

ON PALÆOLITHIC CHOPPERS AND CLEAVERS

(Notes suggested by some Buckinghamshire examples)

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INTRODUCTION

PALÆOLITHIC INDUSTRIES

HAND-AXES are characteristic of those Lower Palæolithic industries which flourished during interglacial periods when man wandered in the areas laid open when the ice melted back. Thus, our earliest specimens have been held to typify the culture called Abbevillian that has been assigned to the first main (Günz-Mindel) interglacial period, represented by derived and abraded elements in the gravels of Burnham Beeches,¹ Lent Rise² and Iver.³ There are hand-axes, too, of most advanced Acheulian form, suggestive of the third (Riss-Würm) interglacial period, from such deposits as the brickearth that overlies fluviatile gravels of the Lent Rise phase.⁴ These beds of gravel have yielded innumerable flakes and implements made thereon, besides the pointed, bifacially worked hand-axes for which they are best known. They are considered to have been laid down during the second interglacial period, that is to say the Great Interglacial (Mindel-Riss). Very many of the relics from them are presumably referable to Clactonian industries of the end of the first interglacial period and beginning of the second. Generally the artifacts of the older spell are dulled and greatly abraded; those of the later vary from fairly fresh to quite unaltered condition. There have also been recovered flakes that in treatment seem already to herald the Levalloisian technique that flourished towards the end of the third great expansion of the ice (Riss). At Lent Rise and Baker's Farm these have been found unscathed, but at Burnham Beeches at best only in fair preservation. At Iver, however, they are usually as badly blemished by natural agencies as the majority of Palæolithic relics from all gravels of this stage. The brickearth that overlies the gravel at Iver has yielded unaltered and sharp Levalloisian specimens.⁵

Briefly, all this artifact evidence accords with that from other regions, particularly the Lower Thames in England and the Somme valley in France. In this sequence that is enshrined in Pleistocene deposits Abbé H. Breuil⁶ sees the movements of two Lower Palæolithic human groups: one, southern manufacturers of core-tools, such as hand-axes made in lumps of stone, associated

with warm climatic conditions; the other, manufacturers of flake-tools made in pieces struck from lumps of stone, associated with cold periods. During overlaps towards the end and beginning of these spells the stone industries blended. These alternations held good throughout succeeding Middle Palæolithic times. Eventually cultural elements fused before the coming of man in the stage of Upper Palæolithic culture, about the end of the first extension of the ice during the fourth glaciation (Würm).

Besides distinctive flakes, plain, worn from use as scrapers or knives, or dressed along the edges, the Buckinghamshire gravels have yielded quantities of waste flakes and chips from the manufacture of hand-axes and other tools. Most of the recognisably utilised specimens bear signs of having served without any added trimming, and many of having been elementarily treated. Study of representative series shews that from the time the more advanced Clactonian facies arose flakes were deliberately made from cores, both for use without edge-dressing and for fashioning into predetermined forms. It is, however, in Middle Acheulian products of the Great Interglacial that we find the greatest variety and most evidence of progress, but this is not surprising when the duration of the culture is taken into account. More striking, however, is the fact that, despite the great antiquity of the Acheulian culture, it is in the output of its industries that we can detect the origins and marked development of certain basic tool-forms that have come down to our own day virtually unchanged. Among these are the knife, a descendant of the flake, and its essential blade, tang and steep back.⁷

The pointed and finely flaked hand-axe of Middle Acheulian industry marked a great advance on its prototype. With the hand-axe, the first standardised tool, man could scrape, dig, hack, cut, even stab. If less common, the ovate form of bifacially flaked implement is yet characteristic in assemblages of Lower Palæolithic hand-axe cultures from Early Acheulian onward. Examples made on flakes appear in Middle and later Acheulian series, as well as in advanced Levalloisian in England and adjacent parts of the European continent.

Our textbooks figure pointed and ovate forms as standards, and several works illustrate other shapely instruments. Little attention, however, seems to have been paid to the cruder forms and their variants, or to their specialised treatment. Now, having personally picked examples from the gravels of Buckinghamshire, and having noted many in collections from the county, the writer wishes to draw attention to some of the implements that have interested him. Not only do these demonstrate the steady evolution and increasing comprehensiveness of Lower Palæolithic man's equipment, but also the remarkable wealth of materials recovered from the deposits that rest upon the terrace benches of the Middle Thames area. In space the researches dictated by these specimens have carried far outside this territory, and in time beyond the limits of the Old Stone Age. Their results indicate that some forms as yet unfamiliar to the student belong to well-defined and widespread classes of tools, the forerunners of types which long persisted in prehistoric times, and which even now survive in metal. The simplest is the chopper considered in the next section. In succeeding sections the cleaver will be examined as a type credibly related to, but technologically more advanced than the first.

