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domestic supervision, was not exercised when it might have been. It is our earnest hope, nay, it is our belief, that the present danger may be escaped. But it is a very painful thing for a loyal Churchman to feel that, but for our Official Chiefs having the opportunity of introducing a Bill into the House where there are no clergy to rise in reply, such a danger could not have been incurred.



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Creation and Modern Science.

BY

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Studies in Modern Problems.

THE proposed Series of Essays, under the above title, owes its origin to two causes. A need, suggested by personal conference, and confirmed by correspondence, has to a wide extent been felt for the production of short, carefully written Treatises upon matters of faith and practice, re-asserted, after a period of neglect, by the Religious Movement in the Church of England, which was begun at Oxford forty years ago. Repeated applications, also, for the re-publication of the Essays contained in *The Church and the World* in a separate form and at a cheap rate, have from time to time been made. Sufficient reasons prevented a fulfilment, in its entirety, of this wish for re-issue. But the demand for a new series of papers upon kindred subjects, by authors of the same school of thought, was more easily answered. Hence the present plan, which combines elements of both ideas, has been matured.

Since the publication of the First Series of *The Church and the World*, seven years ago, the position of the Church Party has sensibly improved. Three reasons, under the blessing of GOD, have caused this improvement: 1. hard work amongst all classes done by its clergy; 2. the effect of repeated but un-retaliated prosecutions, which have extended the range and popularised the effect of its teaching; 3. its ceaseless activity in the use of the press, as a missionary and teaching agent. It is not unnatural then, as a consequence of such improvement, that promoters of the Revival should be encouraged to fresh employment of the latter engine, in order still further to consolidate its labours and to utilise the results of opposition.

Contemporaneously with the consolidation of the Church Party, and the triumph it is gaining over the traditional form of popular religionism, the attitude of Unbelief has become at once less disguised and more hostile. Legislative measures, actual or prospective, the tone of modern society, the sympathies of the literary world, and the language of educated men,

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CREATION AND MODERN SCIENCE.

THERE are quarters in which it is no longer argued, but rather taken for granted and made the basis of proposed social and political re-arrangements, that no one of ordinary ability and common honesty can suppose Revelation and Science to be capable of meeting any longer on friendly terms, and holding their ground together. And further, it is frequently imagined that this assumed incompatibility must be a subject of great concern and serious alarm to all devout persons and sincere believers of Christianity, while the man of science need not trouble himself about the matter, or entertain for a moment the idea that his investigations can suffer any loss from no account being taken in them of anything that what is called the Word of GOD may have to say about the subject-matter to which they relate.

Now I feel sure that a great mistake is made as to the alarm and perturbation with which it is supposed that religious men either do or should regard the course of modern speculation. The lesson which was given to all concerned, by the result of the disturbance occasioned in men's minds when the discoveries of Galileo were being made known to the world, though it has been constantly referred to, has hardly ever, I think, been understood in all its real significance. We have long since become accustomed to the idea of our earth being a comparatively small body, physically neither central nor very important even in the system to which it immediately belongs. We have been taught from our infancy to regard it, not as the fixed centre round which

the expanse of heaven and all that is in it revolves, but as itself ever turning on its own axis and flying along a vast orbit in which it is retained by the controlling power of the sun. We have become so familiar with these ideas, and so convinced of their reality, that we are positively unable to appreciate the shock which was given to the minds of sincere believers of Revelation, when the facts were first announced. And yet there was nothing imaginary or uncalled for in their consternation. It shows an entire misunderstanding of their position to suppose, as is commonly done, that all that was needed to rectify their reading of Scripture was to understand a few phrases, which implied that the sun moved or the earth stood still, as being spoken in a popular way. No ; the apparent opposition between Scripture and the new theories lay far deeper than that. The whole Bible is unquestionably written from a point of view which regards the earth as the centre of the universe ; and the statement contained in the first chapter of Genesis respecting the origin of the sun, moon, and stars, after the earth had been created, and had undergone various mutations, had been supplied with light, furnished with an atmosphere, freed from superfluous waters, and clothed with the verdure of the vegetable kingdom, appeared necessarily to imply that its pre-eminence in the creation was a physical and not merely a spiritual fact.

But not only had the men of Galileo's time good reason to feel a difficulty, but further—and this is the point on which I wish to insist—that difficulty has never really been removed. Attempts have indeed been made, by the late Dr. McCaul and others, to explain the matter by means of Laplace's theory of the formation of the solar system, and it is not impossible that in this direction the reconciliation of Scripture with modern astronomical science may finally be discovered. But hitherto such attempts must only be looked upon as very partially successful ; and even as far as they go, they are

known and cared about by a very limited portion of those who firmly believe in Revelation. Men of every degree of intelligence and education know well—when they look out upon the starlit heaven—what is the earth's insignificant and dependent position among its glorious orbs, and yet feel sure, when they read their Bibles, that something of which the account there given is a true representation did really occur as the result of the fourth day's work. Nor does this state of mind deserve to be contemned as the result of carelessness or want of logical precision. A man may have the best possible reasons for believing the truth of each of two facts that seem to him incompatible, and may well be content to wait patiently for the coming of the trusted friend who informed him of them both, in order to learn how it is that they can be made to fit into one another. He who is so confident of the infallible working of his own intellect, that he can never submit to entertain, as long as need be, two well-sustained propositions that appear to him to be contradictory, will be ever snatching at illusory solutions, casting away precious truths, and failing to attain that higher ground from which the apparent difficulty would be seen to have vanished away.

Now all that has been said with reference to the discoveries of Galileo is immediately applicable to modern scientific speculations, and especially to the theory that man has been developed out of some lower form of life. The time may come when men will be as firmly convinced of this fact, as they are now that the earth revolves upon its own axis. It is possible too that, when that time comes, all the attempts that may have been made to remove the difficulties which the statements of GOD'S Word appear to throw in the way of such an idea, may have proved entirely unsatisfactory. I shall, indeed, before I conclude, have something further to say as to these difficulties, but for the present, I ask the reader to contemplate the possibility of overwhelming

evidence arising in favour of the theory of development, before any satisfactory explanation has been given of words of Holy Scripture with which that theory may seem to be inconsistent. And I assert that, looking at what has occurred already, we may feel sure that, in this case, too, honest and humble-minded men, who are sincere believers in Revelation, will learn to look upon the animal world with a new interest, from a certainty of their own intimate connection with it, and yet go on believing upon the authority of Holy Scripture that man was in some way created on the same day as the beasts from which he is said to have sprung, and created, unlike them, in the "image" of Him Who made him.

But I hinted that Science itself might be suffering some loss from the refusal of its votaries to take into consideration the statements of Revelation respecting matters in which they are interested. Scientific investigations at the present time go back to ages so remote ; they have to grope their way in places where the track is so faint, and the light so obscure, that they might well accord at any rate an impartial examination to any hint that may be given by a record which professes to come from One to Whom that distant past is as clear as the present. May not enquirers into the constitution of the sun and the fixed stars be missing one clue to the recovery of their past history, by neglecting to take any note of the statement, that it was not till after the earth had cooled down sufficiently to allow of the waters of the ocean resting on its surface, that those heavenly orbs appeared in their present form and brightness ? And may not the supporters of the theory of evolution have something to learn from the assertion that the creatures of the sea and the air took their origin in close connection with each other, while the beasts of the earth and man himself were reserved for another day ?

It would be easy to go through the first chapter of Genesis, and show how at every turn the most interesting problems

are suggested in every branch of science ; how the simple asking of the questions, under what necessary, or under what alternative, conditions must these things have taken place ? what is really involved or implied in this or that statement ? leads to the most curious and unexpected results. If it be a fact, as is so often asserted, that Scripture was not written to teach men scientific truth, it is none the less a fact that of all the books that ever were written there is none that stirs so powerfully the scientific instinct in man, and drives him by the force of what it reveals to search in every direction into the things that still remain hidden. I am persuaded that many a man who treats the first and second chapters of Genesis as mythical, or as the result of the crude speculations of the science or want of science of an early and child-like period, if he would only lay aside for awhile his prejudices, and study the record they contain with an honest and impartial attention, would say before long, "whatever be the meaning of this, it has none of the marks of a myth, it is no product of the simple science of an age inexperienced in the pursuit of physical knowledge ; it contains statements which could not possibly have occurred to an ancient writer who had nothing to depend upon but his own speculations or those of his contemporaries."

