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The Relation of Geology to the Days of Creation in Genesis.

The following collected opinions of HUGH MILLER, JAMES D. DANA and SIR J. WILLIAM DAWSON, eminent Nineteenth Century Geologists, and HAROLD JEFFRIES, noted Physicist of the Twentieth Century, compiled by WILLIAM BELL DAWSON, M.A., D.Sc., F.R.S. (Can.), Laureate, Academy of Sciences, Paris, are published at his request, with permission of the Council, for record and reference. These opinions are from men who have themselves contributed largely to the upbuilding of geology and physical geography into sound sciences.

NOTE.—These quotations and summaries will show that Geology is one of the most stable of the sciences. While in others, notably in Physics and Astronomy, there have been very radical changes of view, the general scheme of Geology and the sequence of Formations have remained the same as defined by the pioneers. This sequence on the American side of the Atlantic proved to be in accord with what British and European geologists had determined in their regions. Also, the succession of life in the Formations was well established before Darwin's scheme of Evolution was put forward; and there were geologists who had already discerned the correspondence between this succession and the account of Creation in Genesis before Darwin's day.

*THE RELATION OF GEOLOGY TO CREATION ; IN-
CLUDING THE DAYS OF CREATION AND THE
SABBATH REST.*

From HUGH MILLER, a pioneer geologist. (Abbreviated from *The Testimony of the Rocks*, American edition of 1857; pages 159-163 and 170.)—*Note.* Written before Darwin's first book on Evolution, published in 1859.

THE geologist, in his attempts to correlate the Divine account with the geological record, has only three of the six periods of creation to account for—the period of plants, the period of great sea monsters and creeping things, and the period of cattle and beasts of the earth. All geologists agree in holding that since there was life on the earth, the vast geological sequence naturally divides into *three* great parts.

In the first, or Palæozoic division, we find corals, crustaceans, molluscs, fishes; and, later on, a few reptiles. But none of these organisms gives the leading character to the Palæozoic or its prominent feature; or makes it more remarkable as a scene of life than the periods which follow. What chiefly distinguished the Palæozoic from the other two was its gorgeous flora. It was emphatically the period of plants. In no other age did the world ever witness such a flora; the youth of the earth was peculiarly a time of dusk and tangled forests. Wherever dry land, or shallow lake, or running stream appeared, a rank and luxuriant herbage cumbered the dank and steaming soil. The geological evidence is complete, that the first great period of organised life was, as described in Genesis, peculiarly a period of herbs and trees, "yielding seed after their kind". The vegetation of this period reached its culmination in the Coal formation, when tree ferns, or trees resembling an exaggerated moss, or others reed-like in form, were so profuse in their growth as to accumulate in beds of coal. Of this we are continually reminded by our domestic fires, and other uses of coal.

The middle period or Secondary division (the Mesozoic) also had its herbs and plants, but of a much less luxuriant and conspicuous character. The humble sea creatures also continued ; but the grand existences of the age were its enormous monsters of the deep, and its gigantic birds as shown by their footprints stamped upon the rocks. In such creatures, this period excelled every other, earlier or later. They were not mammals but of the reptile class ; for this was an age of egg-laying creatures, whether in the waters, on land, or in the air. The second period of the geologist was thus peculiarly and characteristically a period of whale-like reptiles of the sea, of enormous reptiles of the land, some rivalling the elephant in height and greatly more in bulk, and of numerous birds, some of them of gigantic size. Thus the second of the periods in Genesis which come within the range of geology was a time when God created just such creatures as accord with the facts now discovered.

The Tertiary period (or Neozoic) has also its prominent class of existences. Its flora seems to have been no more conspicuous than that of the present time ; its reptiles occupy a very subordinate place ; but its beasts of the field were by far the most wonderfully developed, both in size and numbers, that ever appeared upon earth. Its mammoths and its mastodons, its enormous dinothereum and colossal megatherium, were of far greater bulk than the largest mammals of the present time, and vastly exceeded them in number. Truly this Tertiary age, the third and last of the great geological periods, was peculiarly the age of great "beasts of the earth after their kind and of cattle after their kind".