CHOPPERS

The term chopper, in particular reference to Palæolithic man's equipment, connotes a heavy tool flaked bifacially to a cutting-edge opposite a side left untrimmed, or but slightly decorticated for the grasp, e.g., Fig. 1, no. 1, a specimen that could be of Abbevillian manufacture, from the Shrubbery pit between Linden Avenue and Belmont Park Road, Maidenhead. An implement so treated could of course serve for scraping, but the thickness of its body, necessary for heavy work, distinguishes the chopper from the true side-scrapers which is normally made on a flake.

Since a tool from a Berkshire locality has been mentioned, it is opportune to say that even in this short review it is necessary to cite examples from outside Buckinghamshire. For the present essay, however, these have been chosen because they have been found close to our own county, and in deposits of which the precise equivalents occur with us. Special interest attaches to these choppers that are referable to one Lower Palæolithic culture or another, than which the basic type must be much more ancient, since it represents one of the very oldest of man's devices. Hence it may be assumed that man's first intentionally fashioned tool consisted of a piece of flattish stone, a convenient margin of which was rudely trimmed. As this foreshadowed the scraper and the knife, so in the chopper with a single cutting-edge lay the beginnings of the hand-axe.⁸

Choppers were easily fashioned from cobbles, pebbles, nodules, or even in pieces of a size suitable for hacking branches, smashing bone or skinning large carcasses. No doubt because of their usually crude aspect, these implements have received less attention in this country than artifacts more attractive to the collector. Yet, even the most rudimentary testify to the skill with which the prehistoric knapper rapidly transformed raw material into efficient instruments. Much technological interest therefore attaches even to these elementary tools. However, such objects are atypical and do not identify any one facies of industry. For, throughout his Stone Age cultural development man wrought simple tools at the same time as he manufactured the well-defined and characteristic forms by which we have come to-day to recognise and separate the industries of his different cultures.

The strong cutting-edge marking the chopper was produced by the alternate removal of flakes along a single striking-platform. Man would first do this with a hard hammer-stone, or by knocking the raw material upon the edge of a heavy fixed stone. Both methods appear to have been followed from very early human times. Afterwards man learned that a straighter edge could be obtained by using a softer hammer. This might be of stone, antler, horn or even a hardwood bar.⁹

Unfortunately, most of the oldest Palæolithic artifacts recovered from the gravels in Buckinghamshire have been so affected by natural agencies that the signs of workmanship on them are usually very faint. However, a Middle Acheulian example from Lent Rise, Burnham, shews well how a flint nodule was converted into a peculiarly effective chopper or hatchet, by the deft removal of a few flakes from each face and leaving untreated the narrow rounded part for a handle, no. 2. Indeed, collections from Buckinghamshire include many

