



Notes on Exhibits

Author(s): Boyd Dawkins

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which at the present time the range of Palæolithic man has been extended over North America, is wrong, and can only lead to erroneous conclusions.

X. *Conclusion.*

In conclusion it only remains for me to say, that, so far as I know, the progress of discovery has not yet bridged over the abyss separating the Palæolithic age of the Pleistocene period, from the Neolithic age of the Prehistoric period, in any part of the world. It is as clearly marked in India and on the Mediterranean shores of Europe, and of Asia and Africa, as it is in Britain. We must look upon mankind, with Prof. Draper, "as one man, always living and incessantly learning," but the intermediate stages, by which he passed from the Palæolithic to the Neolithic stage of civilisation, still remain to be discovered, equally with those links in evolution which connect him with the higher apes.

NOTES *on* EXHIBITS. By Professor BOYD DAWKINS.

SERIES of NEOLITHIC IMPLEMENTS from the Flint-mines of Cissbury, near Worthing, Sussex, illustrating the various stages in the manufacture of implements.

First Group.

- A. Axes begun. Flint-blocks roughly chipped and simulating Palæolithic implements.
- B. One side chipped.
- C. Two sides chipped.
- D. "Mesolithic" series.
- E. Neolithic axe nearly finished, but broken.

Second Group.

- A. Implement roughly blocked out, pointed at end, and simulating a Palæolithic type.
- B. Implement partially chipped=chopper type.
- C. Small axes roughly blocked out.
- D. "Mesolithic" series.
- E. Neolithic axe nearly finished, but broken.
- F. Flakes and splinters.
- G. Hammer stones.

It is clear from the examination of the above series that the Palæolithic and "Mesolithic" forms are merely stages in the manufacture of the true Neolithic types; and further than this, that the Palæolithic form does not necessarily imply the Palæolithic age. The confusion of the Palæolithic form into the Palæolithic age has already led to rash and¹hasty generalisation in the United States, and is likely to impede the progress of Prehistoric Archæology in Europe.

SERIES of PALÆOLITHIC IMPLEMENTS from the Cave-earth in the Cresswell Caves, illustrating the association of forms.

This series shows the association of the rude so-called "Eolithic" implements of the Upper Plateau gravel with well known River-drift hâches of the Amiens and Abbeville types. They were obtained from an undisturbed stratum of cave-earth which was for the most part sealed down with a layer of stalagmite. The manufacture of implements had been carried on in the caves, and the finished implements were, of course, carried off for use, or were merely represented by those which had been broken or lost.

In the making of the higher palæolithic forms, the splinters and other rude fragments of the block must preponderate in the places of manufacture, while the finished implements are carried off for use elsewhere, and are likely to be more numerous where they have been used and lost. I am therefore unable to follow Prof. Prestwich in the view that the rude implements which preponderate over the finished hâches on the surface of the High Plateau gravels, mark an earlier stage of Palæolithic culture than the River-drift stage of the Low Level gravels.

The fact that the implements in question occur only on the surface or a little below the surface of the former, while they are found in the undisturbed stratified deposits of the latter, proves in my opinion that they belong to the time of the accumulation of the latter, and that they are later than the time of the deposit of the former.

The materials out of which the implements have been fashioned, the colouring and the abrasion of their angles and edges, appear to me to be merely local accidents, and unimportant for purposes of classification. The River-drift hunter would naturally use the local materials, and the implements embedded in the surface of the clay-with-flints would naturally be stained. To my mind the whole series is of River-drift age, and represents one stage of human progress.

SERIES of IMPLEMENTS from Trenton, New Jersey, referable to the Red Indians, and illustrating the association of various types.

Group A. Indian Camping Ground.

Various implements and splinters, and finished articles, some of Palæolithic forms found on surface of plateau overlooking the river Delaware, and in association with Indian pottery. They are referable to the Delaware Indians.

Group B.

Implements found in sand of plateau, and of Palæolithic form.

Group C.

Implements from talus of old terrace of the Delaware, some of Palæolithic form.

This series of implements was obtained by me in 1880, when I spent three days in examining the district in company with Dr. Abbott, Dr. Putnam, Prof. Carvill Lewis, and Prof. Haynes. The sand in which Group B occurred seemed to me wind-drifted, and possibly rearranged in modern times.

For comparison with the above the two following specimens are exhibited:—

1. Quartzite "Teshoa," obtained by Dr. Leidy from a Shoshone squaw in Wyoming, who was using it on a hide. It is without any trace of man's handiwork.

