DISCUSSION AND CORRESPONDENCE.

REMARKABLE DISCOVERIES.

IN *McClure's Magazine* for June there appears an article, entitled 'Geology and the Deluge: Remarkable Geological Discoveries in Central Asia and Southern Russia, showing that the Noachian Flood is a Scientific Possibility,' by Dr. Frederick G. Wright, Professor of the Harmony of Science and Revelation in Oberlin College.

The first of these 'discoveries' is entitled 'No Glacial Period in Asia.' It is set forth in the following words:

"For many years I have been collecting facts concerning the glacial period in North America and Europe, and in 1900 I went to Siberia to determine conditions in that country in the same period. As Asia, like North America, stretches toward the North Pole and faces a great sea on the east, I naturally expected to find there evidences of a glacial period similar to that in this country. But, contrary to all my expectations, I found no sign in Central Asia and Southern Siberia of glacial work. On the contrary, the geological conditions I found were such as are only to be explained by an extensive submergence of the region where the Scriptures and tradition locate the Flood which destroyed the whole human race, excepting Noah and his family. The evidences of such a deluge are not one, but several, and extend from Mongolia to the western borders of Russia."

The state of previous knowledge may be inferred from the following quotations from well-known works, to which others might be added:

"It is a familiar fact that there are no traces of glaciation in Northern Asia, but on the contrary there is the most complete and consistent evidence that no such traces are to be found either on the flat tundras or on the higher ground. Murchison long ago showed that there are no marks of ancient glaciation on the Urals, which it must be remembered rise in places to a height of 1,525 metres, and are in many places covered with snow for eight months in the year. Repeated visitors have tried in vain to find old glacial traces in the Altai Mountains. Lastly, traveller after traveller across Northern Asia speaks of the absence of all boulders, rounded rocks, etc., in Siberia from one end to the other." ['The Glacial Nightmare and the Flood,' by Sir Henry Howorth, Vol. I., pp. 510, 511, 1893.]

"These [certain mountainous and plateau tracts], as far as I can learn, are the only regions in Asia which have yielded certain traces of glaciation. (See Plate XIV.)" [The plate shows no general glaciation in Siberia or Central Asia.] ('The Great Ice Age,' by James Geikie, third edition, p. 697, 1894.)

"East of the Urals in Northern Asia there is no evidence of moving ice upon the land during the Glacial period." ('Man and the Glacial Period,' by G. Frederick Wright, p. 190, 1892.)

The second 'discovery' relates to the general prevalence of loess in the region named. This is set forth as follows:

"*Evidences of a great sea around Mt. Ararat.*—On the contrary, throughout this entire region we were confronted with the evidence of a great subsidence of the land which had taken place in recent geological time, and which, in date, would correspond roughly with that of the glacial period in North America. For several hundred miles, while driving through the region south of Lake Balkash and the Aral Sea, we were evidently upon a terrace of the fine loam which is called loess, about 2,500 feet above sea-level. Indeed, at different elevations this loess extends continuously in a broad shelf along the base of the mountains, from the Irtish River to the Caspian Sea, and is found in extensive areas over various portions of the Caucasus and Northern Persia around the base of Mount Ararat; while the so-called 'black earth' of Southern Russia is a deposit of the same material, and probably of the same age, 100 or more feet in thickness. The distribution of this loess is the key to the whole situation" (p. 135). [The map accompanying the article 'showing the country through which Dr. Wright traveled, and where he found evidences, not of glaciers, but of a flood,' and on which the itinerary is marked, indicates that Dr. Wright did not visit Mt. Ararat or the Biblical lands.]

The degree of originality of this 'discovery' of the distribution of the loess may be inferred

from the following quotation from Geikie's 'Ice Age' in the chapter on Asia:

"Immense sheets and terraces of loess fringe the alpine lands and sweep outwards upon the low grounds of Turkestan and Siberia, but do not seem to go much farther north than 54° N. L. These, as Kropotkin shows, present the same character as the similar accumulations of Europe, and have yielded remains of mammoth, rhinoceros, etc., and land shells. In Northern China the same accumulation is developed on a yet grander scale—covering enormous areas, and occurring at all altitudes from a few feet to upwards of 8,000 feet above the sea. The distribution of the Asiatic loess, its general character, and the nature of its organic remains hardly allow us to doubt that it has been formed under the same conditions as the similar deposits in Europe. Its materials, we may believe, are largely of fluvio-glacial origin, and represent in great measure the flood-loams swept down from the mountains and plateaus when these supported extensive snow fields and glaciers. But, as Baron Richthofen in his great work on China has demonstrated, the loess, as we now see it, owes its structure and heaping-up to the action of the wind, and is even now forming and accumulating in many regions of Asia. It is, in short, a true steppe-formation." (Geikie's 'Great Ice Age,' p. 699.)