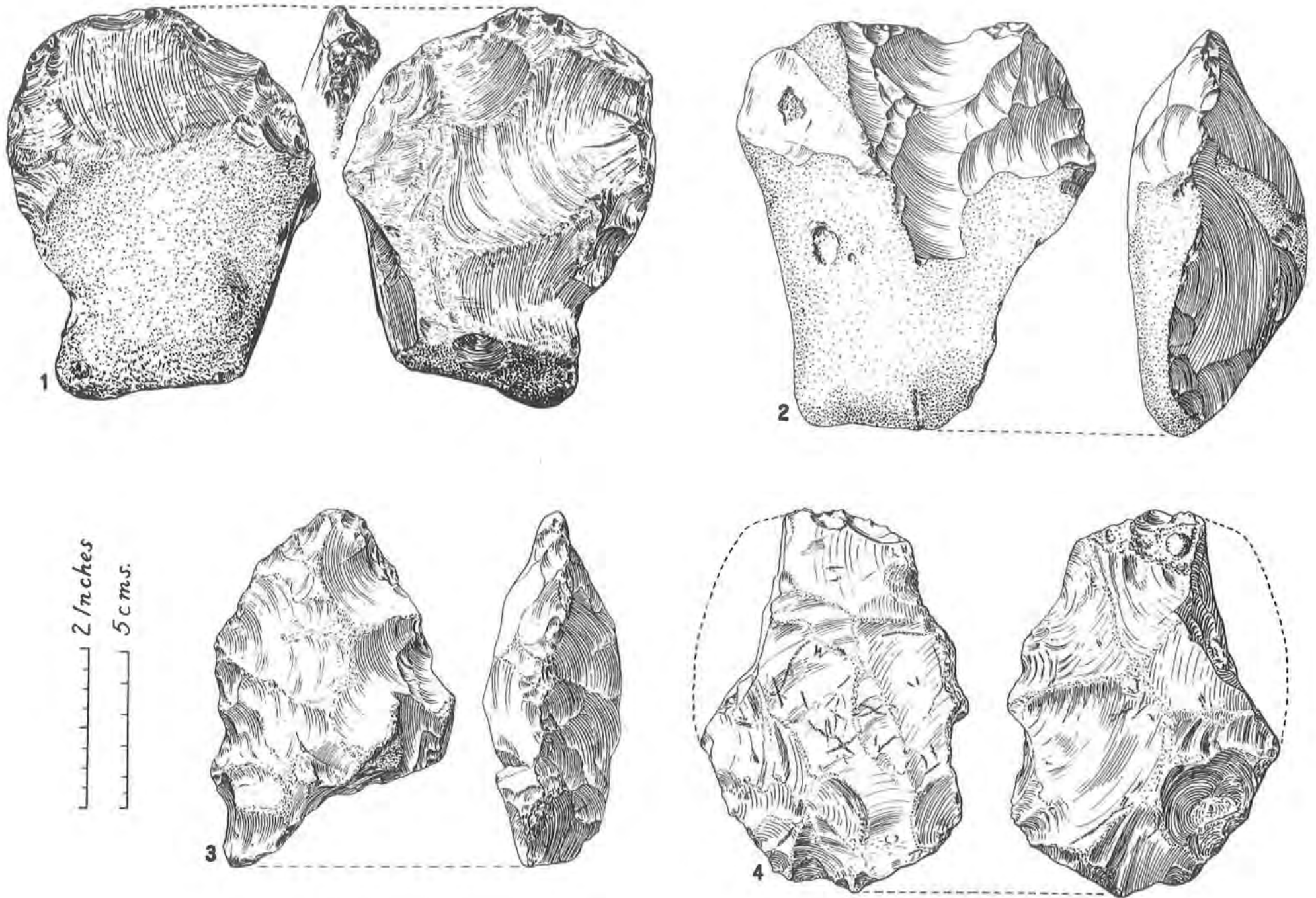


FIG. 1. Palaeolithic choppers: 1, Maidenhead, Berks.; 2, Lent Rise, Burnham; 3, Iver; 4, Burnham Beeches.

