecules. Facts, however, are stubbornly against them; and we must here glance at the facts which are on all hands admitted.

It is usual to recognize various kingdoms in nature, with some higher divisions which it has been proposed to call "empires." The inorganic must be thus distinguished from the organic. In a mineral, for instance, there is no combination of parts to form a whole. Its atoms are alike throughout; and it grows, if it grows at all, not by any internal principle, but by mere accretion from without. The forces that are manifest in it are those of gravity, or chemical ones only. The properties of the atoms furnish the conditions under which these forces act. Spontaneity is no where present. From such and such a combination such and such results will assuredly follow, and may be calculated on with most definite precision. All is material, and yields itself, as matter will, to the control of mind without resistance. When we come to the vegetable kingdom, we find at once that we are in another sphere. Here too there is matter; here too gravity and chemistry are recognized forces; but there is something which, at present, at any rate, cannot be resolved into gravity or chemistry. With conjectures we have nothing to do. That this is the fact all must acknowledge perforce. Here there is a principle of growth, whatever it may be—an internal principle which is absolutely characteristic. There is power of reproduction, a power different from any

thing that we can possibly find in the mineral. There is a correlation of parts, which act together for the welfare of the whole. There is a plain mastery exhibited, in a certain measure, over the merely material and chemical forces. This is shown strikingly when death takes place; for then the chemical forces escape from such control, and reduce the organism to mere inorganic molecules.

When we turn to the animal kingdom, we find the exhibition of a still higher power; to which the lower, though there and manifest, is again in more or less evident subjection. We can readily recognize the forces of gravity, chemistry, and vitality as all present; but there is now a true spontaneity—a power of self-direction, which is not apparent in the vegetable. Descending to the region of infinitesimals and invisibles, we may find more or less difficulty in distinguishing, as people have pointed out, the animal from the vegetable. It is usually more difficult to see in the dark. But in the higher forms there is no such difficulty; and the higher forms, and not the lower, show us the true character of what is here. What we call, in a loose way, *mind* has come in. For "mind" in a strict sense, we have to rise, spite of the physiologist, to a higher kingdom—we must come to man. But this we cannot as yet enter into: we must return back to look at these three grades of life a little more distinctly.

It is in connection with the plant and with life, therefore, at its outset,—present wherever life of any kind is found—that we come in contact with that mysterious thing for which the name now popular is *protoplasm*. A very remarkable thing is protoplasm. Mr. Huxley has done his very best to present it to us as a mere compound of certain material elements; but manifestly, the moment he employs chemistry to decide this question, the life must have escaped. He is arguing as if there was no difference between the dead and the living. From all that we can gather of it, looked at as a living thing, protoplasm is now well known to be structureless to the highest powers of the microscope. It is every where the great organizer: it has itself no organs. It has been so commonly talked of, that every one knows that these little

masses of protoplasm, invisible save to the microscope, lie imbedded every where in all the tissues, whether of the animal or of the vegetable. They are the living part of these organisms. All the rest is what is called "formed material," and material which the protoplasm itself has formed. Wonderful to say, this has the power of receiving from without the nourishment of whatever kind which is supplied to it, transforming it into its own likeness, and then building up the different structures from itself.

These little masses have power of growth, of multiplication, of movement; and we have, many of us, seen pictures in which they are presented moving in a given direction, as along the strand of a muscle, and leaving behind them as they move a sort of a spider's web of formed material. No difference can be discerned between one mass of protoplasm and another. Nay, all of them, in any one body, are derived originally, so far as we can see, from a common mass. Yet in spite of this apparent identity, they are, in the more developed organism, very manifestly different in the work that they perform. Each in its place builds up the tissue which is required by the plan of the whole structure, and it builds up no other. That which is set apart to build nerve tissue will not build muscle, and that which builds muscle will not build bone. The division of labor is perfectly understood by these little workers, but the labor is steadily devoted to the good of the whole. Each works independently, and yet in fullest harmony with all the rest. Here, surely, there is a thing very different from what we ordinarily apprehend as chemical, inherent in the protoplasm itself, that renders it absolutely necessary to speak of vitality and of vital action. This vital action, as has already been said, controls and counteracts even the chemical action, as death shows; when chemistry prevails again, and putrefaction is the consequence.

As I have said, protoplasm is found wherever life is found. It does not distinguish the animal from the vegetable; although the structures built by it in the animal may be and are more various and complex. But the plant is thus a living thing. As compared, however, with the

animal, we find very readily that ordinary lifeless forces have a larger part in it. The plant is nourished simply by what is called endosmose,—a law by which two fluids upon the opposite side of a membrane will diffuse themselves through it in proportion to their different density. The plant is passive here: no animal but what is more or less active in its quest of nourishment. Endosmose has, of course, its place in the animal frame, as I do not forget; but it is a different place. Life, however, in itself does not separate between the animal and the plant. When we come to the animal, we find, if we take Scripture, something more than life, however connected with it. The plant, as we have seen in Genesis i, is a thing "made," not a fresh "creation." The living soul, or animal, is a "creation;" but here we rise out of the sphere of pure physics into a higher one.

The animal has a soul. The soul, however, is not all that it is. It is but one of its constituent parts—the highest; from which, in contrast with mere matter, or with even the vegetable, it gets its name. "Every thing wherein there is a living soul," says Scripture. The soul is a higher power inherent in the bodily organism, closely connected, as is evident, with the life of the body; directing and controlling, to a certain extent, the bodily powers, just as we have seen vitality itself controlling the chemical. It is the order of nature that the higher should in part control the lower, and yet only in part. There are thus certain bodily functions which we may easily recognize to be under the control of vitality alone. We have seen that bodily structures can be built up without a soul at all. It is important to realize this. It is certain that we have no consciousness or superintendence of what goes on in this way. Nay, in ourselves, any control that we have over it tends often to act injuriously rather than the contrary. Vitality has its own sphere, and an important one. The soul is an added entity which, however now indissolubly connected with the life of the body, has also its own sphere, overlapping to a larger or smaller extent the bodily one.

Again, let us take the animal at its highest, not in its

lowest forms. No one but the naturalist would go to the germ in order to find out—just where the microscope and every thing else fails—the character of what is presented. The development of the germ is what makes manifest what is in it. How worse than foolish is it to argue from any apparent identity of the germ at the beginning, that that which develops into an oyster is yet the same as that which develops into a man. Surely the simple fact of development is a clear proof that something, and that the most important for a true definition, must have escaped the microscope or the chemical analysis. Nay, if we even take the lower forms that are developed, how *many* tendencies are there in these which would never be discerned in their true character except by comparison with those of a higher grade! To find, then, what the animal is, we should rather go to the *highest* animal than the lowest and least developed, and here we shall find, I doubt not, that Scripture and science agree most perfectly.

Anatomically, the thing which we may consider distinctive of the animal organism is the nervous system. It may be hard to trace this in the lowest forms, but I have said we shall prefer pure daylight to what is obscure. The nervous system is evidently that by which the self-directive power is manifested in the higher animal. It is necessary to spontaneous movement. But there is more than this; we have a whole range of things beside, which imagination itself can hardly ascribe to the most developed plant. Sensation is the basis of all these—one thing apart from which none of them can apparently exist. We may distinguish the animal as a sensitive being. It has sensations, and it responds to them. Sensation is not a quality which depends upon the mere possession of life. Life, as we see it in the vegetable, can exist perfectly without it; whereas in Scripture, sensation is ascribed to the soul, and to the body only as connected with it.

