

II.

MESOLITHIC IMPLEMENTS FROM AYRSHIRE.

BY A. D. LACAILLE, F.S.A. SCOT.

One mile south of Irvine, and immediately above the point where the river of that name makes its big bend northward as it approaches the town, is an open tract known as Shewalton Moor whose general elevation is about 50 feet.¹ The moor is divided by a road leading to Drybridge Station from the Ayr-Irvine turnpike. On either side of the small thoroughfare is an expanse of sandhills spreading for a considerable distance. Parts of the sands are flat, however, and in such places are covered with a poor vegetation consisting of small shrubs, tussocks of coarse grass and heather. The growth has, by gradual encroachment westward, stabilised an extensive area of the sand, which is still in many parts constantly shifting and wind-blown.

In certain respects the Shewalton Sands resemble those of Glenluce, Wigtownshire, and the Culbin Sands, Morayshire. Like these vast expanses, the Ayrshire waste, in common with the East Lothian Sands, was the site of important prehistoric industries. Here have been found many stone implements as well as other relics of antiquity.

To two persons credit is due for having made assiduous, but incompletely recorded, search for what the sands could yield. The late Mr Joseph Downs of Irvine brought together a good collection of prehistoric flints from here. In his examinations of the ground he was sometimes accompanied by Mr John Smith, who also searched the place independently. Mr Smith, in his *Prehistoric Man in Ayrshire*, p. 111, mentions the find of prehistoric implements here, and from his description of some of these it seems that he had discovered pygmy tools. Mr Downs, too, on one very limited area, found a number made of a fine quality of light grey flint.

I have had the place under observation for some years, and have carefully studied the effect of the varying winds upon the shifting masses of sand. While frequently unrewarded in my scrutiny of the surface, I have in time succeeded in bringing together a fair collection of stone implements from the moor. On one site was found a number with certain features indicating that some of the implements

¹ On the left bank of the river, at the great bend and below the sands, fragments of a whale skeleton, lying on a bed of peat, were exposed by the erosion of the river. I have examined the steep bank from time to time after heavy floods and have found at its base large numbers of shells of sub-Arctic mollusca and also small branches of now easily frangible white coral.

are quite different from any so far found in Scotland or even in the British Isles.

Attracted by the notice given to the few known (or recorded) Scottish implements showing Tardenoisian facies,¹ I showed some pieces I had found to Mr Graham Callander, the author of the paper on the Dryburgh Mains collection of microliths acquired by the National Museum in 1926.² After studying comparative types we agreed that the small irregularly shaped scraper of clear flint, dressed along both sides and possessed of a distinct "enchoche" (No. 61, fig. 2),³ resembled certain tools from French and other upper-Palæolithic floors.

Concentrating after these conversations on a particular site, I was able, by the autumn of 1928, to present a goodly selection of implements, many of early type, to the National Museum. It is now my purpose to refer in some detail to these artifacts from Ayrshire. The practically complete series is illustrated in these pages, and the most noteworthy examples will be considered.

IMPLEMENTS OF GEOMETRICAL SHAPES.

In a representative collection of Tardenoisian implements certain classes of geometrical forms constantly appear.

Triangles, represented in the series by five implements, Nos. 1, 2, and 3, fig. 1, of brown-grey flint, bear fine workmanship. No. 1 has seen much service, even to its becoming slightly hollowed out by wear near the centre. This implement has the feature of being dressed over all its surface, whereas the two others are delicately pressure-trimmed only on the longest edge. The three are of typical scalene triangular form.

No. 4, fig. 1, of jasper, and apparently a trapezoid, I take, nevertheless, to be a comparatively large triangle, part of which is broken off. No. 5, in the same figure, of clear grey flint (included here for convenience with the triangles), is probably an incomplete implement, the lower part having been broken across. While two of its sides are straight, meeting at right angles, the third is curved, and well trimmed by battering.

Representatives of the *trapezium* are Nos. 6, 7, and 8, fig. 1, of brown, yellow, and yellowish flint respectively. These are important because they are the first of the kind to be recorded from a Scottish

¹ (a) The implements described by Mr J. M. Corrie, F.S.A.Scot., in the *Proceedings*, vol. 1. pp. 307-13.

(b) The series of Mr Ludovic M'L. Mann, F.S.A.Scot., epitomised in the *Historical Catalogue* of the Scottish Exhibition, Glasgow, 1911, p. 831.

(c) Mr John Smith's reference to examples of a "pygmy" industry at Shewalton, *Prehistoric Man in Ayrshire*, p. 111.

² *Proceedings*, vol. lxi. pp. 318-27.

³ *Ut infra*, p. 43.

