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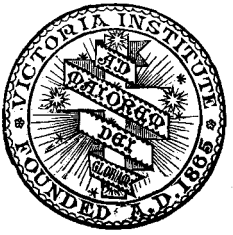

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NOTES ON THE ANTIQUITY OF MAN.

By the Editor.

This subject was specially treated on by Professor Hughes (in volume xiii. of the *Transactions*), by Dr. Southall (in volume xv.), and has been referred to by Mr. White (in volume xix.); and Mr. E. Charlesworth, F.G.S., has made remarks (p. 82, *ante*) upon the great dissimilarity between the structure of the gorilla and man, pointing out, foremost among other significant differences, first, the capacity of the brain, and secondly, the peculiar high crest to the gorilla's skull, which latter is also found in that of the hyena, but is absent in that of man. Mr. White, it will be remembered, pointed out that if the capacity of the brain of the anthropoid ape were taken at ten, that of man, even in his savage state, was twenty-six, or nearly thrice as much, a very important fact, when, as is known, any appreciable diminution in the brain of man is at once accompanied by idiocy. As regards the transmutability of species, Barrande's arguments against the theory, founded on the results of a life of research among the fossil strata, have not yet been overthrown; and modern investigation clearly points to the fact that one great bar to the transmutability of species lies in the refined and minute differences in the molecular arrangements in their organs.* Professor Virchow's remarks upon the subject are included in volume xix., and to them we may add an opinion, given by a high authority, that the whole British Museum Natural History Collection does not, as yet, contain a particle of evidence of the transmutation of species.

In regard to the ape descent of man, the following remarks are from the pen of the Rev. W. Guest, F.G.S.:—

"The latest of the books in *The International Scientific Series* (Kegan Paul & Co.) is on 'Anthropoid Apes,' by Professor Hartmann, of the University of Berlin. It is the last, and the most complete and exhaustive treatise on the subject, and by one recognised as a highly distinguished naturalist. The work shows that the differences between these apes and man are greater than the resemblances, that their intelligence is peculiar, but not greater than that of other animals, that they are interesting subjects of study, but can never become useful; that they cannot adapt stones to their personal use; they grow less like man as they become older, especially in the head; and that any close connection with man cannot be proved.

"Professor Hartmann thus sums up the argument: Man cannot have descended from any of the fossil species which have hitherto come to the notice of scientific inquirers, nor yet from any species of apes now extant. A supposed progenitor of our race is necessarily completely hypothetical, and all attempts hitherto made to construct even a doubtful representation of its characteristics are based upon the trifling play of fancy. Even if the assumed ancestral type should really be discovered in some geological stratum, yet research will have to overcome immense difficulties, if it is to explain the development of the understanding and speech, and the growth of independent local intelligence.

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* See Professor Dabney's paper further on in this volume.

"This latest outcome of natural science has great significance. Darwin maintained that 'the great principle of evolution stands up clear and firm,' and in the opinion of some, made light of the intelligence which believed that 'man is a separate act of creation.' But here is an investigator of European fame who affirms that so far as science has pursued inquiries among living species, or in fossiliferous rocks, no progenitor of man has been found. Evolution, then, is not 'clear and firm' in relation to man: he is exceptional in creation.

"The conclusion of Professor Hartmann touches a statement of Professor Huxley in his reply in the *Nineteenth Century* to the recent article of Mr. Gladstone in the same review. 'The horse,' says Mr. Huxley, 'is the last term of the evolution series to which he belongs, just as *Homo sapiens* is the last term of the series of which he is a member.' Although this cannot have been intended as a sophism, is it correct? There is no break in the series to which the horse belongs, but that is not the same with man. *Homo sapiens* is not 'a last term' of a known series, for 'a supposed progenitor of our race is a play of fancy.' It is proper to say that Professor Huxley's article is not at all marked by that contemptuous tone which formerly obtained among a certain school of scientists when referring to the first chapter of Genesis.

"As a picture of the way the earth was prepared for man, the opening chapter of the Bible still stands in its beautiful and unique sublimity."

As regards the early history of man, it will interest many to read what Sir J. William Dawson, K.C.M.G., F.R.S., has said in a paper published this year, 1886 :—*

"Geology has divided the whole chronology of animal life on the earth into four great periods: Eozoic, Palæozoic, Mesozoic, and Kainozoic. In the three first of these periods not only are remains of man absent, but we find no examples of those higher animals which are most nearly related to him in structure. It is, therefore, to the last of these periods, the Tertiary or Kainozoic, that we must look for human remains.