This may suffice to distinguish the animal from what is below it. But in order to understand clearly what the animal is, we must learn to distinguish it also from that which is above it, which, in spite of materialism, man is. There is a *human* kingdom, better perhaps called an empire, as

distinct as possible from the animal, although in distinguishing it anatomy and physiology may altogether be at fault. Just as the phenomena of life do not suffice to explain to us the animal organism, which of course man is possessed of, and in which he resembles other animals, so the powers of the animal, while yet he possesses them, do not suffice to explain the highest powers of man.

Man, if we still cleave to Scripture, has a spirit as well as a soul; and with this spirit is identified the "knowledge of the things of a man,"—reflection, judgment, the moral faculties. It will be objected by some that Scripture also speaks of the "spirit of the beast." (Eccl. iii. 21.) There is one place alone in which it does so, but not as giving any positive doctrine upon the subject. It is, as the large part of the book of Ecclesiastes is, human conjecture and reasoning only. It is what a man, though he might be the wisest of men, said in his heart at a certain time. It is given as that, to put his condition of perplexity into which he had fallen, and into which every one else will fall who seeks, with him, simply "to search out by wisdom concerning all things that are done under heaven." Man's wisdom is here at fault, just as in the book of Job man's goodness is found wanting also. The wisest man here, the best there, has to confess his folly and his vileness before God. Looking at things in this human way, death is for us the great mystery—the thing which levels man with beast and wisdom with folly. Here, then, is his thought at this time: "Man has no pre-eminence above the beast." It is just because "that which befalleth the sons of men befalleth the beast; as the one dieth, so dieth the other." He adds, "Yea, they have all one *ruach*"—the word which in Hebrew stands for both breath and spirit. Its vagueness, therefore, here answers his purpose better than any more precise definition. Death is before him, and, as far as the eye sees, "all go unto one place: all are of the dust, and all turn to dust again." Now comes the question: "Who knoweth the spirit [*ruach*] of man that goeth upward, and the spirit [or *ruach*] of the beast that goeth downward to the earth?" It is human conjecture, not divine knowledge;

and whether the human *ruach* (*which is, in fact, spirit*) is distinct from the *ruach* of the beast (*which is, in fact, breath*) he knows not. At the end of the book there is, however, distinctly given to us the exact opposite of this. It is of man that he says, speaking of death also, "Then shall the dust return to the earth as it was, and the spirit shall return unto God who gave it." Thus the spirit does *not* go downward to the earth; it is distinguished by this fact from the *ruach* of the beast.

The passage here, then, if duly weighed, will only make more manifest the Scripture-distinction between man and beast.

The mental or moral powers are ascribed to the spirit in Scripture; although in man the region of the spirit overlaps that of the soul, just as we have seen the soul overlapping the vital sphere and the vital overlapping and governing the chemical.

Let us take a few passages as to the soul and spirit, that we may see how differently Scripture characterizes them. Thus the soul is the seat of the affections (Gen. xxxiv. 8.)—"The soul of my son longeth for your daughter;" "The soul of Jonathan was knit to the soul of David" (1 Sam. xviii. 1.). Hatred is ascribed to it, as is love,—"The blind that are hated of David's soul" (2 Sam. v. 8.); "My soul loathed them" (Zech. xi. 8.). The soul is the seat of the appetites of the body (Ps. cvii. 18.)—"Their soul abhorreth all manner of meat;" (Prov. xxvii. 7.)—"The full soul loatheth the honeycomb;" (xxix. 8.)—"He fainteth, and his soul hath appetite;" (Lam. i. 11.)—"Meat to relieve the soul." So the derived meanings of the word, as given in our ordinary version, are, "appetite" (Prov. xxiii. 2; Eccl. vi. 7.), "pleasure" (Deut. xxiii. 24; Ps. cv. 22.), "desire" (Jer. xliv. 14; Mic. vii. 3.), and "mind;" but in the sense of will or intention and not of the understanding, 1 Sam. ii. 35; 2 Kings ix. 15.

The spirit is used in a very different way. I have before quoted the main passage in 1 Cor. ii. 11,—"What man knoweth the things of a man, save the spirit of man which is in him." It is also the common word for

"mind" (Prov. xxix. 11.)—"A fool uttereth all his mind;" (Ezek. ii. 5.)—"I know the things that come into your mind;" (Dan. v. 20.)—"His mind hardened in pride;" Isaiah xi. 4, it is translated "understanding."

Thus there is a uniform sense which these words have in Scripture, and we can understand well its consistency with that which has been before noted,—that God is the "God" and the "Father of spirits," and not of souls. He is the God of those able to apprehend and to respond to Him: He is the Father of those who have in their own spirit the likeness of His being which is spirit.

If we turn to what science says, or what we can gather naturally from things, we shall find the same distinctions, if we do not find the things which are the basis of them. I prefer at this point to use the language of another rather than my own—the language of one whose scientific competence can hardly be questioned, and who evidently has in no wise the scriptural statement before him when he uses it. Prof. Mivart distinguishes two classes of powers in man. The highest class he characterizes as follows: "First, a power of directly perceiving and reflecting upon our continued personal activity and existence—sensations and perceptions being reflected on by thought and recognized as our own, and we ourselves being recognized as affected and perceiving—*self-consciousness*. Secondly, a power of actively recalling past thoughts or experiences—*intellectual memory*. Thirdly, a power of reflecting upon our sensations and perceptions, and asking what they are and why they are; of apprehending abstract ideas; of perceiving truth directly or by ratiocination, and also goodness—*reason*. Fourthly, a power of, on certain occasions, deliberately electing to act either with, or in opposition to, the apparent resultant of involuntary attractions and repulsions—*will*. Fifthly, a power of giving expression by signs to general conceptions and abstract ideas; a power of enunciating deliberate judgments by articulate sounds—*language*. These powers result in actions, which are deliberate operations implying the use of a self-conscious, reflective, representative faculty."

Besides these highest psychical powers, he enumerates

the following powers and activities also: "First, *vegetative* powers of nutrition, growth, and reproduction. Secondly, a power of responding to unfelt stimuli by means of nervous interconnections—*reflex action*. Thirdly, a power of inadvertently performing appropriate actions in response to felt stimuli; such actions, termed *instinctive*, being provided for beforehand by the special organization of the body. Fourthly, a power of experiencing sensible pleasure and pain. Fifthly, a power of indeliberately perceiving sensible objects, of which some start or exclamation may be the sign—*sensible perception*. Sixthly, a power of effecting the coalesence, agglutination, and combination of sensitives in more or less complex aggregations, and so simulating inference. Seventhly, a power of automatic or *organic memory* which may exhibit itself in unintellectual imitation. Eighthly, a power of responding by appropriate actions to pleasurable and painful sensations and emotions—*organic volition*. Ninthly, a power of experiencing vague pleasurable and painful feelings—*emotional sensibility*. Tenthly, a power of expressing such feelings *by signs or by gestures understood by our fellows*, and replied to by corresponding sounds and gestures—*emotional language*."