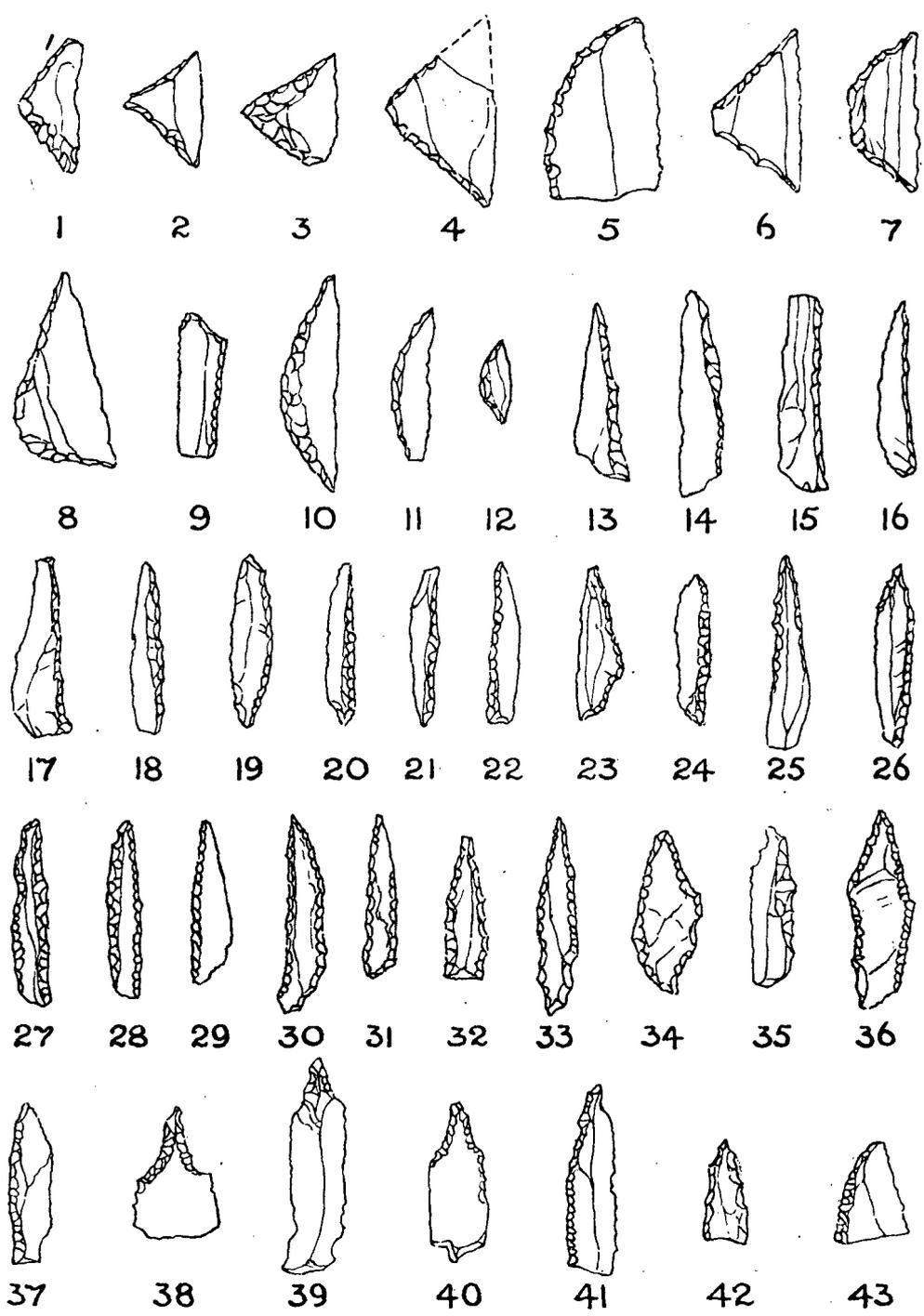


Fig. 1. Mesolithic Flint Implements from Shewan, Ayrshire. (†.)

site.¹ Implements of this shape, although rare, do occur in industries earlier than the Tardenoisian; they are not common even in the phase of the so-called geometrically shaped stone tool.

To what purpose these pieces were put can only be surmised. Probably forerunners of what developed abroad into the tranchet of the Campignian industry, they may have been used as little hatchets, but the trapezium seems more definitely to be a precursor of the tranchet. From their size it is obvious these implements could only have served to cut bone or wood of small section.

