



ON SOME FLINT IMPLEMENTS FOUND
IN THE GLACIAL DEPOSITS
OF CHESHIRE AND NORTH WALES.

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at University College, 9th December, 1898.

SIR John Evans, in his presidential address to the British Association, at Toronto, in 1897, clearly indicates the lines along which workers in different branches of science may contribute towards the solution of problems connected with early man. He says: "The evidence that man had already appeared upon the earth is afforded by stone implements wrought by his hands, and it falls strictly within the province of the archæologist to judge whether given specimens were so wrought or not; it rests with the geologist to determine their stratigraphical or chronological position; while the palæontologist can pronounce upon the age and character of the associated fauna and flora.

"If left to himself, the archæologist seems too prone to build up theories founded upon form alone, irrespective of geological conditions. The geologist, unaccustomed to archæological details, may readily

fail to see the difference between the operations of nature and those of art, and may be liable to trace the effect of man's handiwork in the chipping, bruising, and wearing which, in all ages, result from natural forces; but the united labours of the two, checked by those of the palæontologist, cannot do otherwise than lead towards sound conclusions."

Hence this meeting, constituted of archæologists, geologists, and biologists, seems admirably fitted to discuss and decide upon the question before us to-night.

No doubt man, in the first instance, would use naturally shaped stones as his weapons; then, finding some of these specially useful, he ultimately learnt to shape rough stones to suit his needs.

Thus the earliest implements would be very rude, and show few, if any, undoubted signs of human workmanship. It would not be till later times, when he had progressed in the arts, that forms would be produced delicately and symmetrically worked.

The curious fact has often been noted that palæolithic implements in Britain have a very restricted distribution. A line drawn from the mouth of the Severn to the Wash roughly divides the palæolith-bearing country to the south from the country to the north, where only implements of later age are found. This line also serves to separate the part of Britain covered by ice in the glacial period, from that which was unglaciated. It has been suggested that these phenomena are related to each other as cause and effect, and that the evidence of palæolithic man in the north was destroyed when the ice from the mountains of Cumberland and South Scotland spread towards the Midlands. Some parts of Yorkshire, protected by the Pennine Chain, escaped glaciation, and a

careful search in such areas might be fruitful in evidence, either for or against the theory.

Palæoliths have been described from Bridlington in Yorkshire, and from the old river gravels of the River Rea at Saltley, Warwickshire.¹ It thus becomes highly desirable that the northern part of Britain should be more carefully investigated, with a view to finding traces of early man.

If man really did exist in North Britain in pre-glacial times, we should naturally expect to find evidences of his work in glacial deposits themselves. It seems almost a hopeless task to examine the stones contained in mingled confusion in the boulder clays and sands, and expect to find worked implements. In the very nature of things they would be of the rudest description, and we hardly dare to hope that remains of contemporaneous fauna and flora would be preserved. Form alone is left as the only touchstone we can employ, and the greatest caution is desirable in discriminating between the conscious shaping by man and the blind effects of Nature.

Flints are decidedly rare in our local glacial deposits. When found, they are mostly contained along with other erratics, in the sands and gravels of glacial age, but they may occasionally be met with in boulder clay.

Many such patches of sand and gravel occur in Cheshire and North Wales. The flints exhibited and described are from these deposits.

Sir John Evans, K.C.B., F.R.S., Dr. Henry Hicks, F.R.S., and Mr. W. J. Lewis-Abbott, F.G.S., have kindly examined some of the flints collected from Prenton, Spital, and Moel Tryfaen.

Regarding No. 7, Sir John Evans remarks: "No. 7 may be artificial. Of the others, Nos. 2 and 3 look the most possible; but the signs are

¹ Evans' *Ancient Stone Implements*, second edition, pp. 578 and 581.

