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APPENDIX TO DR. PEROWNE'S "NOTES ON GENESIS."

THE MOSAIC AND GEOLOGIC HISTORY.

We cannot obtain from geology more than an inferential knowledge as to the condition of the globe in the beginning. Probably it was an incandescent mass, surrounded by a vaporous atmosphere; not improbably the present condition of the sun may represent a very early stage of the earth's history. As this mass cooled the vapours would be precipitated, the result being dry land and ocean; the latter gathering in the accidental inequalities of the crust of the globe, which at a short distance beneath the surface would then be at a very high temperature. The most recent researches are favourable to the idea that the great majority of the gneisses and crystalline schists—the rocks commonly called metamorphic—are not rocks which have once contained fossils, but are anterior to the great mass of the fossiliferous rocks, and have been formed under conditions which, if they have ever recurred, have done so very exceptionally.

The earliest of the groups of fossiliferous rocks is called the Cambrian. It is more than probable that life began before this time, but at present we have not found any certain traces of it. The rocks of the Cambrian, especially the older beds, are not rich in fossils; still we find (even very low down) remains of various molluscs (brachiopods), crustaceans (trilobites, etc.), a sponge, and probably annelids. Towards the end of the era the number of genera and species increases, but the general character of the fauna does not materially alter; it is wholly invertebrate.

In the next group (Ordovician, or Lower Silurian of some authors), the fauna becomes much richer, but still con-

sists of representatives of the same great divisions of the organic world, sponges, corals, hydrozoa, echinodermata, crustacea, annelida, polyzoa, mollusca. In the next (Silurian or Upper Silurian), the same continues; but we have the first vertebrata (fishes). These however are not common. Some remains of plants—though rare—have been found; a very few have, indeed, been identified in the preceding period, but the evidence is often doubtful.

In the next (Devonian or Old Red Sandstone), plants are commoner, fishes (of peculiar type) are abundant; the rest of the fauna, broadly speaking, is similar to the last. In the next (Carboniferous), plants are very abundant, but of low organization, chiefly ferns, club-mosses, marestails, etc. We must however remember that apparently we have only the representatives of the flora of the swampy grounds. There must have been an upland flora, but we do not know it. Amphibians are added to the vertebrates; insects (such as beetles and various "flies") appear to have been rather common. The Permian gives us a true reptile.

These groups form the great Palæozoic Period. In it the fauna is mainly marine, invertebrata abound, and show a gradual progress in development. The cælenterata, the echinodermata, the annelida, and the mollusca abound, but are usually very different from those now living, and the less highly developed members are the more abundant. Plants and vertebrata are both observed about half way up, but it is not impossible that the former had long existed; markings, which some refer to sea-weeds, have been observed much lower down. Birds, mammals, and the more highly developed reptiles (except perhaps just at the end), have not been observed.

The next groups (Triassic, Jurassic, Neocomian, Cretaceous) are contained in what is called the Mesozoic or Secondary Period. Gradually the flora and fauna become more like those which now exist; the fishes become more

allied to existing genera of fishes. The abnormal crustacea have disappeared. The amphibia dwindle, and great reptiles abound both on sea and land. Rather early in the period (end of Trias) a mammal (a small marsupial) occurs, and others have been noticed later on. Still mammals appear to have been small, rare, and of low organization. Birds have not certainly been found prior to the upper part of the Jurassic, and the first (archæopteryx) was a very abnormal one. True birds occur in the Cretaceous. So far as we know, the *mammal* existed before the *bird*; but there were flying reptiles (pterodactyles, etc.) quite early in the Secondary Period.

The next great period is the Tertiary or Kainozoic. It is hardly needful to go into details. Everything gradually gets more like what now exists. The great lizards have gone; mammals are now abundant, and often large. At first they differ much from existing mammals; gradually genera and the species which still survive appear, as the old forms die out.

This I believe to be fairly accurate; but we must remember that the geologic record is imperfect.

(1) The majority of animals without any hard parts practically leave no trace (*e.g.* a "jellyfish").

(2) The hard parts are often obliterated afterwards.

(3) Our record is partial—the fossiliferous beds are mostly marine, some freshwater; that is, we have a fair idea of the flora and fauna of the sea, of rivers, valleys, deltas, lakes, and swamps, but none, or next to it, of the ordinary moorland, forest, and hillside.

(4) A large part of the world is still unknown to us.