No. 9, fig. 1, of yellowish flint, is trapezoidal, and in its narrow form and small size it does not lack parallels, either in Scotland (as can now be shown), or elsewhere. Practically identical implements are illustrated in the paper dealing with the first set of characteristic Tardenoisian artifacts to find a place in the National Museum.²

It has been suggested that a series of these small trapezoidal implements was inserted in grooves along harpoon-heads to act as barbs for the weapons. In support of this conjecture is the remarkable find of Mr Francis Buckley, who discovered under layers of sand and peat on White Hill, South Pennines, thirty-five of these small pieces, uniform in pattern, arranged in a line at short intervals. The opinion formed was that the flints had survived a shaft long perished.³ A more satisfactory solution can scarcely be arrived at, for there are in support of it the grooved harpoon-heads provided with small flint barbs from Danish sites.⁴

Several of Mr Mann's Scottish pygmies were found within a few inches of each other, and they were recorded in 1911 as having probably been teeth of a composite tool.⁵ Ethnographical specimens of wooden shafts with several small stone cutting-edges set into grooves furnish parallels which have interested me when studying various comparative collections, notably examples in the cases of the Horniman Museum at Forest Hill, London, S.E.

¹ On account of its short base, I had hesitated to place No. 6 among the trapezoidal implements. I find, however, that what, at first sight, seemed but the breaking-off of the point of a triangular tool, bears a patination uniform with the rest of the flint. Accordingly, this flint implement is included with the trapezia. Further confirmation that this form is intended is furnished by comparison with a number of small tranchets described and illustrated in 1908 by Monsieur Ch. Schleicher, F.S.A.Scot. He refers to several diminutive examples, hardly bigger than the specimen under mention. Some of these are pointed triangles, and a few are perfect little trapezia whose bases are as short as in this Scottish example. Vide: "Tranchets néolithiques," *Rapport du Quatrième Congrès Préhistorique de France*, Session de Chambéry, 1908, fig. 1, p. 2.

² *Proceedings*, vol. lxi. p. 319, fig. 1, Nos. 30 and 32 to 34.

³ *A Guide to the Antiquities of the Stone Age, British Museum*, 3rd ed., p. 89.

⁴ One example is illustrated in the *British Museum Guide*; *cit. supra*, fig. 169, p. 155.

⁵ *Historical Catalogue*, Scottish Exhibition, Glasgow, 1911, p. 831.

If the diminutive irregular trapezium be only a blade, there seems to be no reason for the intentional sloping back or forward of one or both sides. But fixed firmly into a shaft, an implement, when so shaped, would only tend to become more secure when thrust into the body of a tough-skinned living creature.¹

The *crests*, Nos. 10, 11, and 12, fig. 1, are typically Tardenoisian. In the British Isles crescents have already been noted from localities in Scotland and in numbers south of the Border. Characterising these instruments is the sharp edge thickening back to the longitudinally curved *dos abattu* rounded across its width and carefully dressed, no doubt to provide a good rest for the user's finger.

To be noted is the small size of No. 12, fig. 1. The specimen is of grey flint, unlike the two others of brown-grey material. In the example furnished by the largest crescent, No. 10, fig. 1, there is a certain resemblance to some of the minutely pressure-dressed implements of the Solutrean industry. Similar ones occur on Chwalogobovitzian (Poland), and on some Tardenoisian floors in Picardy.²

The purpose of these small crescentic implements is not clear, but it is certain that they do not differ greatly from the triangles and trapezoids, and, like these, were no doubt used for delicate cutting.

POINTS.

Implements with needle-like points are the most numerous in the various types in the Ayrshire collection. They may be usefully divided into distinct lots, one consisting of a series of twelve tools, still complete, or wanting only the sharp end. Some are patinated on the carefully worked *dos abattu*—the characteristic feature of workmanship in this interesting category.

The first set, dressed on one side only, illustrated as Nos. 13 to 24,

¹ When this was discussed some years ago, it was urged as unreasonable that so much labour should have been expended in the making of such delicate implements which might be lost after little use. But may it not also be said that those who fashioned such tools were sufficiently adept in the rapid manufacture of them? Further, it cannot be doubted that if these small flints were used in the make-up of a harpoon, the weapon itself could not have been the product of an inexpert workman. The loss of a harpoon could not have been a frequent occurrence. The primitive people who throw the harpoon at the present day are sufficiently skilled in its use not to suffer often from such a contretemps. It must, then, be inferred that in prehistoric times men, greatly depending on such weapons, were expert in managing them. Moreover, the harpoon, when used for prey inhabiting deep or swift-flowing water, would not be employed without a long cord. It is more likely that harpoons of the prehistoric epochs were only used for quarry living in relatively shallow water. The haunts of the creatures inhabiting that could be reached by easy wading if not attacked from the bank; in spearing fish there was little risk of damaging or losing the means of capture.

² Letter from Monsieur l'Abbé H. Breuil to the writer, dated Paris, 7th February 1929.

fig. 1, has been fashioned of brown-grey flint, with the exception of the last numbered, which is of chalcedony.