May we not then ask the geologist to say whether these explanations, though given in simple outline, are not true to geological fact ; and also the commentator on Genesis, to say whether these statements, though from the geological standpoint, are not true to the Scriptural narrative ? The wording is no doubt in primitive language, without the scientific terms of botany and zoology ; yet we may fairly ask whether this account of creation, as given in Genesis, could be rendered more essentially true to the story of the earth, geologically ascertained, as we find it. The same manner of emphasizing the outstanding is seen in the description of the universe beyond the earth ; where the two great lights of the day and night are specially referred to, since these arrest the attention most powerfully ; and the stars seem only incidentally mentioned.

If, then, we take the days in the Genesis record as equivalent to lengthened periods, and if we hold that the inspired writer in giving so brief a history seized only on the salient points during these periods, we shall find the harmony of the two records complete.

The Periods and the Sabbath Rest.—The geological facts lead to the belief, as explained above, that the *days* in the account of the creation, were great periods, not natural days. It has been urged, however, that this scheme of periods is irreconcilable with that Divine "reason" for the institution of the Sabbath which God, who in His goodness appointed that day, has vouchsafed to man. We fail to see any force in the objection. God, the Creator, who wrought during six periods, rested during the seventh period; and we have no evidence whatever that He recommenced His work of creation; for, on the contrary, man seems to be the last formed of creatures. Hence God may be resting still; and the presumption is strong that His Sabbath is an extended period, not a natural day, and that the work of Redemption is His Sabbath day's work.* And so we need not suppose that it in the least interferes with the cogency of the reason given with the Fourth Commandment, if stated as follows:—Work during six periods, and rest on the seventh; for in six periods the Lord created the heavens and the earth, and on the seventh period *He* rested.

The Divine periods may have been very great—the human periods very small; just as a vast continent or the huge earth itself is very great and a map or geographical globe very small. But if in the globe the proportions be faithfully maintained, and the scale, though a minute one, be true, we pronounce the globe a faithful copy. Were man's Sabbaths to be kept as enjoined, it would surely not interfere with the reason annexed to the Fourth Commandment; though in this matter, as in all others in which man can be an imitator of God, the imitation should be a miniature one.

During the Creation, each succeeding elevation in the long upward march had been the result of a creative fiat. And finally, the last creative fiat went forth, and responsible, immortal man came into existence. Yet God's work of elevating,

* This view corresponds with the defense which Christ made for doing works of mercy on the Sabbath day; if God's "rest" has continued on since creation was completed (John v, 17). Also, this seems implied in Hebrews iv, 3-7 and 11.

raising, heightening, still goes on. But man's nature and his God-implanted instincts regarding an eternal future forbid that this work of elevation should be a work of creation. To create would be to supersede. God's work of elevation *now* is to fit and prepare sinning, imperfect man for a perfect, sinless, future state. The seventh day's work of God is the work of Redemption. And, read in this light, His reason vouchsafed to man for the institution of the Sabbath is found to yield a meaning of peculiar breadth and emphasis. God, it seems to say, rests on *His* Sabbath from His creative labours; in order that by His Sabbath day's work He may save and elevate you. Rest ye also on your Sabbaths, that through your co-operation with Him in this great work, ye may be elevated and saved.

REMARKS BY SIR J. WILLIAM DAWSON (Principal of McGill University and Prof. of Geology; obiit 1899), on the views of Hugh Miller as above summarised. These remarks follow an extended quotation from Hugh Miller, in his book *The Origin of the World according to Revelation and Science*, sixth edition, pages 135-138.

If God had only rested for a literal day, no good reason could be assigned for the injunction attached to the Fourth Commandment except His thus setting an example. But if God's resting from the work of natural creation is still in progress, this gives forth a ray of light which shines along the whole course of Scripture history. For our short Sabbaths thus become symbolical of that other work for our salvation which God carries on during His great Sabbath; culminating in the final "rest which remaineth for the people of God".

This view occurs also in Lord Bacon's *Confession of Faith*; and Jean Deluc, the Swiss-English geologist, likewise maintains that the Creator's Sabbath must be of long continuance.

It may further be noted that this long Sabbath of the Creator is indirectly a proof that the other six days of creation were likewise long periods, as indicated by geology; for the whole series of "days" in the Genesis record are thus brought into harmony.