Now of the above imperfections, (1) is probably only important to the scientific zoologist. (2) and (4) will more or less tell alike on all formations, so that we may safely reason by induction (within limits) from what we possess; *e.g.*, if we have found no fish remains in the Cambrian or

Ordovician, then either fishes did not exist or, if they did, were exceedingly rare.

(3) is more serious. We have to bear in mind that we really know very little about the ordinary terrestrial flora or fauna. Still I think we may safely argue that mammals and birds did not exist in the Palæozoic and were rare in the Mesozoic periods.

Suppose then we picture the salient features:

(1) Light. Earth self-luminous, without counting the sun.

(2) Precipitation of vapour. Formation of sea, and distinction of dry land.

(3) Marine invetebrate fauna.

(4) Abundant terrestrial vegetation (*i.e.* the Carboniferous with the Devonian).

(5) Great saurians. Marine and terrestrial; the flying saurians might be counted as birds.

(6) Mammalia.

Now I will take the order given in the book of Genesis for the several days.

(i.) Light.

(ii.) The separation of waters.

(iii.) Distinction of land and water; creation of plant life.

(iv.) Lights set in the firmament.

(v.) Water peopled; air peopled.

(vi.) Land peopled.

Now as regards the latter order: (i.) agrees with (1) in the former. (ii.) and part of (iii.) agree with (2). The remainder of (iii.), plant life, *may* be more correct than the position in the former list (4), because we should expect *plant* life to be at least as old, if not older, than animal life. This may be a case where our information is at fault.

But for (iv.) in latter list we can find no place. *Evening* and *morning*, in any strict sense, cannot exist without the sun; and astronomy forbids us to believe that sun and moon can be thus separated from the early history of the earth.

(v.) The appearance of "whales" (saurians) and birds would do, but the peopling of the water generally is the earliest thing we know; moreover, if the "creeping thing" in (vi.) means *insects*, these were early in appearance.

Hence I do not think that the order given by the writer in Genesis can be treated scientifically. Do I think it an "old wife's tale"? No; I believe it to a great extent a revelation, but one into which, for purposes we can well understand, the human element enters largely. I look upon it as a poem or word-picture, whereby some great truths were conveyed, as in a rough sketch, to men. The pictures probably represent visions; the evening and the morning the gathering into shape and fading into darkness of the vision, like a dissolving view (putting darkness for the lamplight in the scene).[1] I think that the personality of the seer also comes in, and he represents the process of creation in a series of visions, in what I may call his own natural order of thought.

To the end of ver. 6 he narrates the events as the cosmogony of the day suggests, but points out that all is God's work. In ver. 7 we have the primary idea of land and water separating. Then, to the dweller away from the sea coast, whose main and central idea was the land, to whom perhaps the rocks and sands of the desert were an abomination, the primary idea in fitting the land for occupation would be clothing it with verdure. The reference to sun and moon next in order I look upon as a result of the astronomy of the time, which regards them as satellites of the earth rather than it as a satellite of the sun; and this would be another stage of preparation.

We then proceed to the peopling of the earth. Here it seems to me that the seer proceeds gradually towards the crowning work: first bringing in those creatures most

[1] On evening and morning see P. H. Mason's *Hebrew Exercise Book*, pref. to concluding part, vii.

remote from man and his uses; and, lastly, man himself when all was ready. When the farm was stocked, the farmer came.

Thus I think you cannot "harmonize," except in the widest and most general sense, the Scripture account with that of science; but I also think that the former is so vague, so obviously popular in form, so concerned only about the central truth, that to talk of contradiction is useless. A child or uneducated person might give us an account of some complicated process, which was true in the main, yet full of small inaccuracies and mistakes in sequence and in theory.

Of course I am aware of the correspondences between the early Chaldæan cosmogony and that in Genesis, but to dwell on this subject is beside my purpose. I will merely add that the former, as it has been well said, is saturated with polytheism, and that the expurgation of such an element, at this epoch of the world's history, is to me a mark of inspiration.

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THE ARAMAIC GOSPEL.

THE NEW CRITERION.

THERE are two facts which, as we have seen from our preliminary paper of last month, are almost universally conceded: (1) that our Lord ordinarily spoke Aramaic; and (2) that Matthew wrote the *Logia* τῇ Ἑβραΐδι διαλέκτῳ. But when we step beyond this, we come into the arena of debate. If we ask, In what language did Matthew write? or, *What* did he write? we receive very discordant replies. It might be supposed that all who admitted that Christ *spoke* Aramaic would also admit that, if His words were originally written in any Semitic tongue, they would be written precisely as spoken. But this is not the case.