"But," it may be said, "do not the theories of modern science, which teach that all the living beauty and variety we now behold has been evolved by natural processes from low and simple forms, do away with the possibility of paying serious attention to any record of creation ? Do they not profess to show how all things have come into being without the aid of a rational Creator ?" Surely of all the strange delusions which from time to time becloud the minds of clever men, this is one of the strangest. It very much resembles the mistake of an ignorant person who, when he witnessed the discharge of a splendid

firework, displaying an elaborate system of moving and variegated light, should exclaim that some ingenious man must be producing that glorious spectacle; but by-and-by being shown a common ugly-looking case, and told how, at the touch of a spark, all the glory he had beheld evolved itself out of it, should consider that this disposed of the whole matter, and that there was no longer any room left for thinking of a skilful fabricator. I am shown a little bit of jelly-like vegetable matter, which appears in the most powerful microscope that can be made to be exactly the same throughout, and I am told that from some such beginning as this, has issued all the life, vegetable and animal, with all its countless varieties of forms, and all the endless beauty and marvellous contrivance, which I now see around me. But instead of saying "now there is no room for a Creator," it seems to me that the only reasonable thought is, "here is a new and greater wonder added to all those which I perceived before; how marvellous must He be Who shut up all these glorious potentialities into this common bit of matter; and that so hiddenly that no instrument devised by man can reveal the slightest prophecy of their forthcoming." No more can come out of anything than that which is first in it. And if there really sprang up from a little bit of protoplasm, consciousness, will, memory, sense of duty, intelligent choice and effort, profoundest thought, and subtlest reasoning and contrivance,—in that case all these capacities were there, however hidden, and I adore the glory of Him Who compressed them all into that miniature world, with an unspeakable adoration.

"But at all events," it may be said, "if this be so, however much you may retain your belief in a Creator, you cannot possibly any longer attribute much value to the Mosaic account of the creation." I have already said enough to show how fully I myself believe in the inspiration, and therefore in the truthfulness of that account, and how little I think

it necessary for anyone to abandon that belief because of difficulties that may appear in the way of reconciling its statements with even well-established facts of modern science. Still, partly for the sake of those to whom such difficulties are stumbling-blocks, either because they have not yet attained any firm belief of the inspiration of Holy Writ, or because they are sorely tempted to abandon the faith in which they have been brought up ; partly in order to assist those who are doubtful as to the amount of divine guidance which that word ‘inspiration’ may imply ; partly with a view of removing the repugnance felt by many devout persons towards the far-reaching speculations of modern science ; and finally in the hope of creating a scientific interest in the minds of some few, whether scholars or physicists, in those earlier chapters of the Bible which of late have been far more discussed and fought over than diligently studied—I will try to put forward a suggestion with regard to the real meaning of the six days’ creation, which, if it be not deemed satisfactory in itself, may yet have the effect of leading others to pay serious attention to the subject, and help them to arrive at a better mode of regarding the whole question.

Let me begin, then, by stating as simply as I can the exact nature of the difficulties which it seems to me have to be encountered. Geology reveals a long series of distinct plants and animals—man being in any case among the last to appear—so arranged with regard to one another that they could not possibly have been contemporaneous, yet which coming in succession must—if individual plants and animals passed lives in any way resembling those of similar existences now—have occupied periods measured, not by thousands, but by millions of years. So that it becomes almost inconceivable either that the earth could have been utterly waste and lifeless till a few days before the coming of man ; or that the whole vegetable world could have been originated before a single

animal was in existence, or that the entire vegetable kingdom could have made its appearance in one day, and the animal creation, including man, in two days more.

Judging from such data as have been already acquired, we must pronounce it to be extremely improbable that all the organic creation should have been completed in visible co-existence within the limits of time set down in the first chapter of Genesis; and very doubtful, to say the least, whether the order of events could have been such in every respect as seems to be there indicated. To this it must be added, that discoveries have been made of late years in more than one line of investigation, which seem to carry back the existence of man, or of some creature sufficiently like man to be capable of fabricating rude instruments, to a much earlier period than had previously been supposed possible; and although there still appear to be points at which error may have crept in as regards the remoteness of the discovered traces of such human-like agency, yet those who have a right to be heard on the question assert with confidence that the commencement of our race must be looked for, not, as the Bible seems to indicate, six thousand years at the most before the coming of CHRIST, but some hundreds of centuries earlier. And finally the difficulty appears at first sight to be still further complicated if any weight be given to those theories of evolution, which regard the different orders of living things not as separate and instantaneous creations, but as developments, going on through immense periods of time, from lower and simpler forms of life.

At the time when the believers in the inspiration of the Bible were first obliged to face some of the facts which seem inconsistent with the sacred record, there appeared to be a simple and satisfactory method of escaping from the difficulty. That creation which began with the words, "GOD said, let there be light," presupposes a state of things already existing; there

was already the earth empty and waste, with deep waters covering its surface. Might not this condition be the termination of the vast periods revealed by geology? Might not the present world have been built upon the ruins of a former creation?

It is obvious at once that this supposition is not consistent with the more recent scientific speculations—those relating to the supposed antiquity of man, and the gradual evolution of present living forms from those which existed in the past geological ages. But independently of these later difficulties, this explanation was never really tenable, except perhaps for a short time before the precise facts of the case had been fully ascertained. The most cursory examination of the fossil remains shows that the animals to which they belonged lived for the most part in conditions exactly similar to those of which the creation is described in the first chapter of Genesis. They saw with eyes, therefore there was already light. They breathed, therefore there was already an atmosphere. They were, some marine, and some terrestrial, therefore there was a division of land and water. The plants in like manner were, many of them, such as require sunlight, air, and dry land, for their production and support. So that if the present earth was built upon the ruins of a former world, it would seem that the Almighty had utterly destroyed one order of things, for the purpose of creating another almost precisely similar. And further, although most of the higher forms of life now existing were found, like man himself, to be comparatively recent, so that they might be conceived to have been created contemporaneously with him, yet even of these some appeared to have preceded him by a long period instead of a single day; while among creatures of a lower organization many were discovered which had evidently existed during a considerable portion of the geological ages, and which are still existing at the present time. In reference to these, again, it would be

necessary to suppose that species had been exterminated for the purpose of producing the preliminary chaos, although the very same species were needed in the new order of things, and had therefore to be re-created.

Considerations such as these by-and-by drove the defenders of Scripture to attempt another explanation. It was asserted that the six days of creation need not mean days such as we now know, but might be understood to denote immense periods of time, sufficient for all the requirements of geology or any other science.

Here again it is plain that the proposed interpretation does not meet the difficulty of the alleged antiquity of the human race. Whatever may be the case with the other animals, the scriptural narrative seems to carry on the chronology of man's existence upon earth, by a succession of distinct dates, from the day of his creation down to historic times. There may be a difference of a thousand years or so in the calculations derived from different ancient versions of the Bible; but the date of man's creation as drawn from this source cannot apparently be thrown back further than five or six thousand years before the coming of our LORD; and such a distance of time is insufficient to satisfy the demands of modern science.

But even putting this out of the question, the proposed explanation is in many ways extremely unsatisfactory and objectionable. The Hebrew word for "day" admits of considerable latitude of meaning. Setting aside the senses which attach to it only in its plural form, with which we are not now concerned, we find the following uses of the word:

a. It denotes any one period of daylight, a "day" as opposed to night; or, to speak scientifically, the time during which the sun remains above the horizon at any particular part of the earth's surface. If the supposition of Gesenius be correct, that

the word was derived from a root signifying "heat," this would be its first and proper meaning.

b. It came however very naturally to be applied to the time made up of one "day" in the former sense and the preceding or succeeding night; in other words, the interval between one sunrise or one sunset and the next, or more accurately, the period of one entire revolution of the earth on its axis—what we call a "day of twenty-four hours." This is evidently the meaning in the first part, at any rate, of the fourth commandment.

These are the ordinary senses of the word, but the following additional uses occur, the references for which may be found in Gesenius's Hebrew and Chaldee Lexicon, edited by Dr. Tregelles, at p. 341:

c. It is employed in a number of special phrases where we use the word "time:" such as "this day," denoting "at the present time;" "in that day," denoting "at that time;" "in the day that," denoting "at the time when." Again, "the day" of any one may express the time, either of his deliverance and prosperity, or of his distress and downfall: and similarly, "the day of the LORD" and "that day" are used to signify times of divine judgment.

It is from this usage of the word that some Hebrew scholars and lexicographers, and many expositors of Holy Scripture, have derived the idea of its denoting an indefinite "period of time." But if any one will look carefully into the above phrases, he will discern that the thought which they all involve, and by which they are connected, is that of a crisis, special occasion, or particular conjuncture. It is not the *length* of the time occupied by what is spoken of, that the writer has in his mind when he uses the word "day," but the *position* in time, or the *critical importance* of the event to which it refers. In other words, this use of "day" is not *extensive*, but *intensive*; and to argue from it that the Hebrew word may

be employed to denote a “period of time” of any length, is most unsafe and illogical. The fallacy of the assumption may be shown by an illustration which it requires no knowledge of Hebrew to understand. It happens that we use the English word “day” in two or three phrases precisely similar to those of which instances have been given from the Hebrew. We speak of the state of opinion at the present “day,” meaning “at the present time;” and in like manner we talk of people who are now prominent, as men of the “day.” Again, we say of a person that his “day” is over, or that he has had his “day;” implying that he has reached and passed the acme of his fame or success. It is plain that, in these cases, “day” does not mean a space of twenty-four hours; and also that the state of things expressed by it, e. g. the culminating period of a man’s success, may last for a considerable time. But who would ever argue from this, that by the word “day” in an English writer might be understood an “indefinite period?” Yet these are the arguments which are used to show that the corresponding Hebrew word admits of this sense. The truth is, this meaning was invented to meet the supposed exigencies of the first chapter of Genesis, and there is no authority whatever for it anywhere else. But it is a rule of good sense, no less than of sound scholarship, that no new meaning of a word shall be devised to suit a particular passage, unless all the senses which undoubtedly belong to it are plainly and certainly inadmissible. Putting then out of the question the prophetical use of a “day” for a “year,” which has no place in historical narration, let us see whether one or other of the ordinary senses of the word is not applicable to the seven “days” of the first chapter of Genesis.