In discussing the origin of the loess, Dr. Wright omits all direct reference to the familiar interpretation sketched by Geikie and held by many geologists on both continents, and thus adroitly creates the impression that the question of its deposition lies solely between the work of the wind and the work of the sea. The following extract embraces the essential part of the statement:

"Twenty-five or thirty years ago Baron Richthofen endeavored to make out that the loess was a wind deposit; and certainly he found much in Northeastern China to support this theory. Upon returning from our trip to the Mongolian frontier, we were inclined to accept it, for we had seen and experienced, in the dust-storms encountered, enough to make us attribute almost anything to the power of wind. For a whole day we once rode in a cloud of dust so dense that it was impossible to see objects twenty feet away; while everywhere in the mountain valleys we saw instances where this loess had drifted into protected places, as snow does in winter. But there were constantly appearing other things which were difficult to explain by the action of wind. For example, the loess was occasionally spread out, even at high levels, in broad, lakelike basins, as if deposited by water. Also the material now most blown about by the wind is coarse sand, which is piled up in dunes quite unlike the ordinary loess deposits. In one instance we found high walls of a large Chinese city completely buried on one side by a wind deposit; but this was coarse sand, and not loess. In many cases, also, we found long lines of gravel and pebbles interstratified with loess. Thus the difficulties of explaining everything by wind so increased that they became well-nigh insuperable.

"But, on coming around to the northwestern side of the great Asiatic plateau, in Turkestan, which is almost the exact center of the continent, the wind hypothesis became entirely incredible, and the evidence accumulated that the land had lately been depressed to such an extent that the water of the ocean reached the base of the bordering mountains, rising to a height, certainly, of about 3,000 feet; for, at this level, south and southwest of Lake Balkash, we found the loess spread out in such an extensive terrace that the wind would be entirely incompetent to produce the results. * *

"In confirmation of this theory of a recent extensive depression of Central Asia, a number of other most interesting facts present themselves, prominent among which are those concerning Lake Baikal. * * * A most curious fact, long known to scientific men, is that this lake is occupied by a species of seal almost identical with those found in the Arctic Ocean. The same species with slight variations are also found in the Caspian Sea, but not anywhere else along the 3,000 or 4,000 miles which separate these bodies of water. The most probable explanation of this fact, and the one usually accepted by scientific men, is, that these species of seal were thus widely distributed during a continental subsidence in which all the waters of the Arctic Ocean

covered all of Northwestern Siberia, and extended up to the base of the great Asiatic plateau which we followed for such a long distance on elevated shore lines in Turkestan. When this depressed area emerged from the sea, it left the seal isolated in the two great bodies of water which still remain on its former margin. So lately has this taken place, that there has not been time for any great changes to be effected in the characteristics of these animals" (p. 136).

Certain high-level deposits at Trebizond and Dariel Pass are cited as the work of the sea and as evidence of subsidence of the land, but no fossils are mentioned (p. 137).

Singularly enough, the comparative *freshness* of the waters of the Caspian and Aral seas made the basis for the inference that "this region has lately emerged from below sea level and, in consequence, rapidly passed through climatic changes which have transformed it from a recently well-watered region to one that is now a desert" (p. 137).

This is the entire evidence upon which the marine origin of the loess is postulated. The direct evidence of the fossil content of the loess is ignored. The public are not even informed of the existence of this class of evidence, nor of such widely current deductions from it as those voiced by Dr. James Geikie in the paragraph previously quoted and by Sir Archibald Geikie in the following extract from his well-known 'Text-Book':

"Though on the whole not rich in fossils, the loess has yielded a peculiar fauna, which singularly confirms Richthofen's view that the deposit was a subaerial one. In the first place, the shells found in it are almost without exception of terrestrial species. * * * It is worthy of note that *Helices* and *Succineas* abound at present in the steppe regions of central Asia, and that many of the species of loess mollusks are now living in east Russia, southwest Siberia, and on the prairies of the Little Missouri in North America.

"From various parts of the European loess, Dr. Nehring has described a remarkable assemblage of animals, which included a jerboa (*Alactaga jaculus*), marmots (*Spermophilus*, several species), *Arctomys bobac*, tailless hare (*Lagomys pusillus*), numerous species of *Arvicola*, *Cricetus frumentarius*, *C. phœus*, porcupine (*Hystrix hirsutirostris*), wild horses, and antelopes (*Antilope saiga*). This fauna, excepting some extinct or extirpated species, is identical with that which now lives in the southeast European and southwest Siberian steppes. Besides these distinctively steppe animals the loess contains numerous remains of the mammoth and woolly rhinoceros, likewise bones of the musk-sheep, hare, wolf, stoat, etc. It has also yielded flint implements of Palæolithic types. The bones of man himself were claimed many years ago by Ami Boué to have been found in the loess, and his opinion has been in some measure strengthened by more recent observations." ('Text-Book of Geology,' by Archibald Geikie, pp. 1059, 1060.)