The first of this latter class of powers—the vegetative ones—is, as the name implies, the result simply of the possession of life. The rest are as characteristic of the soul as Scripture defines it as the former class of higher powers are of the spirit as defined in Scripture also. I might quote others with regard to these distinctions, but this will suffice. Mr. Mivart remarks that as to the instinct of animals, "their highest psychical faculties appear to answer very closely to the above indeliberate human faculties; and thus we come to see, not only what *instinct differs from, but also what it resembles*." We are thus able to differentiate the soul from that which is above it, as we have already seen it differentiated from the mere vegetative life which is below it.

Life, soul, spirit, are thus without much difficulty to be distinguished from one another. It is remarkable that if we take the brain itself, which, of course, we have in

common with at least the higher beasts, the latest science of the day makes it doubtful as to whether the cerebral lobes themselves, and even the frontal which are most in question, have any thing directly to do with the higher class of faculties which Prof. Mivart has described to us. For the expression of them outwardly, they are of course necessary, as the nervous system generally is. Prof. Ferrier, the latest investigator, speaks only conjecturally here; and his own researches, since confirmed by those of many others, show conclusively that large portions of the brain are devoted to mere muscular motions of the face and head. It is little, therefore, for Mr. Huxley or another to compare the brain of an ape with the brain of man. Even here there are great differences, although all the parts in the one are doubtless to be found in the other. But this is no more than saying that man has the animal structure which the beast has. That which makes him "man" is above the analysis of the knife or microscope.

No one who will reflect upon what we have had now before us, but will observe that sort of consistency which belongs to truth, and which nothing short of truth could be expected to have; and yet, as already remarked, what we have in Scripture is no labored argument to prove this, nor any argument at all. It does not even dwell upon such things as these, or bring them into any special prominence. It is content to leave them where man, if he chooses, can search and find; and if those who have busied themselves so much with the investigation of nature had only taken half the pains to investigate *Scripture* upon these subjects, they might have found, not only the harmony which they deny, but the real key also to many things which, for the want of the key, remain, and are likely to remain, questions merely.

I pass on now to other things.

3. Kinds.

Scripture commits itself definitely to the doctrine of species. There is here, as I believe, no uncertainty or ambiguity at all. The seed is "after the kind" of the

herb which yields it; the fruit also "after its kind." God created also the living creatures "after their kind," "every winged fowl after its kind, and cattle after their kind, and every thing that creepeth upon the earth after its kind." There is no room to doubt the doctrine in all this. The question of the origin of species is vital to the truth of Scripture. Let us see briefly what are the points which are in contention as to this.

According to the most pronounced system of evolution in the present day, there are three things which we must especially consider in connection with the question of origin.

There is first of all the principle of *heredity*. This, by itself, is what Scripture-doctrine plainly asserts. It is the principle by which the kind preserves itself upon the earth; it is that by which the offspring resembles its parent in all essential features. It has been strangely misused, as we shall see directly, by evolutionists. It is a principle which, as far as Scripture is concerned, we have no difficulty with at all.

Next, we have to consider the principle of *variation*. It is as undoubted a truth that the offspring seldom or never *exactly* resembles the parent. Throughout the world, scarcely two individuals can be compared without bringing out satisfactory points of difference. The usefulness of this is easily to be understood. Were there absolute resemblance, the very fact would breed confusion. Individuality is as marked on the one hand as kinds on the other.

Along with these two principles we are to place, according to Mr. Darwin and his followers, a third, which he calls "natural selection." Mr. Spencer's synonym for it is, "Survival of the fittest." This natural selection is the fruit of a "struggle for life" which is going on everywhere through nature. Were but one kind left to multiply itself upon the earth, in the end the earth could not hold it. Mr. Huxley has shown us how if a plant produced fifty others in a year, in nine years, the whole surface of the earth would be overspread with it and something more. But in this way, at least, as all could not live, a

struggle for life must ensue—a struggle in which the hardiest and best fitted to survive would naturally do so. The result would be, the *selection* of the varieties which thus proved themselves the fittest; and, supposing variation to be indefinite, the development, by degrees, of indefinitely higher kinds.

It is mainly in virtue of these three principles that it is supposed the different species, whether of animals or plants, *have had their origin; granting, of course, the* first species. Sexual selection has been added latterly in order to reinforce them when their weakness became rather awkwardly apparent. But it is evident as to the lowest forms this could have no place whatever; at least it is hard to imagine it in an oyster, or in the various forms of hermaphrodites. If natural selection cannot thus far, at least, advance alone, it will be out of its power to call in the help of the other principle. In point of fact, the question is not so much of the existence of such a thing as natural selection, which may be allowed without much trouble, and which might have its use to maintain the vigor of a species, if not to improve, at least to adapt it to varying conditions; but whether there are no limits to variation, which it may be impracticable for it to override, is another point, and is the main one.

The principle of heredity, which evolutionists strangely appeal to in their own behalf, is really that which is powerfully against them. No doubt there are variations, and plenty of them; no doubt that these are most useful in adapting a species to fresh conditions; no doubt that man can, to a large extent, both multiply and preserve these variations. We know, however, that skill is required on the part of breeders to preserve them; and we know too that they are to be found mainly in *domesticated races.* Let these but run wild, and they will most surely return, if not to the primitive condition, yet at least to be sufficiently homogeneous, and with as little tendency to variation, as the primitive one itself. The facts as to hybrids also are allowed by Mr. Huxley himself to have great importance. "The formation of hybrids naturally," says *M. Quatrefages*, "*is so rare that eminent naturalists*

have doubted its reality. There are, however, according to M. Decaisne, a score of well-proved examples among plants. What is this number compared with the thousands of *mongrels* produced every day under our eyes? and yet the material conditions of fertility are identically the same with races as with species, and our botanical gardens, which group numbers of species side by side, facilitate crossing still more.

"Among wild animals living in liberty, hybrids are still more rare. It is unknown, for example, among mammalia, according to Isidore Geoffroy, whose experience has here a double value. The order of birds alone presents some facts of this kind, nearly all of which are in the order of Gallinæ. According to Valenciennes, they are unknown among fishes. In domestication and captivity, spontaneous crossing between different species is a little less rare.

"The intelligent intervention of man has multiplied unions of this kind in a remarkable manner, especially among plants, *but without being able to extend their limits.* Linnæus thought crossing was possible between species of *different families;* but in 1761, Koelreuter showed that he was mistaken. From these investigations, which were carried on for twenty-seven years, and from those of M. Naudin, his worthy rival, it appears that artificial crossing between species of *different families never* succeeds, and *very rarely* between species of *different genera;* that it is always very difficult, and demands the most minute precautions to insure success; that it even fails between species of the same genus closely allied in appearance; and finally, there are whole families amongst which hybrids are impossible. Amongst the latter, figures the family of the cucurbitaceæ, so thoroughly studied by M. Naudin, where the most perfect mongrels were produced spontaneously, we could not imagine evidently a more complete contrast. . . . . All experimenters agree, further, in declaring that even in unions between species which have been most successful the fertility is constantly diminished, and often in immense proportions. The head of the *Papaver somnifera* generally contains two thousand seeds

or more. In a hybrid of this species, Goertner only found six which had been matured; all the rest were more or less abortive.