To be distinguished from the foregoing are eight points, Nos. 25 to 32, fig. 1. Of brown-grey flint, they show partial or entire secondary dressing on both sides, and are all *à dos abattu*. A ninth and similar implement, No. 33, fig. 1, has both sides battered full length, the flakes on both sides having been struck from opposite faces.

A point of chalcedony, No. 34, fig. 1, is different again, for, although dressed on both sides, its sharp extremity is like a beak. No. 35, fig. 1, also of chalcedony, resembles the last in terminating similarly, but with this difference, that it is only dressed on one side.

Recalling the *pointe à cran* are Nos. 36 and 37, fig. 1. The shoulder, admittedly, is not pronounced, but the tendency is towards this peculiarity. Of these, No. 36 is dressed on both sides, but the second, No. 37, has only received secondary treatment on one side; it has also the feature of being *à dos abattu*.

Positive assertion as to the use of these delicate little implements is not possible, but their shape indicates that they would be particularly well adapted to the piercing of skins and fibrous materials. Comparative ethnography helps to explain some prehistoric problems, and a suggestion made by Mr John Smith with reference to his Ayrshire specimens may be recalled. Mr Smith thought that these small implements might have been used for tattooing,¹ but it is not certain that cutaneous decoration of the body was ever practised in Scotland in prehistoric times. Howbeit, I have seen in the Wellcome Historical Medical Museum, London, a series of small pointed crescents and needle-like implements of chert, quartz, and quartzite from Australia. These had been used as surgical instruments by some aborigines of that continent for making small incisions in the skin of living human beings.²

As far back as 1893, Monsieur de Pierpont, referring to delicately pointed implements from Belgian sites, gave it as his opinion, that they had served in tattooing, scarification, or even bleeding. In some places, colouring materials, such as oligist and red-ochre, were found associated with them, thus strongly supporting the theory of tattooing.³ It may not be unreasonable, therefore, to put forward the suggestion that some of the small sharp-pointed implements found at the Ayrshire site were put to some such use.

¹ *Prehistoric Man in Ayrshire*, p. 111.

² I am led to believe that the primitive peoples of Australia still use such implements in their rude surgery and scarring of the body. Lord Avebury, in his *Prehistoric Times*, p. 427, gives a graphic description of the scarring process with a small stone implement.

³ *Congrès International d'Anthropologie et d'Archéologie Préhistorique, Compte Rendu de la XIV^e Session*, Genève, 1912, p. 307.

Points of Neolithic and Bronze Age workmanship have been got in Scotland, and these may have served for making surgical cuts. The workmanship, however, on the specimens of these periods is not the same as that expended on the pieces at present under review. While not nearly so finely dressed as the Scottish implements illustrated herein, the Australian ones possess, nevertheless, the battered back with a studied but crude technique.

In the collection are four *borers*, Nos. 38 to 41, fig. 1 (38 and 39 of brown-grey and 40 of yellow flint). These are typical of the tools which developed from the large and cumbersome *tarauts* of the Lower Palæolithic.¹ These three implements are well finished, with their point projecting from the centre of the body of the tool. No. 41, fig. 1, of brown flint, is an implement with the actual boring portion short and formed by a dressed extension of one of the long sides. Opposite is a narrow, thin trimmed part, shouldered where it broadens downwards into the body.

In numerous works on the Tardenoisian industries, Commandant Octobon has described and illustrated a number of borers in the *Bulletin de la Société Préhistorique Française*. But in the many series to which he refers, it is rare to find any borers with thick points. As regards appearance alone, the piercing implements found at Shewalton find their nearest parallels in some French Neolithic sites.²

BLADES.

Mr Callander, treating of the collection of Tardenoisian implements from the Borders, draws attention to the absence of certain tools occurring in the Neolithic. He includes knives and saws in this generalisation.³ Among the pieces referred to in the present notice, there are some blades and two saws.

Tardenoisian blades are not uncommon in France, where certain floors have yielded varieties. Pygmy knives have also been collected in England by Mr Leslie Armstrong, Mr Francis Buckley, and Mr Lewis Abbott. Miss Paterson, too, found small knives of Tardenoisian appearance in the Deeside region.⁴

From Shewalton are five distinct types. No. 42 (of dark flint) and No. 43 (of light honey-coloured flint), fig. 1, are possessed of only the

¹ These did not reach their full development until the Solutré culture. Persisting later in fine execution, many beautiful examples are found in succeeding epochs. In Neolithic times the borer becomes scarce and its workmanship is no longer the delicate one of the earlier craftsman, yet, in type, the survival is apparent.

² G. et A. de Mortillet, *Musée Préhistorique*, planche xlii., Nos. 411 to 414, 416, and 420.