The readers of *McClure's Magazine* are not invited to consider the overwhelming force of this class of evidence; nor are they frankly told of the absence of marine fossils from the loess; nor are they informed that the association of Palæolithic implements with the loess is familiar text-book knowledge; but in lieu of such prosy science, they are inspired by the following eloquent climax:

"The crowning point of interest is reached in the discovery by Professor Armashevsky at Kief of flint implements and burnt stones in connection with the bones of extinct animals fifty-seven feet below the undisturbed surface of this soil. The discovery was made in the bluff of loess bordering the river Dnieper, whose general surface is 633 feet above the sea and 340 feet above the present stream, and totally unconnected with any deposits that may have been made by it. In this discovery we have the link connecting the recent geological changes in the East with those in the West. The flint implements of glacial man found in France, England, and the United States indicate the same stage of culture as that attained by the men who were overwhelmed in the great subsidence of Central Asia and Southeastern Russia, and of the region about the base of Mt. Ararat" (p. 138).

This remarkable article closes with 'The Relation of These Discoveries to the Bible Story of the Deluge,' and 'Harmony of Biblical Story and the Geological Facts.'

"* * * What the recent discoveries have shown is, that during, and subsequent to, the glacial period, and since the advent of man, there has existed such an instability of the earth's crust that the present cannot be made a measure of the past. Man has certainly witnessed catastrophes by flood which are quite analogous to the one described in Genesis. But it is important, in conclusion, to obtain correct ideas of what we are required by the narrative to believe. * * *

"1. The biblical account of the flood does not imply, as many seem to assume, that the waters of the earth increased to such a degree that it swelled the circumference of the globe to the extent of the tops of the highest mountains. * * * (p. 138.)

"2. Nor is it necessary, except for the purpose of effecting the destruction of the human race, to suppose that the flood was, in the strict sense of the word, universal. We may well believe that the end in view, namely, the destruction of the human race, with the exception of Noah and his family, was accomplished without the destruction of all forms of animal life whose existence was unconnected with the general moral reasons for the flood. * * * The objects of the flood were all satisfied if the destruction of the human race was fully accomplished, so that history could make a new start with a selected family. * * * (p. 138.)

"Some time during the prevalence of glacial ice over Northern America and Northwestern Europe, man came into existence in Central Asia, where the climate was still congenial. From this point he spread as far west as the Atlantic seaboard in Europe, and eastward to the Pacific Coast, whence he succeeded in reaching, by way of the Bering Sea and Alaska, the western coast of North America, and thence migrated to the Atlantic Coast, where his remains are found in the glacial gravels of Trenton, New Jersey. But the extreme and rapid changes incident to the closing stages of the glacial period naturally, and very likely, exterminated man in company with many of the animals accompanying him both in America and in Europe. The destruction of many of the species of animals accompanying man at the close of the glacial period is a well-known fact. It also seems probable, from scientific evidence, that man shared largely in the destruction. There is everywhere a sharp line of distinction between Palæolithic and Neolithic man, *i. e.*, between the men who were limited to the use of flaked or rough stone implements and those who used smoothed stone implements. It is Palæolithic implements only which are found in the glacial gravels of America and Northwestern Europe, and beneath the loess at Kief and at three or four other localities in Southern Russia. The Palæolithic man of science may well be the antedeluvian man of Genesis" (p. 139).

From this it appears, a little darkly and vaguely, that the public are to understand from these 'recent' and 'remarkable discoveries' that Paleolithic man, scattered over Asia, Europe and America (and Africa?), was destroyed by the flood, where there was a flood, and by 'the extreme and rapid changes incident to the closing stages of the glacial period,' and that this gave rise to the 'sharp line of distinction between Paleolithic and Neolithic man,' and hence, by implication, that Neolithic man was the descendant of Noah and that the line of cultural evolution was from ark-building to 'smoothed stone implements.'

One is led to wonder how far respect for the Scriptures is fostered by 'remarkable discoveries' of this sort and by the much-trumpeted stage-play that preceded and accompanied them. * * *

THE MONGOOSE IN JAMAICA.

IT seems to be almost impossible for writers of text-books to give a correct account of the mongoose in the island of Jamaica, and its effect upon the native fauna. In *Nature*, February 7, 1901, I took occasion to point out a peculiar error in the account of the animal in an excellent text-book of zoology; to-day I open Mr. J. W. Redway's *Elementary Physical Geography* (1900) and read that the mongoose 'did not lessen the number of cane-rats,' but 'exterminated one or two species of ground-bird.' As in the former note just mentioned, I must beg those who wish to discuss this subject to read Dr. J. E. Duerden's article in *Journal of the Institute of Jamaica*, July, 1896, p. 288.