"Hybridism in animals present exactly the same phenomena as in plants. Man has been able, by diverting and deceiving animal instincts, to multiply crosses between species; but he has not been able to extend the very narrow limits at which these phenomena cease. Not one fertile union has taken place between different families. They are very rare between genera, and even between species they are far from being numerous; a fact the more remarkable, as animal hybridation is an ancient institution. . . . . We may draw this conclusion from known facts, that there are only two species of mammals —the ass and the horse, the crossing of which is almost universally and invariably fertile."

With regard to hybrids, M. Quatrefages further remarks that "in the vegetable hybrids the physiological equilibrium is destroyed in favor of the organs conducive to the life of the individual, and at the expense of those conducive to the life of the species. The stalk and leaves are always developed in an exaggerated manner relatively to the flowers. The most common animal hybrid, the mule, is an entirely similar case, being invariably stronger, more robust, and more hardy than its parents, but *sterile*. This sterility is not absolute, however, among all hybrids of the first generation. . . . . In a small number, the elements which characterize the two sexes remain capable of reproduction. Nevertheless the fertility is always immensely reduced. From his hybrids of the datura, M. Naudin only obtained five or six fertile seeds from each plant; all the others had completely failed, or were without an embryo. The capsules themselves were only half the normal size.

"If two of these first hybrids are united, they produce hybrids of the second generation. In most cases, however, the latter are either sterile, or present the phenomenon of a *spontaneous return* to one or other of the parent types, or to both. M. Naudin crossed the large-leaved primrose with the *primula officinalis* and obtained an in-

termediate hybrid between the two species, having seven fertile seeds. When these were sown, they produced three primroses of the male species, three of the female, and *a single hybrid plant, which was perfectly barren.* . . . .

"In order to establish a series of generations presenting a certain amount of uniformity, the hybrid must lose some of its mixed characters and resume the normal livery of the species, as M. Naudin says; in other words, it must return to one of the parent types.

"The same facts which we have just noticed amongst plants occur also among animals. . . . . There are, however, some examples among birds and among mammalia of hybrids which have propagated *inter se* for several generations, four or five at the most. . . . . But can these hybrids, of which so much has been said, maintain themselves without reverting to the parental types? M. Roux evidently believed it, and it is still asserted by M. Gayot. But the testimony of those who have established and impugned their assertions, leaves scarcely any room for doubt. Isidore Geoffroy, who had at first believed in their fixity, and had spoken of it as a conquest, did not hesitate afterward to admit the reversion. The fact has been established in Jardin d'Acclimatation, and M. Roux himself, upon the assertion of M. Faivre, appears to have abandoned his previous assertions. The observations and experiments made by the Agricultural Society of Paris clearly show that the *leporides* sent or presented by the breeders themselves, had entirely reverted to the rabbit type. Lastly, M. Sanson, discussing the anatomical side of the question, has arrived at the same conclusion."

M. De Quatrefages sums up the characteristics of hybrids as follows: "*Infertility as a general rule*, and, in the exceptions, a very limited fertility; series suddenly *cut short, either by infertility, by disordered variation, or* by reversion without atavism."

The reality of species from the scientific side can scarcely, therefore, be doubted, except by those whose *theories blind them to facts such as have been stated.* Heredity appears in these, whatever its nature, not as a principle which would preserve variations, but as a princi-

*ple rather which tends to prevent their indefinite exten*sion. It is a truly conservative principle. It controls and limits variations within certain degrees, within which it may be, and is, no doubt, of the greatest utility, but beyond which it would breed but utter confusion.

4. The Day-Period Interpretation.

Returning, now, to take up the six days' history more in order, we are confronted at once with the fact that there are two modes of interpretation of these, which have been ordinarily represented as contradictory of each. Carried out as they have been by various writers, whether from the side of Scripture or of science, no doubt they are so; yet in spite of this conflict, those who have looked carefully at what is said on either side, instead of finding no *force in either, will find force in both.* The *resemblance* of the six days' work to the geological periods is not merely an ingenious fancy, but has a foundation of fact. It does not follow from this that the days *are* periods as given in Scripture. To me, it is evident indeed that they are not so; but there is a real analogy, which, pushed beyond limits, as it has been by many, is nevertheless a *true witness to the inspiration of the narrative. It surely* should be no wonder if whether working upon the larger scale of periods or upon the smaller one of days God should preserve the one plan of working. Those who realize the unity of the plan in the things created will have no difficulty in realizing it in the order of creation. The fact, however, should speak for itself, that an analogy *there is, and which needs but little dwelling upon for any* one acquainted with the facts of geological science accepted every where now. Let us look at this first, reserving the question as to whether it be the whole truth for examination afterward.

Scripture, then, presents to us evidently, at the outset, before life existed upon the earth, a *reign of water*—"Darkness was upon the face of the deep;" and buried in the deep, to emerge from it only on the third day, is *that which is dry ground afterward.*

A view of this kind is by no means, at first sight, natural or reasonable. We are most of us familiar with the wonder that was produced when men found the shells of the ocean upon the mountain-tops. We may perhaps remember that Voltaire, not so very long ago, suggested that those that were found upon the Alps had been dropped by pilgrims on their journey over them. Moses, nevertheless, (if it were no higher than Moses,) declared long ago a primitive reign of water, which science has so abundantly confirmed. The mountain-chains are mostly of comparatively late geological formation. As we go back through the history as presented by the strata, we find the land becoming less and less elevated, more and more, in fact, subsiding under the waters. The carboniferous epoch presents us with a time when immense tracts of land were so near the water-level that oscillations of no excessive character alternately plunged them underneath or raised them to the surface. The Silurian seems to speak of little dry land any where, and that, probably, mere archipelagoes of no great extent. Every geological formation has been formed under water. No one acquainted with the facts doubts, I suppose, that it was at first universal.

The second point, that may seem more doubtful, is the the existence of dry land before there was life. It is certain that the first forms of life that we find are exclusively marine, and the distinct evidences of land-vegetation are still scanty in the Silurian, perhaps not to be found in the preceding "Cambrian." If the contested *Eozoon* be accepted as a reality, the first primitive being that we have knowledge of, long before the Cambrian, was still marine. Yet at that time there are evidences, at least, though not unambiguous, of vegetable life existing in such a form as ordinarily argues the existence of dry land. The graphite of the Laurentian is apparently near akin to coal, and the inference is that it was formed in a similar manner. This exists in large quantities, so altered, however, by the action of heat as to have lost any trace of vegetable structure which it may have once contained. Further, the graphite, we are told, occurs "in the way in which we

should have expected it to occur, if of organic origin. It is found disseminated in the limestone just as bituminous matter is found in unaltered rocks of this kind." We have also, according to Dana, the occurrence of anthracite in small pieces in the iron-bearing rocks of Arendal, Norway, which are probably rocks of the same age. Geologists do not consider this evidence to be absolutely decisive, but it is all the evidence we have on the subject.