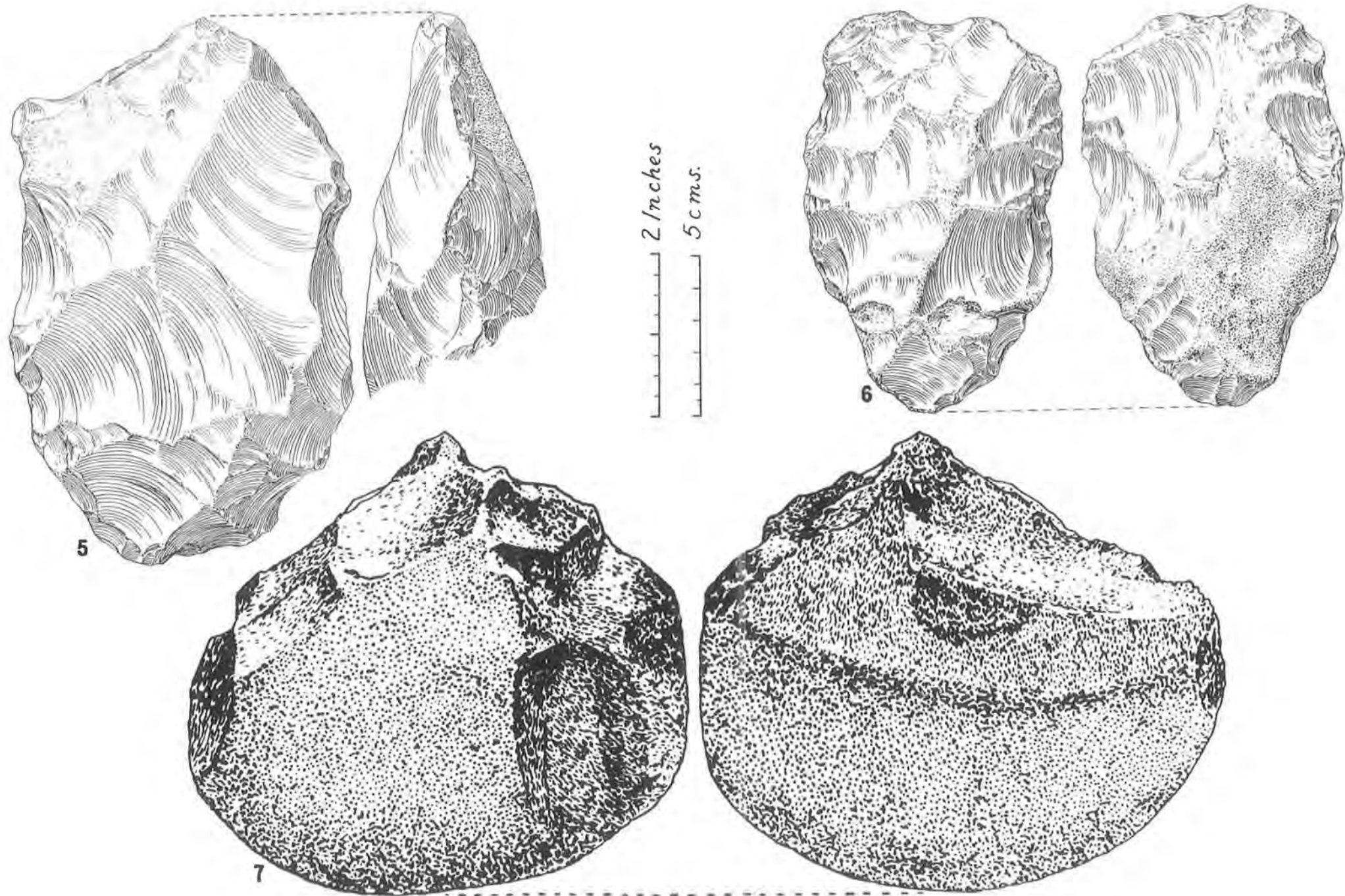


FIG. 2. Palaeolithic choppers; 5 and 6, Iver; 7, Swanscombe, Kent (after Chandler, 1931).

contemporary Acheulian chopper forms developed from those that were already firmly established in the earlier tool-kit. To this would belong a well-preserved specimen from Mansion Lane, Iver, no. 3, illustrated here as a side-chopper of well-developed Acheulian make evolved from the simply flaked pebble.

Whereas the last exemplifies the implement with a simple long working-edge, other forms of choppers were developed from the rudimentary pebble-tool. In these the bifacial edge-trimming may involve two sides, and usually an end also. Objects so made are distinct from the hand-axe which thins evenly to long edges and to the wide, flat rounded and finely flaked tip characteristic of the Acheulian developed tongue-shaped implements.

The wide heavy tools, which are regarded as so characteristic of Abbevillian industry, are not unlike some of the cores of later cultures. They are well represented in Buckinghamshire Lower Palæolithic collections. Two serve to indicate the types: Fig. 1, no. 4, a chopper, from Burnham Beeches, with two prepared long edges and unworked, but injured, upper end; Fig. 2, no. 5, from Mansion Lane, Iver, with the added feature of a flaked working-end. The terminal cutting-edge in this form admits of an oblique variant which was devised in industries possibly as early as developed Abbevillian, or more probably early Acheulian, as is suggested by the specimen no. 6 from the same gravel-workings at Iver. That in treatment all these tools, which are assignable to such early culture, fall far below later standards appears from the examples figured in these pages.

Some illustrations of Palæolithic artifacts may suggest that crude choppers were intentionally fashioned by the Clactonian flake-users. Inspection of large groups of their relics shews that most of these objects are only residual cores. Nevertheless, cores were not all discarded as waste; wear and battering of edges indicate that many served as improvised choppers. This can be said with confidence for components of the more advanced Clactonian series. It cannot, however, be asserted for the constituents of the earlier, since their margins are invariably so injured by natural transporting agencies that distinctions are rarely possible between bruises due to carriage and concussion in deposits on the one hand and the marks of utilisation on the other. Notwithstanding, Clactonian choppers intentionally made in the lump should be looked for, since there exists the record of such a Clactonian implement which has been profusely flaked to an irregular cutting-edge. Hewn in a quartzite cobble, this tool from Barnfield pit, Swanscombe, Kent, belongs to the derived Clactonian series, Fig. 2, no. 7.¹⁰