The exact translation of the sentence at the end of verse 5 is, “And evening happened, and morning happened—day one.” In trying to understand this we must begin by declining to pay any attention to metaphorical meanings which

have been suggested for "morning" and "evening," as well as for "day," since they are clearly out of place in such a narrative. The first sense then which belongs to "day"—"day" as opposed to night, although it is evidently the one intended in the preceding words, "GOD called the light day," has never, I believe, been proposed in the latter part of the verse: its adoption would not remove any difficulty, and is precluded by the order of the words, which indicates that "morning" came at the *end* of the period signified.

Again, none of the usages by which "day" denotes a special time or season are applicable in this case. The words of Genesis ii. 4, "in the day that the LORD GOD made the earth," mean "at the time when the LORD GOD made," or "had made," "the earth :" but in the present instance the form of the sentence excludes this and all similar meanings. So too the use of "day" to denote a crisis or special conjuncture, in the history of a person or a nation, is inadmissible in the passage we are considering; not merely because such a use is poetical or prophetical, but also because it is excluded by the mention of "evening" and "morning." For although, by an intelligible extension of the meaning of these words, we might perhaps get this sense out of the passage—"the close of a period of light happened, and then the close of a period of darkness happened, constituting the first great crisis in the work of creation," yet such a sense is shut out by other considerations. It must be remembered that the periods in question, if they are to be of any use in overcoming the geological difficulties of the subject, must be immensely long, consisting of tens of thousands of years. But, if so, the statement of verse 13 would run thus—"And the close of an immense interval of light happened, and the close of an immense interval of darkness happened, constituting the third great crisis of creation." Now although, on the one hand, the idea of an immense period of light might possibly

be made to remove one difficulty, by providing the time required, according to the successions of vegetation revealed in the geological strata, for the production of grass, herb, and tree, as recorded in the preceding verse ; yet, on the other hand, the subsequent vast interval of darkness would introduce a fresh difficulty of still greater magnitude ; because any very long-continued absence of light would have annihilated all the ordinary forms of vegetable life, and the crisis of their birth would have been that also of their destruction. Moreover, if we are to regard the teachings of geology at all, we must bear in mind the fact that these teachings deny the occurrence of any such crises as those imagined, and declare that one order of creation must have faded away into another by continuous and almost imperceptible gradations.

It only remains, then, to see whether there is any valid objection to the employment in this passage of the remaining sense of the word "day"—that by which it denotes a day of twenty-four hours, or, in other words, the time occupied by one entire revolution of the earth on its axis. This is the sense which the reference to the days of creation made in the fourth commandment naturally suggests, if it does not absolutely require : it is the sense too which for the fourth, fifth, sixth, and seventh "days," after GOD had appointed the sun to rule over the day, seems almost unavoidable. The only question therefore is, whether there was anything in the state of the world during the three first "days" which renders this meaning inadmissible. What then are the facts of the case ? It is almost demonstrable that the earth at the time referred to, when it had become solid enough to sustain an ocean of deep waters, must have been revolving on its axis at a rate not appreciably different from that at which it turns at present ; and it is most probable that the source of light was already sufficiently concentrated to allow of the succession of day and night being produced then, as it is now, by means of that

revolution. But even supposing that the changes of evening and morning were brought about for the first three days by some different method, there is nothing unreasonable in thinking that the Almighty would choose to give uniformity to the week of creation, by arranging that the periods of light and darkness should be of the same length for those days, as they would be when the sun was fully formed.

On these grounds, which might be enlarged and fortified to almost any extent, I do not hesitate to say that reverence for the truth of GOD'S Word obliges us, in spite of all scientific difficulties, to take the words "day," "evening," and "morning," in their ordinary senses ; and I venture to call upon the reader to reject all schemes of interpretation founded upon the opposite principle, even though they originated with so great a theologian as S. Augustine, and were countenanced by so great a scholar as the late Dr. McCaul.

There are those who, when the inadequacy of these explanations is pressed upon them, think it sufficient to fall back upon the vague assertion that "the Bible is not meant to teach science." It is difficult to see upon what grounds this assertion rests. Holy Scripture constantly supplies information on points of scientific interest having no apparent bearing upon morality, religion, or theology ; as for instance when it gives the precise times of the rising and subsidence of the Noachian deluge, and an accurate measure of the greatest height of the waters ; and in so doing it would seem to teach, and be meant to teach, science. But however that may be, it is a sufficient answer to the statement that the Bible is not intended to teach scientific truth, to say that at any rate it can hardly have been intended to teach unscientific falsehood. Surely GOD'S HOLY SPIRIT could have told men that GOD is the Maker and Ruler of all things, that He made all things good, that He created man in His Own Image to be the head and lord of this terrestrial system, and that He wished the

seventh day to be kept holy, without stating that all things were made in six days, if such was not the fact, and that they came into existence about six or eight thousand years ago, if that was utterly untrue.

Let us, then, see whether there is not a way of looking at the whole subject of creation—a way suggested by Scripture itself and by common sense, which may perhaps in due time furnish us with a method of escaping from all these difficulties.

We say, that “in six days the LORD made heaven and earth, the sea, and all that in them is ;” and at first sight the statement appears to be perfectly simple. But as soon as we fix our attention on any one particular thing now existing, we find that it requires a little consideration to determine what it is exactly that we mean by the statement. If I look at the heaven, I know that not a cloud I see there, not a particle of unseen watery vapour, and perhaps not a molecule of the atmosphere that supports the cloud and the vapour, is the same now, or occupies the same place as when GOD’s Word was first fulfilled, “Let there be a firmament in the midst of the waters, and let it divide the waters from the waters.” If I turn my eyes downwards, there are the earth and the sea ; but the distribution of land and water, and the situation, shape, and elevation, of mountain, valley, and plain, are totally different from what they were when the waters were first gathered together in one place, and the dry land appeared. Innumerable mutations have altered all these things in the lapse of ages : so that the only sense in which we can truly say, that GOD made in the six days all that we now behold, is this—that He then made an arrangement of materials, laws, and forces, which He knew would in due time produce the heaven and earth and sea, on which we now gaze. But if this is what we must understand by the statement that GOD made all these things at the first, namely

that He established something then, out of which all the things which we now behold would in the course of ages take their rise, then it seems to follow that, even if we go back to the time when heaven and earth and sea first assumed an appearance similar to that with which we are acquainted, there is no need for us to suppose that time to have been the day of their creation. Rather that day must be looked for still further back, when GOD established the laws and forces of which that first phase of heaven, or earth, or sea, would—after how long a time we know not—be the intended and foreseen result.

This modification of our idea of the six days' work seems inevitable, even when we confine our attention to merely material things; but the necessity for making it appears to be increased tenfold as soon as we take into consideration the various forms of life. Evidently not an individual plant, animal, or person now to be found upon the earth came into visible being, or was called into any such existence as it at this moment enjoys, on the days of which it is written, that in them the earth brought forth grass and herb, and tree, or that GOD created every living thing that moveth which the waters brought forth abundantly, or that He made beast and cattle and creeping thing, or created Man in His own image. If, therefore, they were made on those days, it could only be in the sense of something being then formed, or established, or arranged, which would in due time lead to their production. But if we are obliged to allow this in the case of all the individual members of the different kingdoms after the first progenitors of existing species, there can surely be no further difficulty in allowing it in the case of those first progenitors themselves; of them too it is conceivable that their creation on the third, fifth, or sixth day, was simply the arrangement of those elements and setting to work of those forces, from which at last they would inevitably spring.

Gentle reader, you have probably some plant in your garden or conservatory, or on your window sill, in the growth of which you take a special interest. I trust that you believe, as firmly as I do, that a loving GOD has made that plant for your delight. Let us, then, stand for a few moments before it, while I ask you to consider the question, *When did He make it?* If you reply, "on the third day of Creation," you will see at once that it could only have been made then in the form of some minute germ or gemmule, or other remote beginning of life, which, after going through a long line of preceding plants, at last came forth in the individual specimen at which you are now looking. And if this was the mode of creation of this particular individual, it is at least possible that the creation of the first unit of the species to which it belongs may have taken place in no other fashion.