Nearly connected with this last point is the precedence of animal life by vegetable. In the Laurentian, if the presence of graphite is conclusive at all as to the existence of the latter, it would be evidence of the existence of it already in a comparatively high grade, while such an organism as *Eozoon* shows only the very lowest form of animal life. To this is added, in argument, by Prof. Dana, "Secondly, the fact that a cooling earth would have been fit for vegetable life for a long age before animals could have existed; the principle being exemplified every where, that the earth was occupied at each period with the highest kind of life the condition allowed. Thirdly, the fact that vegetation subserved important purposes in the coal period, in ridding the atmosphere of carbonic acid, for the subsequent introduction of land animals. Such is a valid reason for believing that the same great purpose—the true purpose of vegetation, was effected through the oceans before the waters were fit for animal life. Fourthly, vegetation being directly or mediately the food of animals, it must have had a previous existence." Here again all the evidence that the case seems to admit of is in perfect agreement with the scriptural statement.

We are upon more certain ground, however, when we come to the next point of agreement. According to Scripture, upon the fifth day the waters produced the living creature, and not until the sixth day, the dry land. Geology is in complete accordance with the order of production announced here. The Laurentian, Cambrian, and lower Devonian, so far as the records of the rocks have been deciphered hitherto, speak only of marine life. The middle Devonian presents for the first time an in-

sect said to be allied to the modern May-flies. There is also a shell which we are told may possibly be that of a land-snail. The course of discovery is continually carrying back indeed the supposed dates of origin of all classes of existence. It is not however in the least probable that the conclusion here stated will ever be overthrown. Land vegetables began only in the carboniferous or coal period. There, comparatively speaking, in their lowest forms.

A progress in the development of life necessarily follows from all this—a progress which Scripture indicates, while it does not dwell upon it. It is plain, from the Word of God and nature together, that there has been an "evolution," but an evolution of a plan in the Creator's mind alone—an *evolution* of what was first *in*volved, as all real "evolution" must be.

The final and last point of similarity that needs to be insisted upon is that in both records the whole animal creation is in existence before man. That is not questioned any where. For man, as indeed the head of it, "all creation waited." When it had advanced near this its culminating point, its special adaptations to his need began to assume the multitudinous shapes he finds now around him. For him indeed, long ages before, the immense masses of coal were packed away with a manifest design which causes even Mr. Huxley himself to break *out into admiration of nature's thrift; he will allow nature* to prophesy, however little he will allow God. But the intelligence which looked so far forward we may surely attribute to a higher source. If man, however, had existed in that carboniferous period, he would have found little, if any thing, of "the fruit-tree yielding fruit," so necessary to his existence; he would have found little trace, apparently, of that which now furnishes him with bread; he would have found none of the flowers which now adorn for him the face of nature. We must wait long in the geologic ages before we come to these. To quote the words of another, "we miss in the species of plants of the primeval epochs those distinguished for their utility at the present day. Doubtless the earth formerly yielded ferns, firs, cycases, and palms; and plants of the same

rarent justification. There is at least in the analogy between the geologic ages and the six days' work sufficient to show that they have one author. Instead, therefore, of seeing in this view of things an insuperable difficulty, we see a real harmony which it reveals, to lose which would be a loss indeed. When we ask ourselves, however, Does the Day-Period interpretation as a whole really agree with Scripture? we shall find plenty of reason for not accepting it as the full thought there.

The first and most evident argument is that which is derived from the thought of "days" themselves. It is quite true that the word may be used in other senses; but when "evening and morning" are defined to be the day, this sort of use is much more questionable. That even these terms may be used poetically may be conceded; but the first of Genesis, as already said, is certainly not poetry. The seventh day, moreover, can hardly cover the whole period from man's creation until now; and to speak of the work of redemption as the work of it, the day being a day of *rest*, seems still worse confusion. In the ten commandments, that one which ordains the keeping of the Sabbath has been rightly brought forward as against the period theory. "In six days God made heaven and earth, the sea, and all that in them is, and rested the seventh day, and hallowed it." Is this seventh day not the day which He commands in this connection to be kept? If so, it is not an age, clearly; but just what we ordinarily mean by day. The attempt of some to make the first evening include the period of darkness preceding it breaks down manifestly when we consider that for "evening" itself light is necessary; and light dates only from a certain point when the earth, waste and desolate, and under water, was nevertheless there.

If people contend for the analogy, I have no objection. But analogy is one thing, literal application quite another; and it would seem very hard to prove the literal application to the geological ages,—nay, it would be hard to prove that these six days as defined periods have any proper representative in these.

But this is not the whole matter. Indeed, there are

arguments much more decisive. The evident reference to man which runs through the inspired account is a stronger one. Take, for instance, the fruits of the third day. They are surely those which are given to man for his use upon the sixth; and it is quite impossible to find such fruit, or to think of such a use of them, in the carboniferous period for instance. How can we suppose that this vegetable creation which God speaks of here is only that belonging to a by-gone time, and of which no trace remains at present? Does Scripture give any hint of such destruction or renewal as this would involve? I do not say that destruction and renewal have not taken place, but it is merely impossible to read them into the simple narrative of the first of Genesis.

So too with the living creatures of the fifth day. How is it possible to imagine that they were nearly, if not totally, blotted out of being before the sixth day came; and that a new generation of creatures should, in fact, coexist with the beasts of the sixth day? Still more, how is it possible to suppose that all these very creatures of the land, or at least the major part, had passed out of being before man, created upon the *same* day with them, came into existence?

Turning back again to the fourth day, where we find sun and moon appointed for "signs" as well as "seasons" —for signs, which could have no significance except with regard to man himself as the beholder of them. How can one with any reason imagine that they could be given as signs for ages before there was any one to behold them? To import such things as these into the simplicity of the Scripture-narrative is to destroy it. An analogy is all that I believe can rightly be urged—an analogy the importance of which I have already admitted, nay, insisted upon; but for the traces of the real fulfillment of the six-days' work—the geological traces—we must look elsewhere.

5. The Literal Day Interpretation.

The character of the Scripture chaos which precedes the six-days' work we have already seen. The terms "waste

and desolate," which apply to the earth in this condition, speak of a lapse from the primitive state. The land is buried under the waters, and darkness rests upon it. We have reason to believe, as I have before said, that it had already acquired, in the main, its configuration. "The waters stood above the mountains," says the book of Psalms. The mountains, therefore, are recognized, and geology plainly indicates that they were outlined, as we say, from the beginning. The continents have been gradually formed, the mountains gradually upheaved, that is plain; but there was no destruction of continents, so far as we can find, and formation of others in their place; no subsiding of mountain-ranges, to be replaced by others. Thus in the period of desolation, already we find the earth materially finished in the form which it at present has.

Again, we are not to think of a total want of atmosphere; for, as I have pointed out, all that the second day indicates is the creation of an "expanse," not an atmosphere. Nor is it necessary even to suppose that before this the sun had not acted as a luminary to the earth. There is no necessity to deny that it had so acted, but, so far as Scripture is concerned, we scarcely expect to find this confirmed. That the mass of the sun existed is not at all against the Scripture-statments here, but rather in agreement with them. Life, on the other hand, seems clearly stated to have been absolutely extinct; that is, supposing it to have formerly existed, which we may reasonably believe that geology has proved.