THE DAYS OF CREATION according to PROFESSOR JAMES D. DANA, the American geologist and author of foundational works on geology, based on its North American features.

Those who consider the "days of creation" in Genesis to be days of twenty-four hours, have to place geological time *before* the six days, and then to assume a chaos and a re-ordering of creation during the six literal days. There would thus have been a *first* creation that had operated for a long period through secondary causes, and which did not reach to man, and a *second* creation by another method, with man included.

On this point geology is now explicit in its decision, and indeed has long been so. It proves that there was no return to chaos, no great revolution; that creation was beyond doubt one in its progress. We know that some geologists have taken the other view. But it is only in the capacity of theologians and not as geologists; and they did not pretend there was a geological basis for such a hypothesis.

To unsettle confidence in these teachings of geology, it is often asserted that geology is a changing science. In this connection the remark conveys an erroneous impression. Geology is a progressive science, and all its advance tends to establish more firmly the principle that the progress of creation was by periods analogous to the days of Genesis.

EXPLANATIONS BY SIR WILLIAM DAWSON, to meet objections to the evidence given. (*The Origin of the World*, pages 153-155.)

After the somewhat lengthy train of reasoning into which the term "day" in Genesis has led us, it appears that from internal evidence alone in the first chapters of Genesis, it can be rendered probable that the day of creation is neither the natural day from daylight to dark, nor the civil day of twenty-four hours. It also appears that the objections urged against the doctrine that the "days" are long periods, are of no weight when properly scrutinised; and it harmonises with the progressive nature of the work and also with the evidence of geology.

As to the physical nature of the periods, some geologists appear to regard the whole of geological time as a continuous evolution without any breaks. But the facts indicate that there were cycles of repose and of physical activity succeeding each other. There were eras of subsidence and elevation of continental extent, usually occurring gradually; and accompanied with

alternations of climate. These, however, are not equal to the creative days we are considering, for they are greatly more numerous. But beyond and above these, there is a much longer type of geological cycle marked by vast crumplings of the earth's crust and enormous changes of level, with the upheaval of mountain ranges. Such great movements unquestionably closed each of the four leading periods in the geological sequence.

Various physical causes have been suggested to explain why such great disturbances should occur at long intervals of time . . . Whatever the causes, they must have been of a world-wide character, resulting in a collapse of the crust of the earth. (See following explanations by Jeffreys.) These great movements at the close of successive geological ages thus coincide in a general way with the aeons of creation which the ages themselves represent.

CONFIRMATION BY DR. HAROLD JEFFREYS, the eminent physicist; from his exhaustive researches based upon all data now available, and worked out mathematically. (Summarised from *The Earth*, chap. XV; 1928.)

The formation of mountains has not taken place at all periods in the history of the earth; for it is known that there have been long periods of quiescence. On the basis of the actual rigidity of the rocks and the mathematical laws of compression and resulting stress, there has been time since the solidification of the earth for the breaking stress in the earth's crust to be reached about five times. Also, such collapses would occur at fairly equal intervals of time, estimated in millions of years. It is of interest that five times is about the number of the great eras of mountain-building that are geologically known to have occurred.*

The objection that continuous cooling of the earth would give continuous adjustment, and not long, quiet intervals separated by short and great upheavals, has been answered already. The actual alternation is precisely what would be expected from the finite strength of ordinary solids. Nor does the conclusion result from a theory invented specially to explain mountain formation.

* One of these may correspond with the appearing of dry land above the ocean, and another might also be before there was animal life in the world.

For it is the direct outcome of the earth's thermal history, and research undertaken to account for quite other matters.

CONCLUDING REMARK BY SIR WILLIAM DAWSON, on a discussion of the Days of Creation, in thirty-two pages of *The Origin of the World*. (Pp. 123-156.)

We may still ask: Why are God's days so long? He is not like us, a being of yesterday. He is "from Age to Age", and even in human history one day is with Him as a thousand years. We shall know in the endless ages of a future eternity, when even to us these long creative days may at last become but as watches in the night.