But if, in order to avoid this inference, you say that your plant may have been created since that first making of the species, at what point will you put this more recent act of creation? Did it take place when the seed or cutting from which your flower sprang was first planted in the ground? Surely what occurred then was merely the starting of a fresh growth, not the making of a new creature. Was it, then, when the seed or cutting first began to be formed that the new plant was created?—but that, too, was merely a process of growth—the existing life of the parent plant moulding existing materials. Do what you will, you will find it impossible to fix any satisfactory date for the creation of your plant later than the day when GOD said, "Let the earth bring forth grass, the herb yielding seed, and the fruit-tree yielding fruit." And, indeed, Scripture itself will not allow you to seek for any other creation. For it says that on the sixth day "The heavens and the earth were finished, and all the host of them," and with the coming of the seventh day "GOD ended His work which He had made; and He rested on the

seventh day." But if the production of every fresh individual of a race is an act of creation, then GOD only ended His work, and rested that one day, in order to begin it again the day after, and continue it ever since. This does not look like finishing the host of heaven and earth, or ending His work. But, in fact, the seventh day's rest itself becomes inexplicable on this supposition : for not only would all the races of tiny creatures, whose life only lasts for a few hours, have died out, unless preserved by a miracle, if no successors were created for them during that one whole day of rest, but instead of the Sabbath having been instituted, as the Scripture clearly represents, because GOD'S work came to an end on that day, GOD must have arbitrarily stopped His work of creation for one day for the purpose of instituting the Sabbath ; a thing which, it may be further observed, He has, on the supposition in question, never done since for the purpose of keeping it.

It results, then, that the Creation described in the first chapter of Genesis was not the making merely of the first progenitors of the different races there spoken of, but of every individual of those races from the first to the very last. And this conclusion, if it needs to be enforced, is strengthened by what is said respecting the creation of man, which must surely show what is to be understood in every other case. GOD said, "Let Us make man in Our image, after Our likeness, and let *them* have dominion ;" where the sudden change to the plural shews that by "man" is meant not Adam, but the whole human race. So that here comes in again the inference, that since all the rest of that race could only have been made then by some beginning of life being formed, out of which, by virtue of the forces contained in it, and the laws impressed upon it, all the successive individuals would, as time went on, arise, Adam himself also may have been created at that time in no other way. In other words, as there has been an immense process to be gone through, and a great lapse of ages since

the sixth day, before any of my readers came into visible existence, so it may have been that it was only after a long progression, and at a great distance of time from the day on which he was created, that Adam at last trod the earth, and man, made in the "Image of GOD," assumed his proper place in the universe. And the same reasoning applies to nearly all the acts of Creation recorded in the first chapter of Genesis ; with the exception, perhaps, of the division of the light from the darkness—which it would seem, from the nature of the case, must have taken place between the morning and the evening of the first day—whatever is there said to have been made, or done, need not have appeared in its perfect and complete form till long afterwards ; the interval of time having been occupied in the processes then set up working themselves out to their intended results.

But it may still be said, that, although such an idea of creation is conceivable, and although in the case of the succeeding members of any race of living things it may be necessary, yet, as regards the original progenitors of the different races, it can hardly be made to agree with the Scriptural narrative. If the account had merely been, "GOD said, Let Us make man in Our Image," there would have been no difficulty in supposing that ages might have elapsed before the result of that determination displayed itself. But the sacred record goes on to state, "So GOD created man in His own Image : . . . male and female created He them ; and GOD blessed them ; . . . and GOD said, Behold, I have given you every herb." Does not this require us to believe that Adam and Eve appeared in visible existence before the close of the sixth day ? This might be our first idea, but I have already given a reason for supposing that this presumption cannot be maintained. The words are, "GOD said, Let Us make man in Our Image after Our likeness : and let *them* have dominion." "Man," then, here is

not Adam, but the whole human race ; and obviously, when it is said directly afterwards, "So GOD created man in His Own Image, in the Image of GOD created He him ; male and female created He them," He must be understood as having carried out the design previously announced. And therefore, here too, "man" denotes the whole race, and "male" and "female" are not Adam and Eve, but all the individual members of the two sexes from them down to the end of time. So, too, the grant of dominion, fertility, and sustenance is made to the whole human race : and that it is not necessary to suppose that such words could only be addressed to those who were able to hear and understand them, is shown by the fact that GOD had just before blessed the fishes and the birds, "Saying, Be fruitful and multiply, and fill the waters in the seas, and let fowl multiply in the earth."

That which GOD has determined to execute, and has set at work the means to bring about, is as truly present to Him, as it is to us when it has been accomplished before our eyes; He can already pronounce it to be good or bad, and declare its properties or assign its prerogatives. We have a striking instance of this divine style of treating that which has been provided for as if it were actually done, in the threat given to our first parent, "In the day thou eatest thereof thou shalt surely die." We know that Adam did eat of the forbidden tree, and yet lived for at least nine hundred years after. But there was no mistake in the awful warning. At the moment when Adam sinned, the germ of death entered the human frame. The thing was done, the result certain ; and the lapse of a thousand years before it worked itself out, made no difference in the Divine estimation. For it must be remembered, that there is this distinction between the works of GOD and those of man ; that when we have made every arrangement, and set at work all the requisite means, for bringing about a desired end, we never can be certain that our purpose

will not be defeated, or that the result will not disappoint our expectations. But with Him there is no such uncertainty ; He takes into account every disturbing influence, and works into his designs every opposing force. Therefore, when he speaks, it is done, and when He commands, it stands fast : although for ages after no eye but His own may discern the intended result. Therefore, too, in His Word, He " calleth those things which be not as though they were," speaking of His SON as "the Lamb slain from the foundation of the world ;" saying to Abraham, "Unto thy seed have I given this land," when as yet he had no child, and the land was in the hand of strangers ; and asking by His prophet, " Hast thou not heard long ago how I did it, and of ancient times that I formed it," when it was only just now that He had actually brought it to pass. Hence it is that where it is written, "GOD said, Let the earth bring forth grass, the herb yielding seed, and the tree yielding fruit," it is added, "and it was so; and the earth brought forth grass, and the herb yielding seed . . . , and the tree yielding fruit . . . and GOD saw that it was good :" though it may have been ages from that time before any eye but His saw the earth covered with vegetation.

I trust that the thoughtful reader has now sufficiently grasped the idea of creation which I have tried to present to his mind ; an idea which takes in the entire range of living things from the beginning to the end, with all their possible mutations, transformations, and developments, from the moment that the first germ of life appeared upon this globe to the accomplishment of that regeneration of all things, which surely must have been the phase of His creation that stood out most prominently before the eye of GOD, when He "saw everything that He had made, and behold it was very good." According to this idea, they who stand at any time upon the earth may say with perfect truth of the things around them,

as then existing, "GOD made all these at the first;" because He then made or did that of which these are the prepared, predetermined, and forenamed results. And the lapse of time, whether long or short, between the actual appearance of the named and contemplated result and the institution of the means for its production, forms no element in the matter; some fruits of each divine work may have become apparent to angelic eyes at the instant it was accomplished, while some may never see the light till the day when "the heavens shall pass away with a great noise, and the elements shall melt with fervent heat." And I wish it especially to be noticed that this view of the matter has not been arrived at at all in the interest of science, but as a conclusion from the most obvious facts of existence, and the simplest statements of Holy Scripture. You, my reader, were certainly made, according to the Scriptures, on the sixth day of creation; both because GOD finished His work at the end of that day, and rested from it, and also because He spoke of that which He was going to do, when He made man, as the making of the entire race. Contemplate, therefore, all the transformations that you must have undergone from that day to the present, and those which must still befall you up to the hour when you shall assume your glorified form and be indeed "very good;" and then take yourself as a sample of the whole six days' creation, and you can hardly fail to feel the force, even if you are unable to acknowledge the necessity, of the conception for which I have been pleading.

Before, however, we attempt to enunciate that conception in the form of an exact definition, we must notice another principle that should be taken into account, in order to render it complete. It is evident that the production of individuals, whether vegetable or animal, depends not only on the existence of certain forces and laws by which they are built up, but also on the circumstances being such that those forces

and laws have an opportunity of coming into action ; and these circumstances, it will be found, generally involve motions of which the forces in themselves are incapable. The seed from which a new plant is to spring must be carried by the force of gravity, or by the wind, or by a bird, or by man, to a soil favourable to its growth. One man divides a polype, or cuts and plants a slip, and a new animal or plant results. Another keeps beasts, and, for his own purposes, regulates the production of their offspring ; often bringing into existence individual animals, which certainly would never have come into being without his intervention. And this is still more obviously true of the offspring of man himself. Now no one would say in these cases that the plants, animalcules, beasts, or men, which thus originated, were created by the earth's attraction, or by the wind, bird, or man whose action was necessary for their production. We must allow, then, that they were potentially in existence before, although favouring circumstances were needed in order to bring them into visible separate being. And this leads us to notice, in passing, that there must be innumerable hosts of things which have this potential existence—which were as really created at the beginning as their more fortunate competitors, and yet, as a matter of fact, never see the light.