³ *Proceedings*, vol. xli. pp. 321-2.

⁴ *Man*, vol. xiii. No. 58, pp. 103-5.

merest trimming. Of somewhat more elaborate workmanship is a long blade of brown-grey flint, No. 44, fig. 2. Patinated on one face, it bears flaking along one edge. Similar dressing is to be observed on the broad tool, No. 45, fig. 2, of grey-brown flint.

Next is a series of five, comprising comparatively large wide blades, Nos. 46 to 50, fig. 2. All are dressed along both edges. The first three of this lot are of brown-grey; the last in order, of clear flint, terminates at one end in a point.

Fourth in type, and represented by Nos. 51 to 54, fig. 2, are blades *à dos abattu*, with the distinctive and delicate secondary working on the convex back. No. 51 is conspicuous by its slender and tapering shape, and No. 54 is clearly Palæolithic in type, recalling the Solutrean by its minute pressure-dressing of the back.

The fifth and last of the series of blades consists of four examples dressed on one side only (and that side curved). Numbered as 55 to 58, fig. 2, the implements are shown with the foregoing in the same figure. They are paired off respectively as of grey and yellow flint.

The large size of some of the blades, in comparison with the small associated implements, calls for comment. Close study of many collections of Tardenoisian artifacts from Continental sites has shown me that there is present a proportion of large or fairly big blades and also other tools which, judging from their size alone, might be ascribed to Neolithic fashioning. I infer from this that some of the series exhibited at home have been made up of the smaller tools, and that any large pieces found at or near the same place have been segregated as Neolithic. Close scrutiny of the dressing of all implements must therefore be of first importance when the Tardenoisian appearance has been observed in tools at a particular site.

No. 59, fig. 2, is a saw of brownish flint whose serrated edge extends along part only of the side where the tiny teeth have been made. For nearly its full length, the side opposite is dressed, either with the object of providing a good finger-rest or for firm hafting. It may be, of course, that originally this specimen was longer, as the clean nature of the break at the lower part of the flint suggests. If this were indeed so, the saw is all the more interesting, being possibly the portion of a comparatively large implement of a class common enough in Neolithic collections. Found, however, with microliths, the workmanship upon it is different from the ordinary *retouches* identified with late stone-craft.

No. 60, fig. 2, is a flake of grey-brown flint with some chipping along one side. Probably a small saw, it has the added feature of bearing secondary dressing at the lower part opposite the serrations.