"This, the last of the four great 'times' of the earth's geological history, was ingeniously subdivided by Lyell, on the ground of percentages of marine shells and other invertebrates of the sea. According to this method, which with some modifications in details, is still accepted, the *Eocene*, or dawn of the recent, includes those formations in which the percentage of modern species of marine animals does not exceed 3½, all the other species found being extinct. The *Miocene* (less recent) includes formations in which the percentage of living species does not exceed 35, and the *Pliocene* (more recent) contains formations having more than 35 per cent. of recent species. To these three may be added the *Pleistocene*, in which the great majority of the species are recent, and the *Modern*, in which all may be said to be living. With respect to the higher creatures, the ordinary quadrupeds, such percentages do not apply. These animals begin to appear in the Eocene, but no recent species occur until we reach the later Tertiary or Pliocene. The Eocene thus includes formations in which there are remains of mammals or ordinary land quadrupeds, but none of these belong to recent species or genera, though they may be included in the same families and orders with the recent mammals. This is a most important fact, as we shall see, and the only exception to it is that Gaudry and others hold that a few living genera, as those of the dog, civet, and marten, are actually found in the later

* *Points of Contact between Revelation and Natural Science*, R. T. Soc.

Eocene. The Miocene includes formations in which there are living genera of mammals, but no species which survive to the present time. The Pliocene and Pleistocene show living species, though in the former these are very few and exceptional, while in the latter they become the majority.

"With regard to the geological antiquity of man, no geologist expects to find any human remains in beds older than the Tertiary, because in the older periods the conditions of the world do not seem to have been suitable to man, and because in these periods no animals nearly akin to man are known. On entering into the Eocene Tertiary we fail in like manner to find any human remains; and we do not expect to find any, because no living species and scarcely any living genera of mammals are known in the Eocene; nor do we find in it remains of any of the creatures, as the anthropoid apes for instance, most nearly allied to man. In the Miocene the case is somewhat different. Here we have living genera at least, and we have large species of apes; but no relics of man have been discovered, if we except some splinters of flint found in beds of this age at Thenay in France, and a notched rib-bone. Supposing these objects to have been chipped or notched by animals, which is rendered very unlikely by the results of the most recent investigations, the question remains, was this done by man? The probability on general gronnds of the existence of men at this period is so small, that Gaudry and Dawkins, two of the best authorities,* prefer to suppose that the artificer was one of the anthropoid apes of the period. It is true that no apes are known to do such work now; but then other animals, as beavers and birds, are artificers, and some extinct animals possessed higher powers than their modern representatives. But if there were Miocene apes which chipped flints and cut bones, this would, either on the hypothesis of evolution or that of creation by law, render the occurrence of man still less likely than if there were no such apes. For these reasons neither Dawkins nor Gaudry, nor indeed any geologists of authority in the Tertiary fauna, believe in Miocene man.

"In the Pliocene, as Dawkins points out, though the facies of the mammalian fauna of Europe becomes more modern, and a few modern species occur, the climate becomes colder, and in consequence the apes disappear, so that the chances of finding fossil men are lessened rather than increased, in so far as the temperate regions are concerned. In Italy, however, Capellini has described a skull, an implement, and a notched bone, supposed to have come from Pliocene beds, and which are preserved in the Museum of Florence. They are all, however, of so recent types that it is in every way likely they have become mixed with the Pliocene stuff by some slip of the ground. As the writer has elsewhere pointed out† similar and apparently fatal objections apply to the skull and implements alleged to have been found in Pliocene gravels in California. Dawkins further informs us that in the Italian Pliocene beds supposed to hold remains of man, of twenty-one mammalia whose bones occur, all are extinct species except possibly one, a hippopotamus. This of course renders very unlikely in a geological point of view the occurrence of human remains in these beds, and up to this time no such discovery has been certainly established.

"In the Pleistocene deposits of Europe—and this applies also to America—we for the first time find a predominance of recent species of land animals. Here, therefore, we may look with some hope for remains of man and his works, and here, accordingly, in the later Pleistocene or early Modern, they are actually found. When we speak, however, of Pleistocene man, there arise questions as to the classification of the deposits, which it seems to the

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* *Les Enchaînements du Monde Animal: Early Man in Europe.*

† *Fossil Men*, 1880.

writer that some of the leading geologists have not answered in accordance with geological facts, and a misunderstanding as to which may lead to serious error.

"The geological formations of the Pleistocene period are, for the most part, superficial gravels and clays, and deposits in caverns, and it is somewhat difficult, in many cases, to ascertain their relative age. We are aided in this, however, by certain ascertained facts as to elevations and submergences of the land, and as to climatal conditions in the northern hemisphere. There was at the beginning of the Pleistocene what has been called a continental period, when the land of the northern hemisphere was more extensive than now, and there seems to have been a mild climate. This was succeeded by a period of cold, the so-called glacial period, in which the land became diminished in extent by submergence, and the climate became so severe that snow and ice prevailed over nearly all the temperate regions of Europe, Asia, and North America. After this there was a second continental period of mild climate, succeeded by another submergence of limited duration, and then the continents acquired the forms which they still retain. These chronological points, important in reference to the correlation of geology and the Bible, are represented in the following table :—

"*The Pleistocene and Modern in the Northern Hemisphere with reference to the Introduction of Man. (In descending order from newer to older.)*

"*Modern*, or Period of Man and Modern Mammals :—

"*Recent Age.*—Continents at or nearly at their present levels.—Existing races of men and living species of mammals in Europe.