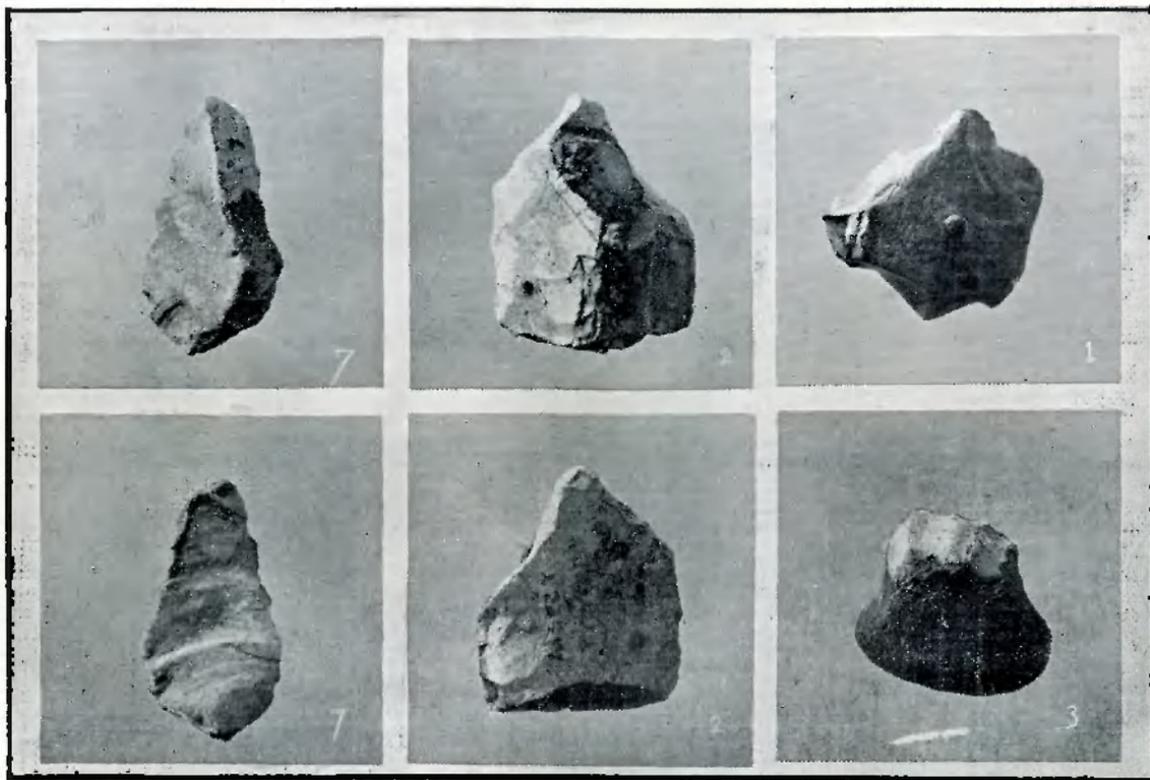
not such as can confidently be relied on. If man existed in pre-glacial times in Britain, it is, I think, probable that his tools would have been of larger proportions."

Mr. W. J. Lewis-Abbott has not only furnished me with an exhaustive report on the specimens submitted to him, but he has very kindly sent a series of implements from his own collection, and that of Mr. B. Harrison, of Igtham, for comparison with the flints found in our glacial deposits. The report I am tempted to give in full, as regards specimens Nos. 1, 3, 2, and 7.

REPORT BY MR. W. J. LEWIS-ABBOTT, F.G.S.

"NO. 1.—This is a small frost-split pebble; the flat side is a natural frost fracture, but antedates the removals from the other side. The latter was originally the outside of the pebble, the natural crust of which remains on all parts except where it has been removed by chipping. The top left edge has been flaked, probably by pressure such as would result from using a flint for the purpose of scraping a very hard substance. The shape of the scraping edge in relation to the crusted outline, would suggest that it (the straight incurved scraping edge) was *shaped* by flaking before being used as a scraper. It shows a different pattern of surface from the contused edges caused by heavy weights passing over a fixed flint; at the same time it is not free struck flaking such as we see on the other side of the flint, such as usually characterises man's bold work, and possibly the top left edge may have been used as a scraper. I can produce similar scraping edges from neolithic positions out of the way of glacial or river agency, which no one would doubt as being man's work.