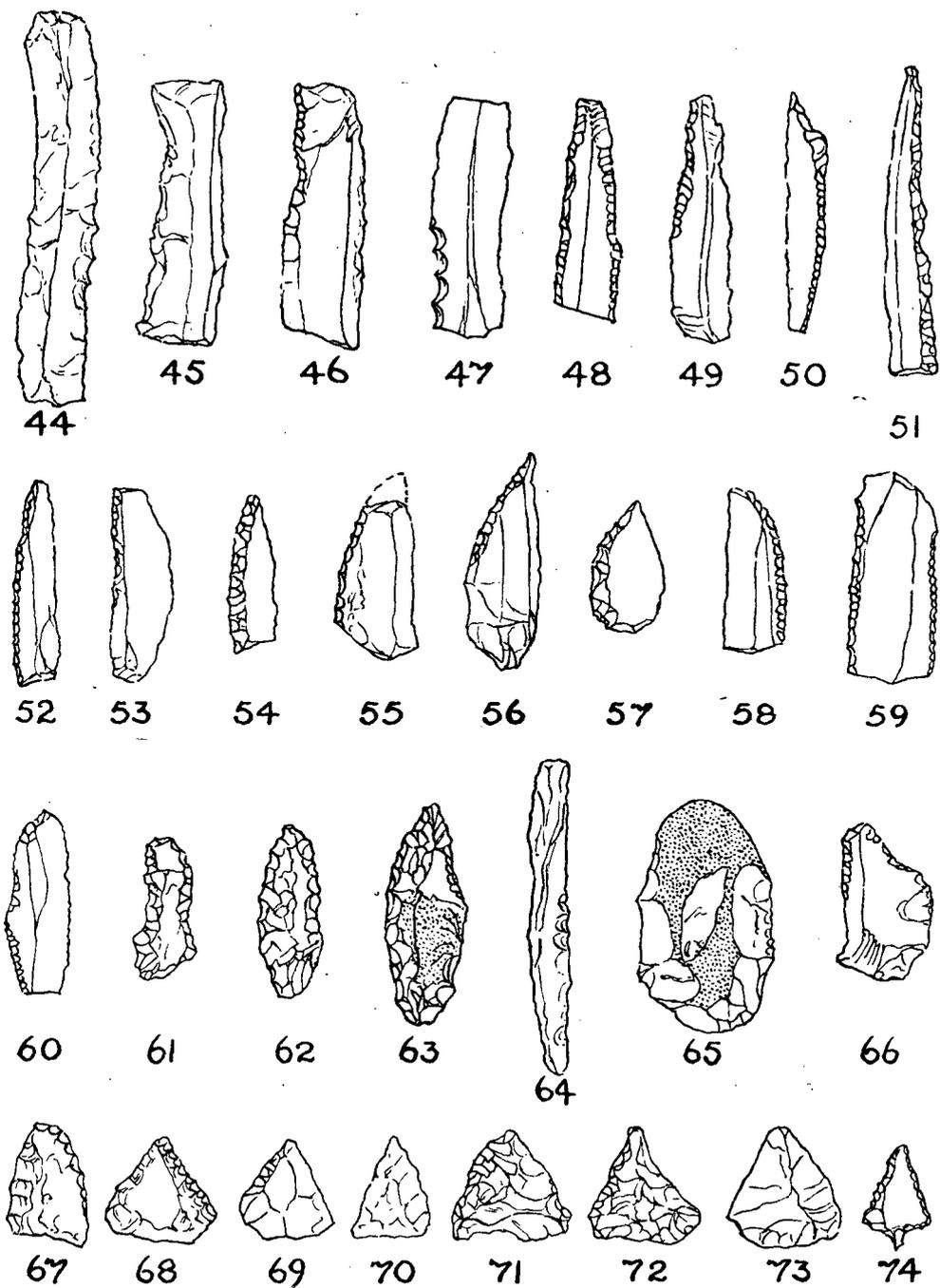


Fig. 2. Mesolithic Flint Implements from Shewalton, Ayrshire. (†.)

VARIOUS IMPLEMENTS.

In common with Tardenoisian floors which have yielded a variety of implements, Shewalton has produced a few odd-shaped flints. It was the find of No. 61, fig. 2, which attracted my attention to one site.¹ This tool is a small scraper of light flint, and its distinguishing feature is a small hollow carefully dressed out of the side. Opposite is a battered convex back. Nos. 62 and 63 on the same figure may aptly be termed slug-like, but the exact nature of these implements can only be conjectured; they may, perhaps, be placed in the category of fabricators. The first of these is of brown-grey flint, and its neighbour, bearing a considerable part of the white cortex at its lower end, is of grey flint.

A thin narrow fabricator of mottled light grey flint, delicately worked, was got, and this singular implement deserves special remark, as it is, so far as I have noticed from comparisons, without parallel except in the Aurignacian and Magdalenian. Not differing much in form from larger examples of the kind, its small size would, no doubt, exclude the possibility that it had been a strike-a-light—a theory which has been advanced in regard to a number of so-called fabricators. This (No. 64, fig. 2) carefully dressed tool could not have been easily managed except by a skilled flint-worker. Its worked part and patination give no indication whatever of small chips having been removed at the tips by striking upon another surface.

No. 65, fig. 2, having the appearance of being one half of a light-brown corticed pebble of clear flint with some slight side flaking, bears minute dressing at the end even to the extreme edge on either side of the point of percussion. Thus worked, the extremity forms a sharp-edged round-ended scraper. The lower part of the stone is so shaped naturally that it is well adapted to the grip of the thumb and finger.

Because it shows the same type of distinct delicate trimming along all edges except at its base, I take this opportunity of including a small glossy brown worked flint I picked up a little to the north-west of the mouth of the River Irvine, at one of the few now accessible parts of the Ardeer Sands. This neat little tool, No. 66, fig. 2, is fashioned from a chip with flat surface underneath, but showing the bulb of percussion. By its trimming it affords at the same time a straight scraping edge on one side, a semicircular one on the other, and by a carefully made "encoche" or notch underneath, a useful spokeshave cutting-edge is provided. The straight secondarily worked edge also gives a good finger-rest when the

¹ *Ut supra*, p. 35.

round arris is employed. The rounded and straight edges do not meet abruptly, the implement being so shaped that a sort of wide projection extends from the body of the flint. A fourth use may therefore be made of this artifact, namely, that of a kind of rimer for widening holes.

ARROW-HEADS.

Very remarkable in this Ayrshire series is a number of arrow-heads, all the more outstanding as there has been no previous evidence in Scotland of the existence of such pre-Neolithic weapon-points. Differing in workmanship from Neolithic arrow-heads, the specimens enumerated here are similar in their delicate finish to many of the foregoing implements.

Nos. 67, 68, and 69, fig. 2, are of clear flint, and, while not worked elaborately, their shape is quite unmistakable. Despite the material from which it has been fashioned, No. 70, fig. 2, of quartz, is a better example of its class than its three preceding companions.