But if, as certainly is the case, there has thus come across the path of the development of things from their constituent forces the interference, not only of lifeless agents, but also of insect, bird, beast, and man, can we reasonably stop here ? Is it not plainly unphilosophical to deny that yet higher intelligences may possibly have modified the course of that development, both before and since man came upon the scene ? It may turn out that, when science has catalogued all the forces and processes by which things have passed from previous states to the forms in which we now perceive them, the traces of that higher interference may become just as

plain, as the hand of man is now in the pedigree of some of the races of plants, birds, and cattle. Yet this higher intervention could no more be said to create the things to the production of which it led than man can be said to have created the curious varieties of pigeon or dog to which his skill in the art of rearing has given rise.

If, then, we include under the comprehensive term "favouring circumstances" all intervention, whether physical, animal, human, angelic, Divine, or if there be any other, which merely enables existing forces to come into play, and produce effects in accordance with their laws of action, and if we remember what has previously been said as to the time that may elapse between the creation of a thing and its coming into sensible existence, we finally get this idea of creation, or this account of the six days' work: "When GOD is spoken of as having created a thing on a particular day, He is to be understood as having on that day made those capacities, established those forces, and instituted those laws which, being called into play by circumstances favourable to their action, would in due time lead to its production."

It may be noticed by the attentive reader that in this definition nothing is said of the creation of materials, and indeed he may have observed that I have, throughout this essay, almost entirely avoided all reference to the origin of material elements. The reason of this is twofold.

In the first place, it must be remembered, as we have had occasion to remark before, that the six days' creation is not spoken of as being the commencement of this terrestrial globe. When the work began which ended with the seventh day, there was already in existence the earth, empty and waste, and the waters enveloping its surface. It would seem likely, therefore, that all the material elements had already been formed before the creation with which we are immediately concerned was initiated. If so, it would appear that the intro-

duction of new modes of action and combination, new properties, new qualities, amid existing materials, was what constituted the essence of the creation recorded in the first chapter of Genesis; and this will be sufficiently described as the establishment of new forces and the institutions of new laws.

Still it would not be safe to assert positively that no new element was called into being in the course of the six days' work. It remains, therefore, to observe that the constituent elements themselves are, according to all the means we have of becoming acquainted with them, simply arrangements and combinations of force. Take, for instance, a piece of gold. You see it to be of a yellow colour. This merely shows that there are forces there so regulated as to beat off such waves of the light-bearing ether, which fills all space, as fall upon them, in undulations of that particular length which causes the sensation to us of the colour which we name yellow. There is, as it were, an island of force, against which the waves of the luminiferous ocean are for ever dashing, to be broken up into receding undulations, some of which enter the eye of the beholder, and excite in him the ideas both of the form and the colour of the gold. Again, if you press the metal with your finger, you experience a feeling which only denotes that some force is repelling that excited by the effort of your will. If you hold it in your hand, you become conscious of its weight, which is nothing but a force pushing your hand down towards the earth. You may chance at the same time to feel that it is hot or cold. This merely means that there are forces in it which impart more or less of motion to the molecules of your flesh or nerves, or of any other substance with which it is brought in contact. And so you may go through all its properties; and if you know enough of science to see what each of them implies, you will find there is nothing there but force—something, that is, which causes or changes,

or tends to cause or change, motion in the things which come within the range of its influence. You may, if you please, imagine that all these forces reside in something which you call the substance of the metal. But it is simpler to say that the forces themselves are the substance ; that the metal is nothing but a bundle of force, differing from other elements by the laws which regulate its action. Nor must it be imagined that this idea destroys the reality of matter. Nothing can be more real and substantial than that which causes motion, or resists and modifies it ; and in asserting that all matter is force, we do not reduce it to a shadowy and intangible existence, but rather give form and substance to that which was before an unrealized and indefinite conception. I shall have something to say at the conclusion of this essay as to the nature of force itself ; and, in the meantime, I will ask the reader to meditate a little upon this wondrous agency, and especially to notice that he himself has the power of originating and controlling it, and that therefore he himself is distinct from, and superior to, the matter which it constitutes.

Even then supposing that new materials were made at the time we are considering, the definition of creation that has been laid down is sufficient ; because those materials were nothing else than new forces with the laws to which they were subjected. When however we come to think of the creation of life we must introduce the idea of the other term contained in our definition, namely, "capacities;" because here we have, in all the higher vital forms, not only force, but that which exerts force at its pleasure, and in addition experiences sensation ; the living creature is a bundle of capacities for sensation and exertion, just as the lifeless element is a bundle of forces. The consciousness of separate individuality is itself one of the sensations which constitute the individual ; and the capacity for such a consciousness is the beginning of his

existence. Thus capacities and forces, and the laws according to which those capacities are realized and those forces act, seem to form the ultimate subjects of creation.

But while I thus endeavour to show that the definition is sufficient, that it says enough, I must also guard against a possible idea that it says too much, that the six days' creation may have been something less than what my statement represents it to have been. When it is said that all material things had probably been called into existence before the six days' work began, the thought is not unlikely to occur that that work may have been nothing more than a re-arrangement of elements already existing. Fresh combinations, it may be said, wrought out in the laboratory of the cooling globe, fresh mechanical contrivances devised in that busy workshop, are all that are implied in those effects which are said to have been brought about in the course of the great six days. The gases which compose the atmosphere were already formed, and needed but to be disengaged in order to constitute that firmament whose surface the birds of the heaven were to skim, and above which the clouds containing the superfluous waters were to float. It needed but a little manipulation of the still half-molten masses lying beneath the thin crust of earth, to cause those elevations and depressions of the land which would oblige the waters to run off into their appointed place. And then the evolution of life in the slimy shallows, and the rich lands now first emerging from the deep, was but an act of divine chemistry making skilful use of forces and properties already existing, to form new combinations never seen before on earth.

This idea is at the first glance a tempting one, and yet all true insight into the meaning of the divine record forbids us to be content with it. Ever the question returns, from what was it that GOD rested on the seventh day? Or, in other words, what was it that constituted the peculiar significance

of the previous six days' work in the annals of this earth and of the universe? From such work as that just now alleged to be sufficient there has never been any rest. New arrangements and fresh combinations of existing elements, according to existing laws and properties, are ever going on, alike in the physical course of nature, and by the intervention of man. They constitute indeed those "favouring circumstances" through which individual life is incessantly being brought into the world. But if, on the one hand, we cannot certainly affirm the formation of any new element in the six days of creation, and, on the other, cannot be satisfied with assigning to those days mere rearrangements of existing materials, there seems nothing left but to suppose that at that time fresh capacities, forces, and laws were introduced among those already at work, or were impressed upon elements already called into existence.

To give an instance of what I mean, I do not suppose that the production of light, assuming it to have involved a cosmical and not merely a terrestrial change, depended on the creation of the element or elements of which the light-bearing medium is composed; nor yet on the other hand upon those elements being then, by mechanical and chemical reactions, brought into the required combination and the interstellar position. Rather I should consider that, by a permanent alteration in the nature of the forces composing it, the luminiferous ether then first became capable of transmitting those vibrations which produce the effect which we call light; having hitherto been able to convey only those which constitute dark heat. I do not offer this as an exact account of what actually occurred, but as an illustration of the kind of work which seems to have been done during the six days of creation. To take another example: the initiation of vegetable life on the third day probably did not require the formation of any new material. And yet the putting together of existing elements to form an organic substance, even if that be possible where

nothing but chemical and mechanical forces are available for the purpose, would not answer the conditions of the problem. There are organic compounds which neither take nutriment into themselves, nor are capable any longer of growing, but we call them dead. There must have been introduced into existing forces, or impressed upon existing materials, forces and laws of life, before the most infinitesimal beginning of a living vegetable organism could ever have taken its origin.

I trust that I have sufficiently defined and explained the idea, drawn originally from other than scientific grounds, of what creation really means in Scriptural language. Let us now proceed to try what light the conception thus gained will throw upon the supposed failure of Revelation to meet the requirements of modern science. The following, then, appear to be some of the obvious results of this new method of regarding the subject :

1. All excuse is taken away for imagining that six days, such as we ordinarily mean when we speak of days, would be insufficient for the accomplishment of the work recorded to have been done in them. The commencement of a new capacity, the setting up of the action of an entirely new force, the beginning of the dominion of an entirely new law, must according to any notion we can form be instantaneous. Days may have been assigned, but moments, as far as we can see, would have been sufficient, for all that is narrated as having been done in the sacred week of the creation. This is so evident, that we must seek for any explanation of the time allotted, not in the necessities of the case, but rather in the mysteries of the Divine Nature, or perhaps the need of displaying by degrees before angelic eyes the wondrous beginnings from which a world of light and life was to spring.