"No. 3 is also a frost-split pebble; about two-thirds of the edge has been chipped from the flat side, in a way that man has done it throughout the



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FLINT IMPLEMENTS FOUND IN CHESHIRE AND NORTH WALES.

stone ages to modern times. I can duplicate this hundreds of times over, from the plateaux and neolithic stations. I should not, however, like to say that nature, under a series of fortuitous coincidences, could not produce this outline, as it is the result of only some half-dozen blows, or pushes, and should not accept it as evidence of pre-glacial man without further, and very much stronger, evidence, although I think it highly probable that it represents the work of man, and, further, the edge bears evidence of use.

“No. 2 is one of which we can speak with far more assurance, and with far less risk of under-estimating the imitative powers of natural forces. I take the broadest side to be the result of flaking, from the cleanness of the fracture, with its accompanying high patination and conchoidal marking, forming the base, or broadest side, of an originally triangular section “flake,” such as man always made throughout the stone ages, but are more particularly found in certain localities, such as Pressigny. The part of the other two of the three sides not re-worked shows a similar clean cut, which always characterises man’s work in a fairly good flint. There was an original crack in the flint, running obliquely along and across the dorsal ridge of the “flake,” which greatly interfered with successful working. A fairly symmetrical point, however, was put on with an immense amount of pains, necessitating the removal of nearly 100 chips or flakes, resulting in a form I could duplicate many times over. The chipping is continued from the point down the side, not as a single row of haphazard undirected chance knocks, but in several well-marked, intelligently ordered rows, or zones, which would immediately be recognised by anyone who had spent a few years in the artificial working of flint and other hard stones. The importance of these three or more zones is, that they are

maintained from the point round the side, showing—

“*Firstly*, that the same kind of “hammer” point was used all through, thereby differing from the result of natural agencies, where we should get now a broad point of contact now a narrow one, now contact with a large stone now with a small one, now a light tap and now a heavy blow, now the outline would be effected by a frost nip and now by starchy fissure.

“*Secondly*, the blows were all about equal in power, and so regulated as to obtain and maintain the required shape.

“*Thirdly*, during the process of manufacture or the shaping of the flint, it was held in the same plane, but turned from point to side, as shown by the truncation of the respective flakes and the normals of the blows.

“*Fourthly*, with the operations on each zone, the angle of the flint to the vertical in the left hand was altered, so that the flakes removed at each succeeding row of blows truncated those immediately preceding them; altogether forming a series of intelligently directed operations, which assuredly everyone would admit to be beyond the ever-varying chance knocks and nips of natural agencies. All the flakes removed are clean and sharp, showing well-defined pits of percussion, and characteristic conchoidal rippings—impossibilities to frost and crushings—and were free struck while the flint was firmly and correctly held, and turned in the left hand, now in one plane and now in another, as was necessary in the obtaining of the required shape. Other angles or undesirable corners of the flint were also removed by free blows, which tended to bring the implement into the desired shape. It is just possible, however, that the crack at the point, which naturally interfered with the working of the flint, might have made the operator dissatisfied with his work. The frost has since nipped

out several small pieces from the point terminating with this crack, and thus somewhat spoiled the original symmetry and useability of the implement, and affected the shape of the point. Every one of the chips removed, numbering certainly very much more than a hundred, were of the same date, which antedates the imbedment of the flint in the boulder clay matrix. Had these chippings been the result of the vicissitudes of boulder clay formation, in the nature of things they would have been of different dates. Heavy deposits of iron oxide now exist in the crevices, and dendritic manganese on the facets. It would have been impossible for them all to have been effected at one time, and then for the flints and operations to have entered into an eternal rest.