2. Rude implement found in Soapstone Quarry worked by the Red Indians.

The question as to the existence of Palæolithic man in America depends upon the view which is taken as to the Palæolithic age of implements similar to those upon the table. Most of the observers—Abbott, Putnam, Lucien Carr, Haynes—who have studied the question on the spot, consider that the rude implements are found at such depths in the sands and gravels, as to indicate that they belong to the time of the deposit of the sands and gravels, and could not have been introduced afterwards. They view the similar implements upon the surface as having been denuded out of the strata below. If this be accepted, man lived in the area of Trenton at a time when the mastodon¹ was inhabiting the forests on the banks of the Delaware. Is it, however, quite certain that any of these implements have been found at Trenton under circumstances that would not admit of their being of later age than the sand and gravel? Looking at the evidence as to a similar deposit in

¹ A tusk was found in Trenton gravel, and is now in the museum in Brunswick City.

Minnesota, recently published by Mr. W. H. Holmes, in my opinion it is not certain. He points out that the uprooting of trees in a forest will disturb the superficial accumulation to a depth which will extend as far down as the larger roots. In this manner he satisfactorily accounts for the distribution of rude worked quartz fragments to a depth of 4 feet and more in the glacial deposits of Little Falls. (The "American Geologist," xi, 238.) This may have been the case at Trenton. The specimens obtained by me from the red sand did not occur under conditions which would render a later introduction impossible.

With regard to the specimens which came from a depth of many feet from the surface and in the gravel, Prof. Shaler is of opinion that they are not artificial, but the result of natural fracture. (The "American Geologist," xi, 183.)

On the other hand the presence of some of these implements in the old camping ground of the Indians along with ordinary Indian "shop refuse," opens up the possibility that the whole series of remains here, as at Little Falls, is really the *débris* of Indian camps. Until we have further evidence it is safe to put the Trenton rude implements to a "suspense account." The traces of Palæolithic man are, as Prof. Shaler observes, conspicuous by their absence from the caverns of Eastern North America, and from the fluvial and lacustrine formations which contain hecatombs of the game which he would have hunted, had he been similar in his mode of life to the Palæolithic hunter in Europe.

The question of his absence or presence will have to be settled by other evidence than that of the rude form of his implements, and by a careful comparison with those of the Red Indian in America rather than with those of the River-drift man in Europe.

DISCUSSION.

Mr. J. ALLEN BROWN, while admitting the great interest of the paper, said he had not heard anything which led him to doubt the conclusions at which he had arrived, as expressed in his paper read before the Institute, to which Prof. Boyd Dawkins had referred; in fact, far from regarding the Professor's remarks as being antagonistic to his views, they appeared in several instances to confirm them. In the paper on the "Continuity of the Palæolithic and Neolithic Periods," he (the speaker) had endeavoured to show that there was a continuity of existence of man in N.W. Europe from the Plateau (or as he had suggested, the Eolithic) period to the latest division of the Stone age, and of course later. That this continuity is shown by the persistence of certain types of stone implements and by the evolution of the well known more

specialised Neolithic from the older generalised types, as well as by the evidence afforded of the gradual extinction of a few animals and the slow retreat of others.

The author's suggestion as to the Palæolithic implements from the Trenton gravels being possibly "Red Indian," he could not accept in the face of the deductions of Dr. C. Abbott and most other American geologists, but if he did so, it would only confirm his conclusions as to the persistence of some Palæolithic types in America into the latest Stone age—a continuity of form which was noticeable also in the series of native stone implements from Tasmania, recently exhibited by their late President, Dr. E. B. Tylor, accompanied with remarks of great interest and value.

It was almost unnecessary for him to say that roughness or rudeness of work was not in itself a test of age—skilled and unskilled workmen had always existed side by side, as shown in any large collection of Drift implements. It was evident from their geological position and forms that the rudely worked stones from Cresswell Crags were not of the same age as those well marked though rude implements from the Plateau Drift discovered by Mr. B. Harrison and described by Professor Prestwich.

As to general form or type there appeared to be indubitable evidence of the occurrence of dominant forms at different periods of the Stone age, and that while the later types were evolved from the earlier ones there were often survivals in later ages of older forms—as an illustration of this he called attention to the Palæolithic axe from which had gradually sprung, as shown by specimens on the table, the axes of intermediate form (Mesolithic) and the hatchets of the so-called Neolithic period.