If we take, then, the chronology of Scripture, allowing, as we may, for various estimates of that chronology, the period of man's existence upon the earth will not at any rate exceed seven thousand years; and this should give us dates whereby we might reach somewhat definitely the time of the six-days' work. The question here, then, occurs, Can we find any thing which answers to such a state of the earth as has just been described immediately preceding man's appearance upon it? To answer this, we must first of all dismiss from our minds indeed the thought of such periods of time as are being claimed by geologists. It is easy to show that the claim they make

on this score has no real justification. The basis of such calculations assumes what can never be proved, and what is indeed against all probability, that the rate of change which is at present taking place upon the earth can be rightly taken as the rate of changes of its surface from the beginning. Into this I cannot, of course, enter now; but it is an admitted fact for most that all evidence of man's existence upon the earth dates from the *Glacial period*, and not before. It is the estimate of a recent writer that this period ended, "somewhat suddenly," some where about from five to seven thousand years ago. This, at any rate, is the estimate of scientific men, totally apart from any theories of Scripture-interpretation.

This glacial period, when we first look at it, gives us some apparent extraordinary coincidences with Scripture. It is a time during some part of which at least the whole of North America to the fortieth latitude, of Europe to the fiftieth, Siberia mainly if not entirely, are found to have been covered with water. Strata which had not been submerged from the earliest periods then were overflowed. As the land emerged, it left the evidence of this in the sea-beaches of the terrace-period, found far up upon the mountains. This time of submergence was preceded by another—the true glacial one, as to the exact nature of which opinions are divided—some contending it to have been a time rather of elevation than of subsidence, while others take the opposite view. In any case, it was a time when the whole surface indicated was covered with ice. The evidences are found in boulders of foreign material left, as on Mt. Washington, at an elevation of six thousand feet; in Scotland, at Ben Uarn More, at an altitude of three thousand five hundred and eighty-nine feet, and elsewhere similarly through the northern part of North America and Europe. On Mt. Lebanon, boulder-drift has been observed, according to Dr. Hooker, six thousand feet above the level of the sea. In South America, similar evidences have been found from Tierra del Fuego to about forty-one degrees south latitude. According to Agassiz, glacial deposit from the Andes has been found throughout the valley of the Ama-

zon; and he is stated to have been convinced "that as the theory of the ancient extension of glaciers in Europe is gradually coming to be accepted by geologists, so will the existence of like phenomena both in North and South America through the same period be recognized sooner or later as part of the great series of physical events, *extending over the whole globe.*" "Indeed," he asserts, "when the iceberg period shall be fully understood, it will be seen that the absurdity lies in supposing that climatic conditions so different could be limited to a small portion of the earth's surface. If a geological winter existed at all, it must have been *cosmic;* and it is quite as rational to look for its traces in the southern hemisphere to the south of the line as to the north of it."

Throughout the strata thus formed the traces of existent life are very scanty; so much so as to elicit expressions of astonishment from one like Lyell; but we shall have to look at this directly. The statement just given, upon the warrant of men who may be considered of the most unexceptionable authority, show at least a state remarkably approaching the waste and desolate condition of the earth announced in the second verse of the first of Genesis; and such a condition can scarcely be found in connection with another period of the earth's history, as known geologically, so long as life has lasted upon it. Exception will no doubt be taken to the view that the glacial phenomena indicate either an entire submersion of the earth or an entire extinction of life. These are the points we have to look at more narrowly. But it certainly should be enough to produce serious inquiry when we find such correspondence of fact with a statement of so ancient a document as confessedly we have in the book of Genesis. Let us now address ourselves, then, to the examination of such points as these.

Geology itself had first taught us the occurrence of breaks in the life-history of the globe from the beginning. "The older geologists held," says Prof. Nicholson, "what probably every one would be tempted to believe at first, that the close of each formation was characterized by a general destruction of the forms of life in that period;

and that the commencement of each new formation was accompanied by the creation of a number of new animals and plants destined to figure as the characteristic fossils of the same." His answer to this is not one which, according to his own account, science necessitates so much as a certain hypothesis which is widely influencing men's minds. He says, "This theory, however, not only invokes forces and processes, which we can in no way account for, but overlooks the fact that most of the great formations are separated by lapses of time unrepresented *perhaps* by any deposit of rock, or represented only in some particular area, and yet *perhaps* as great or greater than the whole time occupied in the production of the formation itself. Nowadays, most geologists hold that there was no such sudden destruction of life at the close of each geological epoch, and no such creation of fresh forms at the commencement of the next period." That, it must be confessed, *is* what most geologists hold. The question of why they hold it is another matter. The facts remain the same as they ever were. No longer ago than the date of Agassiz's well-known "Essay on Classification" it could be stated by him that "the number of species still considered as identical in the several successive periods is growing smaller and smaller in proportion as they are more closely compared. I have already shown, long ago, how widely many of the tertiary species, generally considered as identical with the living ones, differ from them; and also how different the species of the same family may be in the successive subdivisions of the same great geological formation. Hall has come to the same results in his investigations of the fossils of the state of New York. Every monograph reduces their number in each formation. Thus Barrande, who has devoted so many years to the most minute investigations of the trilobites of Bohemia, has come to the conclusion that their species do not extend from one formation to the other. D'Orbigny and Pictet have come to the same conclusion for the fossil remains of all classes. It may well be said, as fossil remains are studied more carefully in the physiological point of view, the supposed identity of species in different geo-

logical formations gradually vanishes more and more. So the limitation of species in time already ascertained in a general way by the earlier investigators of their remains in successive geological formations is circumscribed step by step within narrower, more definite, and also more equable periods. . . . . The facts do not exhibit the gradual disappearance of a limited number of species and an equally gradual introduction of an equally limited number of new ones; but on the contrary, the simultaneous creation and the simultaneous destruction of entire faunæ, and a coincidence between these changes in the organic world and the great physical changes our earth has undergone."

Such a statement in the present day will perhaps provoke an almost scornful rejoinder; but there can be no question of the competency of the men who made such statements, and the facts remain practically little altered by any new discoveries since their time. The alteration is entirely one of men's minds, with regard to the facts. Just about the time that the essay on classification was published, or but shortly after, Mr. Darwin's views of the origin of species were given to the world. Hypothetical as they were and are, their wide-spread acceptance is now a matter of history. Evolution will not admit of these breaks in geological series. The facts must suit themselves to these altered views. The gaps remain, but they must be gaps *in our knowledge*, not in fact. Here, as so often, our ignorance is successfully pleaded as the basis of knowledge; and an unbroken life-series from the beginning is what has come to be every-where affirmed.