Nos. 71 and 72, fig. 2, are of brown-grey flint, and another arrow-head, No. 73, is of white flint. The last specimen in this trio has little out of the ordinary in the trimming; but the two in order before it, although somewhat irregularly shaped, are exceedingly well dressed all over their surfaces—a feature which would indicate late technique.

All the foregoing are large compared with No. 74 in fig. 2. Unbarbed, but furnished with a tiny stem, this arrow-head of brown-grey flint might easily be assigned to a late prehistoric phase. But it possesses two salient features assigning the piece to a distinct period and that contemporary with the other associated implements. In the first place, it will be seen that it is prepared from a chip struck from the yellowish cortex of the flint. Secondly, and very important, the manner in which it has been worked indicates certain essential characteristics. The flat faces, upper and under, are as free from working as when the arrow-head shape was produced from the chip, but the edges and those of the small stem are minutely pressure-dressed by battering.

Some North African and a number of French hoards show that arrow-heads are present in the Tardenoisian industry. Points, fairly large and small, occur, and they are, in the main, dressed in the same way as the specimen described in the preceding paragraph. For example, a varied set of arrow-heads was got in a series from Theil (Loir-et-Cher). While different shapes come from that site, the dressing by battering is present, except in two specimens. The two exceptions

are worked over their surfaces. The author of the paper, in describing and illustrating the implements, is careful to state that the Theil collection exemplifies a very late Tardenoisian industry¹—a statement which must be considered in its full importance in the comparative study of Scottish examples in the National Museum.

Writers on the Tardenoisian industries have mentioned the variety of stone employed in the manufacture of the typical implements. Examination will usually show this to be the case with the majority of sets, but it will also be found that flint was used in preference to other material. Sometimes the most delicate Tardenoisian tools are fashioned out of material other than flint, chalcedony being a favourite. This silicious stone allows of minute pressure-trimming of pygmy tools, and seldom in a full series of Tardenoisian implements are there missing some chalcedony artifacts. It will be observed that, when these occur, the dressing is extremely delicate.

Shewalton not possessing any native flint, stone of that kind would have to be obtained from sources known to the artisans. That supplies of the raw material came from a number of different localities is proved by the varieties of flint used in the making of the implements forming the subject of the present notes.² As in many sandy areas where Tardenoisian implements have been found, there is a local supply of quartz, jasper, and chalcedony pebbles, the two last being pretty when cut and polished by the lapidary. This fact has not escaped the attention of many people who scour the sandy wastes to-day in search of these stones. In itself the practice is the outcome of a survival of long-established knowledge of the presence of hard materials, now used for ornaments, where in the past they were employed for all-important necessities.

Looking over the different implements detailed and illustrated here, one is compelled to make comparisons with others from Scotland, the British Isles, France, and abroad generally. The facies of the Ayrshire implements is undoubtedly Tardenoisian, albeit, judging by the different Scottish examples already found, some of the specimens are unusual. Naturally these Scottish collections are of first consideration here, but parallels can be found in different groups outside Scotland, although from provenances far apart. Probably the most useful studies I have made of Tardenoisian artifacts are of those contained in the

¹ Octobon, *Bulletin de la Société Préhistorique Française*, vol. 25, planche viii., figs. 140-62, and pp. 364-6.

² I have picked up a large number of chips and flakes here, and all bear some workmanship. It has been pointed out that Arran pitchstone was imported by the Shewalton stone implement-makers in later phases (Mann, *Proceedings*, vol. lii. p. 140).

cases at the British Museum and the Institut de Paléontologie Humaine in Paris. From observation it appears that the Shewalton collection, bearing a family resemblance to the Tardenoisian of the British Isles, yet comprises some implements hitherto not noted in Great Britain, although got abundantly overseas.

All the Scottish sets have well represented the industry, but, so far, no micro-graver appears in any Scottish post-Azilian series. While it must not be assumed that none will turn up, it is a fact, nevertheless, that in late Tardenoisian groups the gravers are not met with. The small gravers have so far been recorded only in the true early or mid-Tardenoisian floors, England and France being particularly rich in these specially typical tools. We seem faced, then, with this first conclusion that in Scotland, as yet, we have only found relics of late Tardenoisian industries.

Again, we have instances of implements of Neolithic facies in association with other tools of earlier appearance—evidence of an influence blending with another, although not necessarily producing a hybrid industry.

From Shewalton is the find of arrow-heads, one class with battered edges, and the other completely or almost wholly dressed over the surfaces. The saws and broad blades, like the arrow-heads, point to a late craft comparing with the late French Tardenoisian, which is possessed of a great diversity of implements, scarcely less varied than the Robenhausen Neolithic.