He had never asserted that the flint implements from the mines of Cissbury were of the Palæolithic age, but had suggested that certain types of instruments survived into the period when those shafts were made, of whatever age they may be, and that such survivals of form indicated a continuity of occupation by man in this country though not necessarily by the same race. As an example of this he pointed to the large nodular pointed implement from Cissbury, on the table, which was chipped only at one end while the butt was unworked, the original crust of the nodule being preserved for comfortable use in the hand: an implement formed in this way being characteristic of the Drift period. The series of axe forms on the table appeared also to confirm his views as to the evolution of the axe which had first been shown by General Pitt Rivers in a series of lectures on "Primitive Warfare" in 1868.¹ Some of these specimens were of intermediate form, between the Drift types and those of Neolithic age, to which he had suggested that the term Mesolithic should be applied.

The flint implements alluded to in his paper on "Continuity" were not only obtained from the surface as mentioned by Professor B. Dawkins, but from chalk rubble and other deposits.

¹ "Journ. Roy. United Service Inst.," vol. xii, No. li.

There was not sufficient time in this discussion to review the most important part of the evidence, *i.e.*, that which was derived from cave deposits and rock shelters in England, France, and Belgium, referred to in his paper. Strong as was the testimony afforded by the English caves, the far richer material available to the French and Belgian geologists had brought forth overwhelming evidence in favour of his (the speaker's) conclusions, which had long since been admitted by many Continental geologists. It was sufficient to say here that he did not found his views on the French cave referred to by the author of the paper before them, or on any single cavern, but on the accumulated evidence of caves and rock shelter, &c., generally both in France and elsewhere.

As to the alleged break between the Palæolithic and so-called Neolithic periods—no physiographical or geological facts could be shown which would sustain such a theory—no cataclysmic or other action had ever been suggested which would produce such a hiatus. There was no evidence of a destructive disaster which included in its action Palæolithic man and spared the thirty-one species of mammalia which Professor Boyd Dawkins himself says survived into the Neolithic epoch, out of the forty-eight which lived in the Quaternary age—the remaining seventeen being accounted for by the migration of twelve and the extinction of five only.

Professor B. Dawkins would hardly say that the later insulation of this country, caused by the incoming of the sea over the land where is now the German Ocean, and the formation of the Straits of Dover, had anything to do with the alleged extinction of Palæolithic man in Britain, as the evidence for continuity of occupation, though not of race, was discernible on both sides of the Channel.

In considering the extinct and retreating fauna in N.W. Europe it should be remembered that there were only five extinct mammals. As the Professor had suggested the urus lived on into Neolithic times—the evidence of the survival of the reindeer in Scotland into that epoch, was strong—and the occurrence of the remains of the mammoth and some other Quaternary animals into the age of the peat-beds had been stated by eminent authorities—these slow changes had always occurred, and with the slow retreat and extinction of certain animals should be noticed the gradual increase of other Quaternary mammals in later Quaternary times: even in the historic period, the bear, wild boar, beaver and wolf had disappeared from this country—the destructive hand of man had been one of the factors in all these later changes, and the changing climate would account for the migration of other creatures: the sheep was a direct introduction from the east, probably in the earliest stage of the Bronze period, or late Stone age.

In conclusion, Mr. J. Allen Brown expressed his great satisfaction that the subject of his paper had been discussed at the Institute, and particularly that so distinguished a geologist as Professor Boyd Dawkins had given his views upon it, though he (the speaker) remained of the same opinion as he had before expressed, *i.e.*, that man had lived continuously in N.W. Europe from the most remote

period we know of, and that his advance in culture could be traced by the slow evolution and increased specialisation of his stone tools and weapons from the generalised primitive forms of the Eolithic (Plateau) and Drift periods into the later stages of the Stone age.

Professor BOYD DAWKINS, in reply, said that Mr. Allen Brown had in his remarks confused continuity of *form* with continuity of *age*, and that there was no evidence in any part of the world of a continuity between the Palæolithic and Neolithic ages. There was a break, both zoological and geographical, between the two in Europe which Mr. Allen Brown had ignored.

Professor Boyd Dawkins had reserved in his paper the general question as to the derivation of the Neolithic culture from the Palæolithic in some part of the world. It had of course been so derived; but we had not yet discovered where that part is. It is probably not in Europe. With regard to the accumulation of flints in the valley bottoms, they were mostly derived from the decomposition of the chalk. In answer to Dr. Garson he stated that the chemical analysis of bones, in his opinion, was no test of age, their preservation being due to local and variable conditions. The calcareous skull he had studied at Harvard University. It is an ordinary Red Indian skull. A perforated disk of wampum in the inside is also ordinary Indian wampum. He doubted its high antiquity.