With regard to the glacial period, especial exception will be taken to any view which represents it as a period of universal extinction of life. It may be confessed also that on many accounts, which may easily be specified, it is hardly possible to arrive at present at all the facts of the case. The "drift," so-called, in North America is especially marked by the absence of life; fragments of semi-fossilized wood being all that is found in it. In Europe, however, things are differently stated; although here also Sir Chas. Lyell remarks, as already said, upon the scantiness of life which, he notices, the extreme cold

of that period is *not* sufficient to account for. It is well known, however, that the very names given to the various tertiary formations are based upon the supposed identity of living mollusca with those existing as far back as the Eocene itself. In the Eocene, about three and a half per cent. of species were believed to be identical with recent forms. In the middle tertiary or Miocene, ten to forty per cent.; and in the later Pliocene, fifty to ninety per cent. Dana, however, states that in the Eocene the species are *all* extinct, and that these formulæ are not capable of general application. It was in face of Lyell's statement that Agassiz made his own contrary one, which has been given from his essay; and with regard to the standard of calculation adopted by Lyell, it would seem as if it were not very happily chosen. Prof. Carpenter says, "The softness of the entire body of the mollusk prevents us from recognizing the form and structure of the animal after death in any other way than by the shell; but upon this, it must be remembered, entire reliance cannot be placed, since it is liable to great variation in accordance with the circumstances of the individual, whilst it is by no means certain that there are constant differences in its form in distinct species." D'Orbigny's manual, to which Agassiz refers, is in complete opposition to Lyell in this matter, who, as the head of the uniformitarian school, had already his own hypothesis to influence him in his view of the facts.

With regard to the fish of the tertiary epoch, we have again the statement of Prof. Agassiz as to their difference from those now living. He says, "They are so nearly related to existing forms that it is often difficult, considering the enormous number (about eight thousand living species) and the imperfect state of preservation of the fossils, to determine exactly their specific relations. In general, I may say that I have not found a *single* species which was perfectly identical with any marine-existing fish, except the little species, *mallotus villosus*, which is found in nodules of clay of unknown geological age in Greenland." This statement of Agassiz is quoted without objection by Prof. Owen and Dr. Page.

With regard to higher forms there is again diversity of judgment. "Prof. Owen tells us that certain quadrupeds found in the tertiary rocks, such as moles and shrews, hares, rabbits, voles, and other rodents, are not distinguishable from the species that still exist; but he expresses himself with great hesitation and caution upon the subject of the identity of the tertiary with existing species. He does so in consequence of the meagreness of the data on which such judgments are formed." Many quadrupeds, however, are asserted to be preglacial and to have survived this period,—the elephant, for instance, among others; but the question here has difficulties peculiarly its own, which we must shortly consider. Thus far, that is, as far as regards the preglacial and present species, we have very competent authority for their almost entire difference.

As to the glacial and related strata, there are several points to be considered which will naturally influence our acceptance of many statements that are current. First, it is to be remarked that such a period as we are now considering is one which would involve, by its very character, a mixing of material such as would be very hard to disentangle. In considering the question of the identity of species between any two formations, we have to take into account what seems very much forgotten, that the latter of these is formed, generally speaking, by the disintegration of the former. It is natural, therefore, that the species of a prior formation *would* be, to some extent, mingled with those of the one following it. Thus, in carboniferous rocks have been found pebbles containing Lingulæ of the Potsdam sand-stone from the lower Silurian; and Lyell observes that "*many of the fossils found in the red crag have been washed out of the older tertiary strata, especially out of London clay;*" and again, in the same page of the well-known "Elements," he remarks, *as to certain fragments of the bones of Cetacea*, "*that they may be derived from the destruction of beds of another formation.*"

Where we have to do with results of ice-action, as admittedly we have in the present case, we have above all

to take this into consideration. Ice is a great mixer. Page remarks this with regard to icebergs, which are the very things, as perhaps most geologists believe, which produced the mass of phenomena of the boulder-drift. "Many of the bergs which drift out to sea, having been the extremities of glaciers while in attachment to the coast, are loaded with large angular fragments of rock and other debris; and many of the floes, having been ground on shore-ice, lift with them immense masses of water-worn shingle and gravel. Thus, as both melt away, the bottom of the ocean must be strewed with very heterogeneous and curiously assorted material. Nay, icebergs have been encountered in the North Sea covered or interstratified with ancient soil, among which were the bones of mammoths and other extinct animals, still further confusing the nature of their deposits by mingling the remains of an existing fauna (reindeer, musk-ox, arctic-bear, etc.) with one of a much higher antiquity."

The matter is still more complicated by the assertion, made by not a few of the present day, and coming perhaps to be the most generally received opinion, that there were at least *two* glacial periods succeeding one another. Thus the products of a more recent one would have to be very carefully distinguished from those of an earlier; and I believe that there are evidences that some, at least, of the remains which are generally counted preglacial are rather to be considered interglacial remains, that is, that have accumulated between these two similar periods. These so-called preglacial strata are, moreover, found but scantily. The Cromer beds are considered the principal; and Lyell remarks that the plants of its buried forests "agree singularly" with those of the lignite of Duernten, which is considered to be interglacial.

The general idea which we gather from all these considerations is certainly in accordance with the thought of the present order of things, as dating from this glacial period. Traces of man's existence, it is acknowledged, have not been found before it; and the words of a well-known text-book, however much they may be modified in the writer's mind, nevertheless are quite suited to convey

to us the thought of a new creation dating from this time. "In process of time," says Dr. Page, describing the close of the glacial period, "the land was elevated to its present level; another distribution of sea and land took place, and the glacial epoch passed away. A *new* flora and fauna suitable to these new conditions were then established in Europe; and these, with the exception of a few which have since become extinct, are the species which now adorn our forests and people our fields." He qualifies this, in some measure, directly afterward, but the broad *fact he allows; and the question is, whether these facts* really need to be taken with any abatement.

But we have now to consider a different question—as to what is the extent of the earth's surface to which these glacial phenomena are limited. Here we have to remember how much, unfortunately, geological researches have been limited to Europe and North America. Of South America we know little; of Africa, less; of large tracts of Asia, very little indeed. It is easy, therefore, to take, as geologists so often remind us for another purpose, the limit of our knowledge as the limit of the phenomena in question themselves. Yet, imperfect as research has been outside of the fields already indicated, even these have furnished us with some indications that, according to Agassiz's own belief, the glacial winter was *cosmic*. The *boulder-drift upon Lebanon, the boreal shells noticed by* Sir Chas. Lyell as occurring in the Sicilian seas, the drift found on the Himalayas, with Agassiz's observations (if admitted) of similar phenomena in the valley of the Amazon,—all point in one direction. We have also very clear testimony to the fact that even for long after, many parts that are now dry land were submerged. In Asia, Siberia, and the extent of ground covered by that "northern Mediterranean," of which the Caspian Sea and the Sea of Aral are the present remainder; in North Africa, the Sahara, which is still covered with recent shells. Siberia *and northern Asia have been, in fact, rising apparently* to the present day, and the large mass of the northern Asiatic continent gradually drying up. Europe, according to the evidence, was to a comparatively late geologi-

cal period a cluster of islands rather than a continent, *and the scriptural designation of the "isles of the Gentiles"* would seem to be the record of a historical fact. All these things point to a submergence, the extent of which, indeed, they do *not* indicate. But if we follow in the direction to which they lead us, it is natural to ask ourselves, Supposing that the full extent of what Scripture indicates were admitted to have taken place, what proofs should we be likely to have more than just such proofs as in fact we have? As to the occurrence of ice, the Scripture-narrative, in fact, says nothing. The strictly glacial phenomena may have been limited to either side of forty degrees from the equator. The question would still remain, Supposing a complete submergence, what proofs should we expect to find of such a condition?