“ Since its original shaping the flint has been subject to much pressure, which has shown itself upon the dorsal ridge of the implement, and the upward projecting parts; all the other far more delicate and acute angles have escaped this crushing action.

“ There is not a particle of unworked original surface of the flint left; all has been removed to bring the implement into its desired shape. Not a single frost flake or starchy facet contributes to the outline, which might lead us to a wrong conclusion with regard to its origin, the power which commenced the working and intelligently continued it, maintained the work single-handed, without the slightest assistance from any other till the implement was completed; and, so far as we can see, since that time all that natural forces have done is to disfigure man's handiwork. There is a total absence of crushing, bruising, and contusions, which we always find in flints which owe their outline to natural forces, especially those connected with the boulder clay. Nor is there a single frost flake upon the implement which has in any way

contributed to the symmetry of it, and in so doing caused the flint to simulate man's work. On the other hand, the small frost nippings at the point really disfigure the implement, and cause it to appear less like the work of an intelligent being. So that instead of natural agencies bringing this flint into a shape which would lead us to mistake a naturally formed stone for man's work, what little they have done tends rather in the opposite direction.

“With reference to the class of implement to which this specimen belongs, they commenced in plateau times, and lasted to the end of the stone age. But this particular type, especially in detail of work, belongs essentially to the group I have called transitional forms, which mark the close of the plateaulithic, and the incoming of the palæolithic ages. It is a double incurved point, approximately the most perfect reversely worked drills, and may have been used either for splitting bones for their marrow, or stripping them of their meat. An experiment with this tool in this last operation would give most surprising results.

“In the face of all these facts and features, which point to the form and chipping of the implement being the result of intelligently and even somewhat skilfully directed operations, the total absence of frost action, and the impossibilities of the forces of nature to produce results here obtained, we must either accept this implement as man's work, or reject all pre-historic stone implements altogether, as I have heard people do, as being Satan's masterpiece counterfeits of modern flint weapons.

“No. 7 is a different thing altogether. It is a medium-ridged flake, a form well known to the merest tyro. In its production a ridge is left upon the core by the removal of two or three flakes, then by a dexterous blow the ‘flake’ is removed, thus

making a low flat triangular section 'flake,' which, from the approximation of the flake-face and the ridge-face, results in a form of a more or less lanceolate shape, suitable for either arrow- or spear-head. It is quite within the realms of possibility for such spear-head shaped flints to be the result of natural forces pure and simple, especially upon sea-beaches, where rounded stones are pitched with some degree of violence against each other. But man is not always satisfied with these mere simple flakes; it is only very rarely that a sharp point or bilateral symmetry is thus obtained, and the resulting edge is far too acute to be lasting; and to effect these, man has to resort to secondary working, or trimming and shaping of the edge of the 'flake,' until the implement acquires the desired outline and the strength of edge. Although it is true that after a flake has been detached by natural agencies, the sharp edges may be battered away by now a crushing weight and now a flying pebble, removing now a big chip and now small ones, now by clear cut fracture and now by contusion, now on one side and now on the other, yet it is this secondary trimming or working which immediately separates the skilfully imitative work of blind nature from the intelligent work of man.

"When we examine this implement, we immediately notice the intelligence, and singleness, and identity of force, and unity of action, by which it was secondarily trimmed and brought into the desired shape; with edges not such as nature puts on, but those that delighted early man, and experience had taught him would both cut best and last longest. We can see him attack the promontories, with several zones of working when needs require; watch him pass over the weak bays, of which unkindly nature would have been sure to have taken advantage; and by the normals of the pits of percussion we can see how he held the flake

and turned it round in his left hand, until it acquired the shape which suited his need, and, let us also hope, satisfies modern criticism."