Though remarkable as an English palæolith, the Swanscombe specimen does not stand alone, and on this issue, almost in our neighbourhood, we may look forward to Mr. John Wymer's report on his inquiries near Henley. While it is true that earlier or contemporary objects occur in Africa, for European counterparts of the rude Kentish tool one has to look to industries later than, and possibly descended from, Clactonian or some of the equivalents in France, such as the Languedocian industries of the Haute-Garonne and Ariège *départements* in the south-west. Nearly all the products of the Languedocian industries are made in pebbles and cobbles of refractory Pyrenean rocks, mainly dark

green quartzite. Consisting mostly of tools wrought in the lump, they nevertheless include many implements elementarily fashioned on heavy flakes. These Languedocian flake-tools remind us that big Clactonian flint flakes, thought to be worn from use as choppers, or as picks, are reported from Pleistocene deposits in the north of France,¹¹ and in the Lower Thames area.¹² It is reasonable therefore to assume that some of the massive Clactonian flakes from the Buckinghamshire commercial excavations served untrimmed as choppers, or with but minimal bold working expended upon their margins.

CLEAVERS

GENERAL CONSIDERATIONS

In the classic regions of Lower Palæolithic discoveries in south Britain and France cleavers, as a rule, are bifacially flaked implements. One end, normally the upper, is typical, being marked by an intentionally produced bezel like that on a carpenter's chisel. Scarred so, some cleavers seem allied to advanced and well-flaked choppers noticed in the preceding part of this article.

For long the term basil- or bezel-ended, and in French *en biseau*, has served to indicate how various specialised Palæolithic hand-axes, ovates and other tools terminate in a transverse edge. This description fits the cleavers provided their distinctive edge is truly bevelled. The essential feature is indicated by Fig. 3

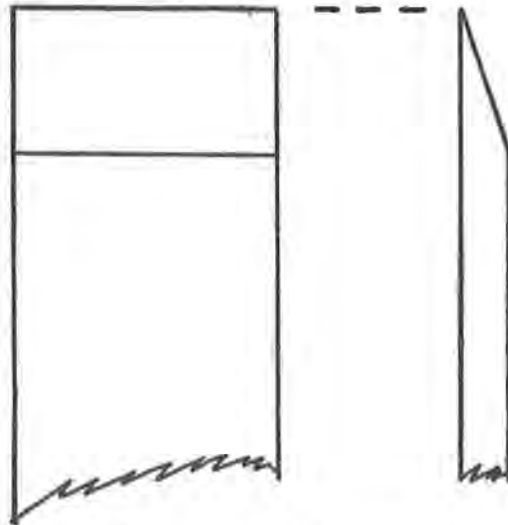


FIG. 3. The cutting-edge of a carpenter's chisel.

showing the cutting-end of a carpenter's chisel. Since the chisel is in fact the slice of an axe, though the two tools are used differently, the illustration of the bezel is applicable to both. It serves also to explain the principle of the implements considered in the sequel.

Actually in the prehistoric tool the bevelled edge was obtained by flaking inward from the rim, or by striking a clean blow at the side near the top of the

piece of stone under treatment. The cleaver is at its best in Acheulian collections from East Africa, where it commonly occurs as a flake-tool, the typical edge being formed by the intersection of the original main separation surface with the scars of dressing on the upper one or obverse, e.g., Fig. 4, no. 1.¹³ In the Old Stone Age province comprising north-eastern France and southern England it is seldom encountered in such clean form. One, however, from deposits of the ancient Solent drainage at Bournemouth is so noteworthy as a comparative specimen as to justify its being illustrated here, no. 2.¹⁴ Yet much interest attaches to the varieties found in this region that includes our own area.

The origin of the characteristic bezel doubtless lies quite early in man's manufacturing of implements by percussion, when the knapper observed that the accident of stone fracture removed a flake larger than intended from the material under treatment. A resulting edge on a sloping facet would suggest suitability for such purposes as splitting wood or bone, and perhaps stripping the carcasses of animals. Leaving unimpaired this fortuitous bezel, the prehistoric craftsman would then hew the sides of the material to make a good grip for the hand. This, as the illustration of no. 1 shews, appears to be the case with so many African and Indian cleavers. Or the conveniently scarred piece might be flaked down to an ordinary shape, such as a hand-axe or an ovate. Tallying with the description of bezel-ended artifacts proffered by the late A. Vayson de Pradenne,¹⁶ this explanation no doubt applies to many cleavers from Middle Acheulian onward. Artifacts in plenty can be brought forward to shew that the Lower Palæolithic knapper did more than just improvise on an accidentally convenient facet or surface, for, having once recognised its usefulness, he learned how to produce it.