2. And yet room is left for any lapse of time, any succession of vast periods, that geology or any other science may

demand. How far back in the depths of eternity that week of strange significance may lie, we have no means of determining. The only limit is that this globe, once a revolving chaos of incandescent fluids and vapours, had already cooled down into a solid mass, with the waters resting on its surface. The great gap which Chalmers and his followers believed to exist in the scriptural narrative was really there. Only it came not as they placed it, after the first verse of the first chapter of Genesis, but after the third verse of the second chapter; not before, but after, the six days' work and the seventh day of rest that followed it. There, as they who have talked about there being two contradictory accounts of the creation have dimly seen, the language itself of the Sacred Word indicates a new starting-point; the formula, "These are the generations" of the heavens and the earth, referring here, as everywhere else in the book of Genesis, to that which follows it, and denoting in this place, as always elsewhere, a fresh point of departure in the narrative.¹ So that there is room for an interval of

¹ The punctuation and translation of Genesis ii. v. 4, 5, are alike uncertain; those which I have adopted are as follows: "This is the history of the heavens and of the earth when they were created. At the time when God had made the earth and the heavens, neither any plant of the field was yet in the earth, nor any herb of the field as yet grew; for the LORD God had not caused it to rain upon the earth, and there was not a man to till the ground." The translation "when God *had* made the heavens," which is that given by Gesenius, seems absolutely necessary, in order to make any sense of the passage. If we render the words, "at the time when God made the earth and the heavens," and understand them to refer to the six days' creation, the concluding words seem meaningless. At that time the reason why none of the herbs of the field could yet be made was, not that there was no man to till them and no rain to keep them alive, but that there was no place for them to grow, while the waters of the sea still covered the whole earth. On the very day that obstacle was removed, God said, "Let the earth bring forth grass and herb and tree."

It may be observed that in the statement that, till the time in question, "the LORD God had not caused it to rain upon the earth," we have a hint given of the change of climate which ushered in man and the coeval, or nearly coeval, plants and animals. There was plenty of rain in some portion at any rate of the geo-

any length that the far-reaching speculations of science may require, between the keeping of the first sabbath and the history of which the verse that follows is the commencement. During that time the potential creations of the six days were working themselves out in varied coexistence, mutation, and succession ; and man made in the image of GOD was still, if we may so express it, below the surface. But to use the same metaphor, he was making his way upwards ; and when all things are now ready for him to emerge, the Sacred Record again breaks its silence, and carries on the narrative, with more or less of continuity, down to historic times. All that is necessary for the vindication of the Scriptural Chronology is to understand, that, however long ago he was created, man only appeared in his perfect form some five thousand years before CHRIST came into the world.

3. And if it be regarded as an established fact, that human remains and traces of human sagacity are to be found in strata, which must have been inaccessible from the earth's surface long before the remotest period that can be assigned from Scripture for the coming of man, the principle laid down would seem to furnish a suggestion for a satisfactory mode of explanation. If the moulding of "the dust of the ground" into the perfect man was not a sudden leap but a long-continued progress, commencing from the sixth day and only ending when "GOD put the man whom He had formed" into the garden "which He had planted," it would appear likely that, at some advanced stage in the process, beings would arise the remains and works of which might be indistinguishable from those of rude or degenerate men. The man whose

logical ages, as the prints left by it in the hardened mud of the carboniferous epoch sufficiently prove. All that is here asserted is that, at the time and place where the flora and the fauna of the human period came into existence, there had been previously a long drought, which needed to be remedied before they could be produced to any purpose.

creation is recorded in Genesis is man made "in the image of GOD." Now it seems not improbable that what in man constitutes his likeness to GOD may be entirely in abeyance, without his losing altogether his human powers and sagacity, or ceasing in the eyes of science to be a human being. When we remember, then, that according to all analogy the highest step would be the last, it would appear probable that there was a time when the god-like element had not yet been developed in man, although in other respects he had attained almost his full powers. And if so, the supposed discrepancies between Scripture and science on this subject may all arise from their having assumed differing definitions of man, in accordance with the difference of their respective aims.

I cannot here resist the temptation of showing how exactly this suggestion with regard to pre-Adamite man falls in with a conclusion of modern science, enunciated by a distinguished naturalist, who arrives at his results from a starting-point totally different from my own, and whose views moreover in this instance are alluded to with approval by no less an authority than Mr. Darwin himself. ("Descent of Man," vol. i. p. 158; compare note, p. 137.) In quoting the following passage I do not in any way pledge myself to the particular theory on which it rests. It will be found, I believe, that any theory as to the mode in which the forces set at work in the sixth day of creation by degrees wrought out the perfect man, will lead to much the same conclusion. "Those great modifications," writes Mr. Wallace ("Contributions to the Theory of Natural Selection," pp. 319, 320), "of structure and of external form, which resulted in the development of man out of some lower type of animal, must have occurred before his intellect had raised him above the condition of the brutes, at a period when he was gregarious, but scarcely social, with a mind perceptive but not reflective, ere any *sense of right* or *feeling of sympathy* had been developed in him." In other

words the ancestor of man acquired a completely human form we know not how long before he was stamped with the image and likeness of GOD.

It is only fair to add that I should infer from other passages in his essays that Mr. Wallace would be inclined to place the change by which man finally became complete, at a much earlier period than any that can be assigned for the commencement of the Adamic race. But I think he would allow that the evidence on this subject is extremely incomplete; and there are not a few arguments which seem to point rather to a late date for the entire completion of man's nature.

4. It would not be necessary, according to the principle of interpretation laid down, that the results contemplated in the Divine purpose should in all cases have made their appearance in the exact order in which they are said to have been created—in the exact order, that is, in which the process of their production was commenced. If, for instance, science should ever be able to demonstrate that there were living things in the sea at a time when the waters still covered the face of the whole earth, this would not be inconsistent with the statement that the arrangements which finally led to the division of land and water were made two days before those which finally led to the existence of marine animals. It would only show that the processes which ended in the latter result were more speedy than those which brought about the former. So too if it could be proved that not a plant could have appeared upon the earth until the sun had assumed its present condition, this would not militate against the assertion that grass, and herb, and tree, were made upon the third day, while the sun took his proper form only on the fourth. It would merely indicate that the new force, or mode of action in virtue of which the sun became constituted as we now see him, produced its full effect with greater rapidity than did that to which the plants and trees at last owed their birth.

In fact there is no arrangement of the order in which created things appeared that science may wish to adopt, for which our principle does not apparently leave full scope ; remembering only that the new forces which led to the bursting forth of light must, from the nature of the case, have produced their effect on the coming of the first day, and that the means employed for dividing the light from the darkness must have been fully developed at the beginning of the first night.

5. The view of creation which has been offered, while it does not require, or seek to establish, any one particular theory of the formation of things and animals—such as that of Natural Selection—leaves ample room for that or any other mode of regarding the subject which may hereafter become established. It even suggests and invites scientific investigation in various directions in which it may by-and-by prove very fruitful. Let us take two or three instances of the elasticity and likewise of the suggestiveness of the views which have been proposed.

A great controversy has for some time been going on among scientific men as to the possibility of living forms being evoked out of lifeless materials ; and the struggle is hardly likely to meet with any speedy termination. Now at first sight it might appear, as if every such notion was incompatible with a genuine belief in the creation of earthly life at the time of the great six days. If a chemist, it may be said, can call forth life by a suitable combination of materials and temperatures, a chance concurrence of fortunate circumstances may very easily have given rise to it at the first. But suppose that it is in consequence of what was done at the first that the chemist can now summon living forms into visible existence. It is quite possible, on the one hand, that the Almighty may have seen fit to attach the capacities and forces which constitute life only to certain special particles or groups of matter, and to those to which they should be transmitted from them

by propagation. And this view would suit the theory of those who deny that life can ever now arise except from life. But on the other hand it is conceivable, that the new forces may have been infused by the work of the six days into matter generally, or into the entire range of particular forms of matter ; so that life may be always ready to appear, when conditions favourable to its production are satisfied. The believer in Revelation then need not feel himself under any necessity to treat the theory of Abiogenesis, as it is called, as a religious heresy, although physicists and physiologists seem disposed at present to regard it as a scientific one. This is an illustration of what I have called the elasticity of the proposed idea of creation : my next example will show both that and its suggestiveness.

We will imagine a follower of Darwin thinking it worth while to try how his theories will work out in the light of Holy Scripture, interpreted in the way for which I have contended. When he reads that on the third day GOD created the vegetable kingdom, he will probably not care to go further back than to some minute germ, from which, as he believes, every kind of plant—past, present, and to come—was destined to arise by a process of variation and natural selection. If I am right, there is nothing in the Sacred Record to militate against this belief ; but there is something to suggest for it a special, and perhaps welcome, form. The final result of the third day's work particularly mentioned, is the production of land plants—grass, herb, and tree ; but what was the habitat of the original germ ? Without venturing to answer such a question too positively, we have the following probabilities to guide us. According to the principles laid down, the second day of creation saw the establishment of those forces, which would in due time produce a cloud-supporting atmosphere ; while the first part of the third day was occupied in setting at work the energies which have ever since been

causing those inequalities of level upon which the existence of dry land depends. Having regard to the slowness with which these energies appear to work, and indeed to the patient deliberateness with which the Almighty usually sees fit to carry out His great designs, it would seem likely that when the germ of vegetable life was called into being on the third day, there was neither air in which it could fly, nor land upon which it could rest ; nothing but the expanse of ocean, with the changes of day and night passing over it. In all probability, then, that little nucleus which bore the future of the vegetable world was a thing of marine origin.