"*Post-glacial or Second Continental Age.*—Land more extensive than now. Climate temperate. Man represented in Europe and Western Asia by races now extinct, and contemporary with the mammoth and other great mammals also extinct, but also with modern species. This was terminated by a submergence fatal to men and many mammalia, and covering the land with gravel and silt.

"*Pleistocene*, or Period of extinct and a few recent Mammals :—

"*Later Pleistocene*, or Glacial Age.—Cold climate and great submergence of land in northern hemisphere.

"*Early Pleistocene* or *First Continental Age.*—Land very extensive, and inhabited by many mammals now extinct. Climate temperate.

"It will be observed, with reference to the above table that the earliest certain indications of man belong to the modern period alone, and that this modern or human period is divided into two portions by a great submergence, in which certain races of men and many mammals perished, and after which the geographical conditions of the northern hemisphere were considerably modified. I have not used the terms historic and pre-historic in the above table, because, while in most countries the period of written history covers only a locally variable part of the recent age, in other countries it extends back into the post-glacial, which thus becomes the antediluvian period. I have, however, elsewhere proposed the name Palæocosmic for the men of the post-glacial age, and Neocosmic for the men of the recent ages, and shall use these terms rather than Palæolithic and Neolithic, since these last refer to forms of implements which, though locally of great antiquity, exist in some places up to the present day. The men of the post-glacial age have also been called men of the gravels and caves, and the men of the mammoth and reindeer ages, and they resemble in physical features the modern Turanian races of Northern Europe, Asia, and America. We might, with reference to the Bible history, call them antediluvian men, but the evidence

of this will appear in the sequel. In the meantime we may observe that the testimony of the earth coincides with that of the Bible, in representing man as the latest member of the animal kingdom, the last-born of animals.

"The most important point with reference to any parallelism between the geological history of man as tabulated above and the Biblical record, is to ascertain what absolute value in time can be assigned to the several ages known as post-glacial and recent, or, in other words, how long ago it is since the glacial period terminated. So vague are the data for any calculation of this kind, that the estimates of the date of the glacial period have ranged from hundreds of thousands of years down to a very few thousands. The tendency of recent investigations has been to discard the higher estimates and to bring the close of the glacial age constantly nearer to the present time. The absence of any change in invertebrate life, the small amount of erosion that has occurred since the glacial age, and many other considerations, have been tending in this direction. I may refer to only one criterion, the importance and availability of which were long ago recognised by Sir Charles Lyell. This is the recession of the Falls of Niagara from the shores of Lake Ontario to their present position. This recession is effected by the cutting back of beds of limestone and shale; and the resulting gorge, about seven miles in length, cuts through the deposits of the glacial period, proving, what on other grounds would be obvious, that the cutting began immediately after the glacial age. When Lyell estimated the time required, the rate of recession of the Fall was supposed to be one foot per annum. It is found however, by the results of actual surveys, to be three feet annually. Lyell's estimate of the time required was thirty thousand years. The new measurement reduced this to one-third, and further abatements are required by the possibly easier cutting of the first part of the gorge, by the fact that a portion of it of uncertain amount above the "whirlpool," had been cut at an earlier period and needed only to be cleared out, and by the probability that, in the early post-glacial period there was more water in the Niagara River than at present. We thus have physical proof that the close of the glacial submergence and re-elevation of the American land could not have occurred more than about eight thousand years ago. It follows that the ordinarily received chronology of about four or five thousand years for the post-diluvian period, and two thousand or a little more for the ante-diluvian period, will exhaust all the time that geology can allow for the possible existence of man, at least in the temperate regions of the northern hemisphere. Facts recently ascertained with reference to the delta of the Nile,* lead to similar conclusions for the oldest seats of human civilisation. Whatever demands may be made by philologists, historians, or antiquaries, or by the necessities of theories of evolution, must now be kept within the limits of facts such as those above referred to, and which are furnished to us by physical geography and geology. These facts must also lead to considerable revision of the excessive uniformitarianism of one school of English geologists, and to explanations more reasonable than some which have been current as to the deposition and age of superficial gravels and similar deposits. When all these points have been adjusted, it will be found that there is a sufficiently precise accordance between science and Bible history with regard to the antiquity and early history of man.

The reader will find a fuller report of the results of the surveys of Niagara Falls, and explanatory diagrams, at page 90 of volume xix. of the Victoria Institute *Journal*.

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* "Egypt and Syria," in *Bypaths of Bible Knowledge*.