The existing evidences are of two kinds only:—The first, the occurrence of sea-beaches as the land rose, more or less intermittently, from the ocean; the second, the occurrence of marine shells or other evidences of sea-life. In a condition corresponding to the waste and desolate time indicated in the first of Genesis, *neither* of these evidences could be expected to be found. If life were absent, this of course would be wanting, save only as it might consist of traces of a condition which had then passed away. *Sea-beaches* could not exist when the sea was every where. Thus, as it would seem, all that we expect to find would be the evidences of a condition *prior* to or *succeeding* one of complete submergence. Just such marks we do assuredly find.

There is another question that might be raised here,—whether in fact the land sank, or the water rose. It is a little difficult to imagine the sinking of a large mass of *whole continents, nay, of all the northern portion of the* northern hemisphere altogether, and this with a similar state of things apparently in the southern. Whether strictly contemporaneous or not, we of course have no means of deciding. Hitchcock has remarked on the singularity of the existing sea-beaches of North America being so perfectly horizontal as they are, and inclined apparently on this account to believe in the rise of the

water rather than the subsidence of the land. It must have been, in fact, a singular force, apparently unknown to geology, which could lift a large part of a continent out of the deep in so steady and equable a manner. With the thought of a rise of water, Scripture, as we have seen, is in complete accordance. Whether it necessitates such view or not is another question. If, however, the water rose, it follows of necessity that the whole earth was covered, and thus the condition indicated in Scripture would be fully made out.

Upon these facts, such as they are, we may at least rest the conclusion that the six-days' work of the first of Genesis was in fact the renewal of the earth after the close of the glacial period, and the repeopling with the forms of life which at present exist. As to the most of these, there can scarcely be a question that they date, so far as the evidence goes, from the glacial period; and upon no other ground than that of evolution could the conclusion be possibly escaped that creative power was here for the last time displayed. Creation may be unknown to Science; in fact, we do not *expect* her to know any thing about it. The traces of it she can only find in the sudden appearance of the *products* of creation. Science assuredly knows no more of evolution than it does of creation. The only difference is, that in the matter of the origination of life from combinations of mere matter, and in that of the alleged transmutation of species, all the facts of the existing world are confessedly against it. If former periods were unstable, we have a most remarkable *stability* as the present result of it, and the efforts to obtain some proof of evolution have only succeeded the more in bringing out this. But between evolution (that is to say, natural causation) and creation there is no middle ground. Science, therefore, so far as it can be expected to testify, testifies in favor of the latter and against the former. With this we may have abundant reason to be content. With men's hypotheses we have nothing to do. Arguments derived from our ignorance, and from those regions which are beyond the reach of the microscope or the chemist's tests, we may safely leave,

as proving the animus of the reasoners rather than the capability of reasoning. On the other hand, we must not expect geology to do duty for revelation. We accept the statement of the latter on the ground of the abundant proof we have of revelation itself. All that can be demanded is, that the facts of science should not manifestly contradict the statements of revelation. But here we must remember that theorists, alas! can even manufacture facts, when only the will is sufficiently strong to demand it. Mr. Lewis, a most unexceptionable witness, for instance, will tell us "the psychological law that we only see what interests us, and only assimilate what is fitted to our condition, causes the mind to select its evidence;" and that he only hopes for the reception of his views by those "who by previous culture and native disposition have been prepared for a sympathetic attitude . . . . Unless the attitude of mind be sympathetic, there would be stubborn resistance to what otherwise would be clearest evidence." So Prof. Tyndal also remarks, "The desire to establish or avoid a certain result can so warp the mind as to destroy its power of estimating facts. I have known men to work for years under a fascination of this kind." But for such considerations as these we need scarcely appeal to any class of writers. We all of us know how the head is influenced by the heart; how, according to a common proverb, "where there is a will there is a way," in almost any direction. The facts to which people often so undoubtingly appeal have therefore to be questioned, not only as to how far they bear out the views for which they are appealed to, but even as to how far the views may be the parents of the facts; and this without any conscious dishonesty, nay, with the greatest desire, apparently, for nothing but truth. I conclude, then, once more, although it is but a conclusion, not at all admitted as upon the same ground as the positive statement of Scripture, that the present state of things dates back to its beginning in that period which, as a scientific writer believes, occurred seven thousand years ago; a time sufficiently near to Scripture chronology, when the glacial period came to its end. I

believe that in this, Scripture and science are really harmonious, although it would be idle to affirm that the evidence, as we have it at present, is altogether unconflicting.

I would close with one or two considerations drawn from the study of the geological record itself, and in which it seems to me to harmonize, in the most distinct way, with some teachings of Scripture. First, it is evident from geology alone that the earth is found in a more developed condition the more we approach the historic centre from which man originally came. No naturalist doubts that the general character of the fauna and flora of Australia is lower in type than that of America; but even in America we find still the marsupials which pertained to a former condition of things in Europe, long since passed away. Thus Australia, America, and the great continent of Europe–Asia are allowed to illustrate three successive stages of geological progress, while the last alone seems to have furnished man with his domestic animals, and with his principal means of subsistence otherwise. The whole earth does not seem thus to have been got equally ready for his reception, but a special part of it only; and with this announcement of geology Scripture accords in the fullest way.

It teaches that man was placed under probation on earth, and as the head of creation, which depended upon him for blessing or for curse; and that accordingly *not* the whole earth, but paradise alone, was as yet prepared for him. Had he stood, the whole earth might have become a paradise; but, apart from all speculation, it is plain that the whole earth was not Eden, but only the place where man was put; and this is quite in accord with this, that at further and further distances it should be found still less and less developed. Here, certainly, is a remarkable and unexpected coincidence between the teachings of science and the inspired Word.

But it by no means ends here. As already noted, there was an apparent return of the cold to a considerable extent after man was upon the earth, and along with this, a brief period of submersion also, which so good an au-

thority as Principal Dawson conceives to correspond with the biblical deluge. After this, the land rose, the climate became milder, and the so-called glacial period passed away.

Here, again, is a witness of geology to Scripture; for it is evident that according to the latter as to the ground after the deluge—in that world which came up from the waters, with which God entered into covenant anew—there was an amelioration of a former condition. "This same shall comfort us," says Lamech, alluding to the name of his son just born, "concerning our work and the toil of our hands, because of the earth which the Lord has cursed." And after the flood, when God smelled in the sacrifice a "savor of rest," He says, "I will not again *curse the ground for man's sake; while the earth remain*eth, seed-time and harvest, and cold and heat, and summer and winter, and day and night, shall not cease." How remarkably appropriate such language at the close, not of a deluge only, but of a glacial period which had forbidden seed-time and harvest and summer-heat to a large part of what is now man's pleasantest abode!

Let us close with the adoring remembrance that fruitful seasons are now not alone, or principally, signs of God's goodness; He has given His Son. In Christ His love has been manifested in such a way that all vail is forever removed. If the glory of Christ be hidden to men, alas! "the vail is upon their hearts."