From the above report we see the spirit in which Mr. Abbott has attacked the question. Some of the specimens I sent to him he rejected altogether; others, although bearing most striking resemblances to well-known types, were also condemned, as they did not to a certainty possess the hall-mark which characterises man's work. No point has been claimed for man which could possibly be awarded to natural forces.

If any of the flints found in our glacial deposits are accepted as undoubtedly the work of man, it follows that man existed in pre-glacial times. It must be remembered, however, that though Cave Man might be autochthonous, his remains found in glacial deposits have been transported from a distance, and the finding of an implement in a certain place is no certain proof that the man who made and used it lived even within a reasonable distance from the place.

The boulders associated with the flints, without exception, come from the north. Among the thousands and tens of thousands of erratics which occur in our Lancashire and Cheshire boulder clays, no exception has yet been established. The probability, then, is strong that the flints came from the north. Unless some concealed outcrop of chalk occurs somewhere in the Irish Sea, the only source of the flints is Antrim. They, as a rule, possess the physical characters peculiar to Antrim flints.

Now, it remains to describe the beds and circumstances in which the flints were found.

NO. I. SPITAL SANDPIT.

Extensive excavations made in a field near the high road to Thornton Hough show a great develop-

ment of fine clean sand overlaid by 3 to 5 feet of boulder clay. The sands are false bedded, and in places divided by fine layers of clay, which render the miniature faulting which the section displays very evident.

A considerable amount of black carbonaceous matter, resembling charcoal, occurs at various horizons. Sometimes it is powdery, and occurs in lenticular patches; at other times branched stick-like forms can be collected. It undoubtedly results from the decay of vegetable matter, but whether it has been burnt into a charcoal is not clear.

The sand contains patches of gravel and rolled clayballs; some of the latter are 8 inches or more in diameter. Near the middle of the section the gravels thicken, and a spur has been left by the workmen, standing out like a wall. In this gravel most of the flints are found. No. 1 was found in the cliff, 5 feet from the surface. It was buried 2 feet in sand, and this was overlaid by 3 feet of undisturbed boulder clay. The boulder clay at the place was overhanging slightly, so that it would be impossible for the flint to have slipped from the surface and embedded itself in the sand. I am indebted to Mr. E. W. Cox for bringing this interesting section under my notice.

NO. 7. PRENTON, NEAR BIRKENHEAD.

Recent excavations made to obtain sand for building purposes have exposed glacial sands and gravels on the roadside near Mount House. Soft Bunter sandstone is seen at the south end of the section. Its surface is irregular and slopes rapidly, disappearing towards the north. The sands and gravels overlying the Bunter thicken correspondingly towards the north, so that the top of the section is almost level. The sand grains are coated with a fine muddy substance, which in places almost approaches a clay. A layer of pebbles, in which

several flints have been found, separates the Bunter from the sands above, and other pebbles occur sporadically in the sand itself. The erratics consist principally of Lake District and Scottish rocks, angular pieces of local sandstone, rolled clay balls, and a few fragmentary shells.

No. 7 was found in the sand at the north end of the section, and 3 feet from the surface. Several neolithic implements were found lying on the surface of the field adjoining.

NOS. 2 AND 3. MOEL TRYFAEN, NORTH WALES.

In November last I accompanied several members of a committee appointed by the British Association to investigate the shell-bearing sands and gravel on Moel Tryfaen. From these beds I obtained the two flints described by Mr. Abbott.

The importance of these finds lies chiefly in the fact that they were found in direct association with normal glacial deposits. They are as truly boulders as the granites and andesites lying side by side with them, and the form they now possess must have been produced in pre-glacial times.

When so cautious a worker as Sir J. Evans admits the high probability of the flints being shaped by man, and so experienced an archæologist as Mr. Lewis-Abbott not only expresses an opinion favourable to such a view, but gives weighty and conclusive reasons to support his deductions, we cannot help feeling that the glacial deposits lying at our very doors have acquired a new significance, and unceasing efforts should be made by local geologists and archæologists to discover other records of early man.