If we pass on, still regarding the matter from the same point of view, to the fourth day's work, we find ample range for speculation. The making of the creatures of the sea and air implies the coming in of new capacities and forces, of which the most important we may suppose would be the capacity—hidden and unrealized at first—for sensation or feeling. And now, in addition to all else to which such new capacities might be attached, there were the little germ previously created, and all the low forms of vegetable life to which—rapidly propagating itself with a mobility of variation appropriate to its simple organization—it had in the course of two days already given rise. Probably our Darwinian friend will think it most likely that the new energies were grafted on one of the existing vegetable germs, rather than on lifeless material now first organized to form the beginning of a higher life ; and then the sacred narrative apparently leaves him a choice of three lines for his surmises and investigations. He may suppose that there is no creational difference between the birds and marine animals, but that the former were developed out of the latter, by the processes of variation and natural selection. Or, secondly, he may consider that after one of the vegetable germs had been impressed with the new energies necessary for the evolution of the moving things of

the sea, and had then been left to propagate itself with variations for a few hours, some further power was added to one of the marine animalcules thus produced, fitting it to become the origin of the fowls of the air. Or lastly, he may conceive that the production of the marine creatures, and that of the birds, were initiated independently of each other, two different vegetable germs being employed as the foundations of these two distinct forms of life.

If we go on to the sixth day, we have now not only the vegetable, but what we may call the fish and the bird germs to choose from, as the stock upon which was grafted the powers which were to give rise to the life of beast of the earth, and cattle and creeping thing. This restriction only appears to be placed by the Scriptural narrative upon the Darwinian line of thought—that as the work of the fifth day shows that fishes and birds could be developed out of vegetable germs through the process of natural selection only by the coming in of fresh capacities, so now in the account of the sixth day it is implied that such a process would fail to produce beasts and cattle and creeping things out of marine animals or birds, and again man out of any of these preceding germs of life, unless it were reinforced by the introduction of some fresh energy at both stages of the ascent. And furthermore it may be noticed, that since the mandate of the sixth day with regard to the terrestrial creatures is, “Let the *earth* bring forth the living creature after his kind,” it would seem that we must suppose the germ from which the land animals finally sprung to have retained enough of its vegetable character to grow like a plant in the ground, up to the time when there was at length developed out of it a creature with distinctly animal characteristics.

But I must not allow it to be supposed that the follower of Darwin has any monopoly of the range afforded by the proposed view of creation. On the contrary, it seems likely that,

when that view is thoroughly grasped, it will suggest modes of thought which may compete for acceptance with the idea of development by Natural Selection. To show that such other conceptions are possible, I will give an imaginary sketch of the progress of life from the beginning ; not by any means putting it forth as a statement of what has actually occurred.

There are some plants the growth of which takes place in this wise—a root starts from a certain point, and runs for some distance in a nearly horizontal position under ground ; after awhile it sends up a shoot producing a small shrub ; it then goes on again, and by and by sends up another shoot, and so on. Now imagine that the root improved as it went on, so that at every fresh shoot it produced a plant of a higher order than the preceding one ; and suppose that the growth finally came to an end by the root running itself out in a plant of the most perfect organisation. Add the further idea that the root at different points put forth branch roots which behaved just like itself, sending up shoots from time to time, and at last running themselves out in the highest form of organisation possible in the direction to which their constant improvement tended, and we seem to have a conception for the progress of living existence on this earth which fulfils every essential condition.

Imagine then a hidden root of life, either immaterial or material ; but in the latter case capable of carrying its growth, if need be, through air or water as well as earth, and virtually indestructible by any adverse influence. Suppose this root to have taken its origin at the moment when GOD said, “ Let the earth bring forth grass,” and to have had fresh capacities infused into it when He gave the command, “ Let the waters bring forth abundantly the moving creature . . . and let fowl fly above the earth ;” and twice again, on the day when His word was uttered, “ Let the earth bring forth the moving creature,” and “ Let us make man.” Imagine that both the original

and the added powers and capacities did not all display their effects at once, but gradually unfolded themselves, the lower ones much more speedily than the higher ; so that there was a continual upward progression in the scale of life among the things which the root was capable of putting forth. The main line, or trunk, of the root would run on from the moment of its origin, till it finally emerged, and ceased all further hidden growth, in the production of the complete man ; and in this long course it would send forth, from time to time, into visible existence the first progenitors of those various species which lead by a natural line of ascent from the lowest living organism up to the perfect man. And at uncertain intervals there would spring from it branch-roots similar to itself, each sending up, now and again, new species tending continually towards some higher organisation, till it terminated at last in the most perfect form of life that could be attained in that direction. Suppose, finally, that all these branch-roots had come to the end of their growth by the time that man was produced, so that from that day forth there originated no new species, and we have a scheme of the origin of life which does not seem to make greater demands upon the imagination than does that of Darwin, while it avoids most of the difficulties which appear to beset his conception.

For then the likeness between the man and the monkey, and other similar resemblances of which that is a type, would arise, not from the higher germ being derived by natural descent from the lower, but from both the higher and the lower having sprung, with an interval between them, from the common root. And so the gap between the nearest species, which seems so impassable, after all that can be said to bridge it over, would be a real gap—one occasioned, not by the connecting links being lost, but by the connection having lien originally only through the unseen root. Then, too, all those strange cases of mimicry, and those apparently odd freaks of

Nature, in which plants resemble insects, or insects are indistinguishable, till they move, from vegetable productions, would be accounted for by the fact that the formative powers, being the very first that would come into play, would pervade the whole root ; so that it would be rather remarkable than otherwise if no such superficial resemblances ever occurred. Naturally, too, the extinct species found in particular countries would display a connection with those now existing there ; because the latter would be merely the later productions of the same part of the trunk-root, or the final productions of the same branch-root, from which the former had previously sprung.

Again, an explanation would be given of a fact difficult to be accounted for by the theory of Natural Selection ; namely, that here and there in the very earliest ages of terrestrial life we come upon creatures of an organization marvellously beautiful and perfect in its kind. The roots that branched off from the trunk-root at a very early time, having a less complex store of powers and capacities to develope, would the sooner run themselves out into the highest form of perfection of which they admitted. And lastly, the parallelism which exists between the course of the development of the individual man, from the germ of his conception to the moment of his birth, and the order of the production of the different animal forms shown by the ancient life-history of the earth—first the fishes, then the amphibia, next the inferior, and lastly the superior mammals—this parallelism does not appear at all astonishing, if the root from which the human race finally sprang forth had itself been previously undergoing a corresponding development, and contained to the last all those forces and capacities from which the successive orders of animals had arisen.

It may be noticed that it would not be necessary, according to this idea, to suppose that, as soon as the powers which made it capable of producing marine creatures and birds were in-

fused into it, the trunk-root would become at once disqualified for giving rise to any fresh species of plants ; or that it would lose its power of originating any new kinds of fishes and birds the moment the forces of the land animals had been grafted upon it, or, again, of sending forth fresh forms of these last directly human energies began to stir within it. Rather, the new capacities would work themselves into prominence by degrees through long periods of time ; and there would be a struggle in the root, first between vegetable and aquatic or aerial animal life, then between this latter and land life, and lastly between the animal and the distinctively human powers—in which the higher would always, but only by degrees, overcome the lower. Hence would arise those strange combinations which are, in fact, met with—creatures of which it is difficult to say whether they are animal rather than vegetable, amphibia, avian reptiles, and anthropoid apes. Perhaps, if not yet thoroughly worked out, the inferior vital force, when finally beaten, would throw itself off in a branch-root, in which it could pursue its proper development without being crushed by the higher form of energy.

But I have said enough of this conception to show its adaptability to existing facts. As I remarked before, I do not propose it as a carefully worked-out explanation of the progress of vital phænomena, but as a sample of the thoughts which may arise in men's minds when they have grasped the idea of creation which I have been endeavouring to set forth.

6. Finally, as I have already intimated, the idea of creation I have propounded explains the fact to which attention has been often directed—that there seem to be two records of creation, contained one in the first, the other in the second chapter of Genesis. We have seen that the former refers to the beginning of the process of construction of all living forms. Let me now state more explicitly than I have yet done, that the latter evidently brings us to the actual appearance of man,

and of all those varieties of herbs, trees, beasts, and birds, with which man is especially connected. This I will here attempt to show with some degree of particularity.