THE DAYS OF CREATION.—Remarks by SIR WILLIAM DAWSON on the Scriptural evidence. (Abbreviated from his booklet, *The Day of Rest*, in "Present Day Tracts"; Religious Tract Society London.)

When it is said in the Fourth Commandment that God made all things in six days, and rested on the seventh day, it might seem at first sight that these were natural days, and that God enjoins us to follow His example on the day of rest. But the more we think of this as an explanation, the more unsatisfactory it becomes; for the parallel does not hold good.

In reality, the proper significance of this command is reached only when we bear in mind that the creative days of the first chapter of Genesis are really "days of God"—divine periods or ages, as they are called in the 90th Psalm. In Genesis, there were early days before natural days were instituted; "ineffable days" as Augustine well calls them. The seventh day is not represented as having an evening and morning like the others, and there is no hint that God resumed His work on an eighth day. In the second chapter, the world is said to be produced in one day; the word being evidently used in an indefinite sense.

Further on, in the Old Testament, we have no actual statement that the creative days were natural days or that the world was made in a short period, for the term *olam* or "age" is applied to God's periods of working; and in the 104th Psalm, which is a

poetical narrative of creation, the idea conveyed is lapse of time, without division into days. Later in Scripture, we find the same idea in the teaching of the Lord Jesus and in the apostolic Epistles ; so that it was familiar to the primitive church.

The "Sabbath day rest" is thus in harmony with the view that the other six days were age-long. For we may understand that when God rested on the seventh day, He entered into an age of long duration, intended to be distinguished by the happy rest of man in an Edenic world. But the fall of man broke in upon this rest ; and the Sabbath day became a memorial of an Edenic sabbath ; lost, indeed, but to be restored through a Redeemer. This harmonises with the statement of Christ when discussing the Sabbath ; for He implied that His Father had to resume His labour after creation was finished ; and instead of resting had to undertake the further work of redemption. The Saviour thus justifies Himself for doing likewise, when carrying out works of mercy on the Sabbath day. His words are : "My Father worketh even until now, and I work." (John v, 17, R.V.)

To understand this fully, we would need to consider a view which is common to the Scriptures and to physical science. It is that the world is not merely one of a number of bodies existing in space ; but that this world has gone through a series of stages, differing in character during successive ages of time. The Word of God also points forward to "a new earth" in the future ; a world "wherein dwelleth righteousness" ; and which also in many ways will be physically different. This idea of the present world being one of a series existing in time is a familiar one to the astronomer who thinks of suns and planets passing through different stages ; as well as to the geologist who traces the long history of the earth, with each succeeding age different in its conditions.

The Hebrew word *olam* is used in this sense, as well as the Greek equivalent *aeon* ; though our English translation, which is usually "world", does not bring out the idea of time so clearly. Such expressions as : "Before the world began", "the worlds (*ages*) were framed by the word of God", "the end of the world", "God blessed for ever", are all "ages" or "age" in the original. (See Greek in I Cor. ii, 7 ; Heb. xi, 3 ; Matt. xiii, 40, 49 ; and Rom. i, 25.) The sublime prayer of Moses in the 90th Psalm speaks of God as existing before the mountains were brought forth, and a thousand years being to Him as a watch in the night ; while "from *olam* to *olam*, Thou art God". This

properly means "from age to age" of those long cosmic ages in which He creates and supervises the world in its successive stages, during which it was being gradually prepared and fitted up for man.

What we are thus taught to hope for is life through the unlimited ages of God's working; and this life has been promised before the beginning of creation. We are told accordingly that the redeemed will exemplify the exceeding riches of God's grace in the ages to come. So the whole past, present and future of God's plan has its relation to man; and it is included under this remarkable idea of the ages of the world, and is appropriated by faith and hope as the possession of God's people.

And later:—The order of creation as stated in Genesis is faultless in the light of modern science, and many of the details present the most remarkable agreement with the results of sciences born only in our own day. To a sincere and unsophisticated mind, it must be evident that the grand outlines sketched by Moses are the same as those which modern science enables us to trace.

If we admit that the Mosaic days under consideration correspond with these geological periods, it would be impossible better to characterise their creations in so few words, adapted to popular comprehension.

Montreal, Canada.

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