Abbé Breuil and Commandant Octobon, whom I have to thank for examining photographs of the Shewalton collection, are of the opinion that a late Tardenoisian industry is represented in this Ayrshire series. In a letter written to me on the subject, Monsieur Breuil says: "I have always held the view that in your Neolithic there was a group of Tardenoisian origin influenced by the Neolithic." Commandant Octobon writes: "You have not quite got the horizon of Tardenois, but rather that of an 'evolved Tardenoisian.'"¹

I acknowledge also with gratitude the assistance Mr Francis Buckley has given me in regard to comparison with his own discoveries and deductions. I quote from a letter of his, dated Bamburgh, 12th September 1929: ". . . These specimens, taken as a group, come late in the British Tardenoisian series, and they are probably influenced by the Neolithic industries. . . . There is no specimen of the typical Tardenoisian micro-graver, which is a sort of hall-mark of the mid-Tardenois industry in England. On the other hand, we get nothing of the following kind in the Tardenois groups in Yorkshire, Nos. 67 to 74, 4, 6, 7,

¹ Maubeuge (Nord), 20th March 1929—letter to the author.

62, and 63. And No. 2 is very scarce indeed with us. Similar types to 6 and 7 are found on the moors, but they are larger, isolated, and probably belong to the scattered Neolithic industries. Our arrow-heads . . . are larger. A nearer group to yours is found in Northumberland. Here I suspect that arrow-heads like No. 73 belong to the local pygmy series, and there are practically no micro-gravers or gravers. In County Durham the pygmy industry includes micro-gravers abundantly, and is earlier than the Northumberland and Scottish types. . . . There is, I believe, a sort of hybrid or late Tardenois in the Sheffield district."¹

It must not be overlooked, however, that some of the Shewalton implements show archaic features. Of these, the slug-shaped instruments, while perhaps only broad, thickish fabricators (Nos. 62 and 63, fig. 2), recall the Solutrean "feuille." Mr Corrie's examples, especially, include some types presenting features of the Palæolithic.²

The distribution of "pygmy" flints is, we know, an extremely wide one,³ but the Tardenoisian industry, as has been shown, was not confined by any means to microliths and geometrical patterns. Small implements of stone, while certainly most abundant in the Tardenoisian, were the product of different phases ranging from the Aurignacian down to the Bronze Age, but, of course, in the latter the workmanship on the material is distinct.⁴

The Ayrshire implements, those from the Borders, and probably, too, the Deeside specimens, are of a transitional phase between the pure Azilian, as already identified in Scotland, and the Neolithic. But from the deductions made and the concurring opinions of the archæologists whom I have consulted, all the Tardenoisian implements so far found in Scotland must be regarded as being somewhat late. It follows, therefore, that tools of the lower or earlier phases of the Tardenoisian,

¹ Some shell-mounds, on Castle Hill near Hastings, on exploration by Mr Lewis Abbott, yielded a number of microliths which have been placed in a period corresponding to the Northumberland series, and consequently fairly late. It must be noted that the Sussex sites also produced Neolithic implements and worked flakes. The three groups have been segregated by Mr Abbott. (*British Museum, Stone Age Antiquities*, 3rd ed., pp. 91-2.)

² *Cit. supra*, *Proceedings*, vol. 1, pp. 307-13.

³ Pygmy and geometrical implements are found in India and have been got in great numbers in Ceylon. In Eastern Europe they are found in the Crimean Peninsula; the shores of the Mediterranean have provided examples, particularly so in North Africa, where a diversity of types, including arrow-heads, is met with. Portugal furnishes several floors, as does Spain. France has numerous sites, but with the richest in the Aisne department where is the type station of La Fère-en-Tardenois. Belgium, Poland, and the Baltic shores contribute their share. The British Isles are represented in the southern districts and abundantly so in the north-east, east, Pennines, and the west as far as the Isle of Man and Ireland. In Herefordshire I have recognised these implements in a private collection of local finds. The Scottish sites have been referred to.

⁴ As regards late microliths, Mr Mann's collection includes implements found in association with Bronze Age relics from the Glenluce Sands.

that is, nearer the Azilian in point of antiquity, are still to be looked for.

Doubtless the tools from the Borders are earlier than those from the Shewalton Moor, because the former, in their greater number of geometrical representatives, are typical of a more ancient industry than the stone artifacts from the south-west.

Further discoveries of kindred implements will, no doubt, be made serving to shed more light on the Scottish pre-Neolithic industries. Every such find must therefore add to the knowledge of the distribution of the Tardenoisian, but the series examined here stands isolated in certain respects. At once it furnishes additional proof that the widespread Tardenoisian industry comprised a variety of artifacts and that it was not ill-represented on the mainland of Scotland.