With regard, then, to man himself, it is evident that he who is spoken of in the second chapter of Genesis is a visible, substantial, complete being, scrutinising, speaking, sleeping. We have no longer a race, but an individual—not man, but Adam. But it will be said—Was not this man created then and there? Did not GOD take dust of the earth, mould it into a human form, and then breathe into it the breath of life, and make it a living soul? My reply to this is, that in the passing of a man from invisible into apparent existence there must, in any case, be some process of formation, even as there was in the case of you and me, my reader. And, therefore, the real question is, whether the terms used in speaking of Adam are so different from those that would be employed in the case of any one else, as to show that his coming into visible existence was an act of creation, although that of other persons is not. And the answer to this question, as soon as it is thus stated, seems to be sufficiently certain. For, in the first place, it must be noticed that the word here used with regard to Adam—GOD “formed” him—is not used anywhere in the first chapter of Genesis, where creation is undoubtedly spoken of, either in the case of man or of anything else then made. And on the other hand, it is used elsewhere in speaking of the formation of other men, as when David says (Psalm cxxxix., 15, 16), “Thine eyes did see my substance yet being imperfect: and in thy book were all my members written, which day by day were *fashioned*.” And so again the reference to the dust of the ground is not peculiar to Adam’s case. Job pleads with GOD (Job x., 9), “Remember, I beseech Thee, that Thou hast *made me as the clay*; and wilt Thou bring me into dust again?” And some such thought apparently must have been in David’s mind when he exclaimed,

as in the verse preceding those above quoted, "My bones are not hid from Thee, though I be made secretly and fashioned beneath *in the earth*." And lastly, the inspiration of the "breath of life" is surely made at the birth of every child who is brought into the world, seeing, as S. Paul declares (Acts xxii., 25), "GOD giveth to all life, and *breath*, and all things." Observe, reader, I am not arguing that Adam must have come into visible existence in the same way that you and I did, but that the process of his appearing is described in terms sufficiently similar to those which are applicable to other men to allow us to suppose that his advent, like theirs, was a coming into the world, and not an act of creation.

Let us now turn to the lower forms of life. It will be noticed on comparing the vegetable productions mentioned in Gen. ii. 5, with those of which the creation is described in Gen. i. 11, 12, that they are not designated exactly in the same way. In the first chapter the terms are "grass," the "herb yielding seed," and the "fruit-tree yielding fruit;" but in the second chapter there is a significant addition. That which had not appeared up to the time then spoken of is described as "every plant *of the field*," and "every herb *of the field*;" and the force of the restriction thus introduced is indicated by one of the reasons given for their non-production—"there was not a man *to till the ground*." The field then here is the field cultivated by man, and the vegetable forms the coming of which is now announced are the herbs, cereals, fruits, and flowers, which need human care for their preservation.¹ Now as to these, science and

¹ This conclusion is strengthened if we notice the order in which the events are set down in verses 5 to 9 of the second chapter of Genesis. In the 5th verse we are told that no plant or herb of the field had yet been produced; and two reasons are given for their non-production—the want of rain, and the need of human care. Then we are informed how these two obstacles were removed: the want of rain, in no other way than it has been remedied ever since, by vapours rising, becoming condensed, and falling to the earth; and the want of human care, by the appear-

common sense alike teach us that they did not make their appearance in the world until there was some one who valued them, and would take pains to keep them from perishing. It looks, too, as if an intimation were given us here that the man made in the image of GOD, to whose race was committed the charge of replenishing the earth and subduing it, was not the savage hunter and fisherman of what is called the Paleolithic period, armed with rude flint-instruments, inhabiting the shores, and caves, and river banks of a semi-glacial land ; but the man to whom was first revealed the culture of the ground, and to whom was intrusted a garden or a field that he might learn to dress it and to keep it. He was the true father of mankind : to him and to his seed, by a process of selection no less divine than it was natural, was secured the supremacy of the earth ; and before their face, the half-human stock that had preceded them would as inevitably disappear, as the mammoth, and the other beasts who were their companions, vanished in the presence of the improved climate which heralded the coming man.

It is to this change of the surrounding fauna that attended him, corresponding to that of the flora just alluded to, that we are to refer the words (Gen. ii., 19), "Out of the ground the LORD GOD formed every beast of the field, and every fowl of the air ; and brought them unto Adam to see what he would call them." It strikes one at once that there must be "some restriction here, or Adam's task of giving names would have been alike endless and useless ; except in the case of creatures with whom he would afterwards have to do, the proceeding would seem to be an unmeaning one. And this is just the

ing of Man. Finally, the causes which hindered the production of the plants and herbs having been removed, we read that "God planted a garden." And if that word "garden" itself be not sufficient to tell us what sort of vegetable productions had been in view throughout the passage, what is immediately added puts the matter beyond all question : "Out of the ground made the LORD GOD to grow every tree that is *pleasant to the sight* and *good for food*."

limitation implied in the words “every beast *of the field*.” For although that term cannot be confined too narrowly—as is shown by the fact that the serpent is at the beginning of the next chapter reckoned among the beasts of the field—yet the distinction remains that “the field” is the ground as cultivated, or inhabited, or possessed, by man; so that the expression “beast of the field” does not apply to any outlandish creature discovered by the researches of the geologist or the naturalist, but denotes those well-known animals, whether tame or wild, with which man is commonly associated. And this being so, I submit that the other term also, “fowl of the air,” must be held to be conditioned by the idea thus introduced; even if it were not the case, as apparently it is, that the birds *of the air* generally, as opposed to the heavy running or low flying birds, only came upon the scene about the time of man’s appearance. This latter remark applies also to the beasts of the field, as that expression has been explained; even the animals associated with the pre-Adamite men of the Paleolithic period being scarcely in any case identical with those which are to be met with now.

Still it will be said, do not the words, “Out of the ground GOD formed every beast of the field, and every fowl of the air,” show that these creatures, whatever they were, were actually created at that time? I have in reality already answered this objection in speaking of the formation of Adam. The word “formed” here is the same as that employed in his case, and is not the same as that which is used in the first chapter to denote undoubted acts of creation. And the expression “out of the ground” is only a compendious form of the phrase “of the dust of the earth” made use of in speaking of man. Animals as well as men have a certain portion of earthly matter in their constitution: and in virtue of that each individual of them, as he is formed, is said in Scriptural language to be

made out of the dust. There is nothing, therefore, in this phraseology which obliges us to understand by it anything more than the coming into the world of beings created long before.

I have now completed the view of the nature of creation, and the meaning of the language in which it is recorded which I wished to lay before my readers. But before I conclude, I must try to guard against a misapprehension which may easily arise out of the line of thought I have been pursuing. It may appear to those who believe with the Psalmist, that GOD is about their path and about their bed, and spieth out all their ways, who trace and feel His presence everywhere, and delight in the sense of stability which the thought gives them that "in Him all things consist," that, as far as regards the unfolding of life at any rate, I have relegated the GREAT FATHER to an almost measureless distance in the far-off ages of the past, by representing Him as having once for all set at work the forces by means of which all living phenomena have since been gradually evolved. "What is there," they may ask, "in your theory which corresponds with such words as these : 'Lo, children and the fruit of the womb are a gift and an heritage that cometh of the LORD ?' or these, 'He blesseth them so that they multiply exceedingly, and suffereth not their cattle to decrease ?'"

Let me, then, recall attention to the definition of creation at which we arrived ; and show how the terms of it provide for that continual divine intervention, without the thought of which the heart of no devout man can be really satisfied. "GOD createth all things by making those capacities, establishing those forces, and instituting those laws, which being called into play by circumstances favourable to their action would in due time lead to their production."

In this statement room is left for the Providence and the Presence of GOD at two points.

First, what I have called “favouring circumstances,” without which the laws that lead to the propagation of life cannot come into play, may well include some action on the part of Him “in Whom we live and move and have our being.” Probably the fire of life is never transmitted from one individual to another without a Divine hand, or one divinely sent, bearing the sacred torch across a chasm which it could not otherwise pass over. Since of all GOD’s potential creations almost infinite in number, few comparatively ever came into visible existence, it would seem almost inevitable that each one that does so must be a selected specimen, that in some sort all things that exist are “a chosen generation, a peculiar people,” whose coming into the world is superintended by unseen powers.

But this is not all. The words “laws” and “forces” themselves, when rightly understood, testify of the heavenly Presence. For a force may well be believed to be nothing but the continuous putting forth of the Divine energy, and the law regulating the force, simply the order which GOD chooses to observe, and the restraint which He sees fit to lay upon Himself, in exerting His infinite power. It seems difficult not to admit the truth of Mr. A. R. Wallace’s grand generalisation that “all force is *Will-Force*,” and that thus “the whole universe is not merely dependent on, but actually *is*, the Will of higher intelligences, or of One Supreme Intelligence.” (“Contributions to the Theory of Natural Selection,” p. 368.) With this thought I leave the subject. It seems to contain the highest reconciliation that can be conceived between Revelation and Modern Science; and I am thankful that it came from a scientific man rather than from one whose express duty it was to be an interpreter of Holy Scripture.

GEORGE GREENWOOD.