That examples should be noticed in the journal of an English learned society has been the author's wish ever since his interest was aroused more than thirty years ago in characteristically scarred and obviously specialised forms, particularly from Pleistocene deposits in Buckinghamshire. Even at an early stage in the study of these implements it was realised that cleavers are far commoner in Africa than in Europe, though in our continent they admit of more variants. Examination of these has continued for years, but only some principal observations can be set down. Scope remains for further work in respect of many details.

Mr. Harper Kelley, the distinguished Keeper of the Stone Age collections in the Musée de l'Homme, Paris, and Director and Adviser of Prehistoric Research at U.N.E.S.C.O., with whom the author has long discussed these matters, intends to publish his own observations on the occurrence of cleavers in France and on their typology in that country and a part of southern England. While it would have been gratifying to the present writer to treat the wider distribution of such tools in this country as revealed by researches in the field, reading and study of collections, he will deal here only with our own district, taking leave, as he has done with the choppers, to draw on examples of cleavers from outside for comparison. Thus, it is hoped to shew something of the remarkable forms that have been so neglected.

The peculiar tools fall into two categories. For the first the bezel has been achieved by flaking or retouch along the transverse edge. Tools worked in this

way suggest developed choppers. To the second category belong these tools in which the bezel consists of a relatively wide scar resulting from a blow dealt at or near the top. Both kinds can be divided into groups according to the manner in which the characteristic transverse edge presents itself. Thus, this may be at right angles or askew to the long axis of the implement. Such cleavers as terminate in a curved edge (convex or concave) owe the shape of the working-end to deliberate short faceting or to the accident of stone fracture where the bezel results from a single blow. Of the cleavers exhibiting these distinguishing marks, none to which attention is drawn in the sequel bears the stamp of workmanship earlier than Middle Acheulian.

No. 3, a specimen of uncommon Palæolithic type from Deverill's pit, Burnham Beeches, is assignable to the first category of cleavers by reason of its straight and short, secondarily retouched cutting-edge disposed at right-angles to the main axis of the implement. The tool was cited by Dr. K. P. Oakley as closely resembling one he reported from Farnham.¹⁶ Only, the Surrey tool bears at least one large lateral flake-scar of the kind distinctively exhibited by so many cleavers. Deverill's workings have also yielded a smaller and thicker specimen with a longer and wider inwardly extending flake-scar like that on Dr. Oakley's specimen. It may be ranged with the implements under consideration, though the rim is so bruised by natural agencies as to make it uncertain if the end of the tool was straight or curved.

The author finds no cause to revise his rating as a cleaver the exceptionally large, finely flaked bifacial tool of Acheulian-Levalloisian aspect, no. 4, extracted from brickearth on top of gravel at Mead's Bridge, Iver, in 1890.¹⁷ Its symmetrically and gracefully convex cutting-end classes the artifact with the edge-worked relics of the first category.

Some magnificent massive cleavers from Burnham parish proclaim very clearly the ability of their manufacturers. One, from Cooper's pit, East Burnham, Fig. 5, no. 5, although also of well-developed Middle Acheulian fashioning, contrasts with the last-mentioned implement by reason of its squat heaviness and execution that combines bold and fine scarring on both faces. Already specially figured and described as an abraded artifact from Upper Boyn Hill Terrace gravels,¹⁸ only in its blemished state does it differ from similar objects found at Cannoncourt Farm pit, Furze Platt, Maidenhead, in the gravels of the Lower Boyn Hill (Lent Rise-Furze Platt) Terrace. Sharp, brand-new-looking examples of these have also been illustrated to make plain the distinction.¹⁹ The County Museum, Aylesbury, may justly be proud of possessing a clutch of such products of Lower Palæolithic industry from Haycock's gravel-pit at Lent Rise. Gravel in the immediately neighbouring pit owned by the late G. Almond has yielded a counterpart in the imposing specimen represented by no. 6. This shews well the wide bezel formed by the large scar imposed before the body of the artifact was finely flaked. A miniature version of these from Shirehampton, near Avonmouth, has been figured by the writer, no. 7.²⁰ Fashioned deftly in the fine Warminster chert used by Palæolithic man in the valley of the Bristol Avon, it was made in conformity with the general run of other Acheulian artifacts, the small size of which was governed by the material available to the manufacturer.

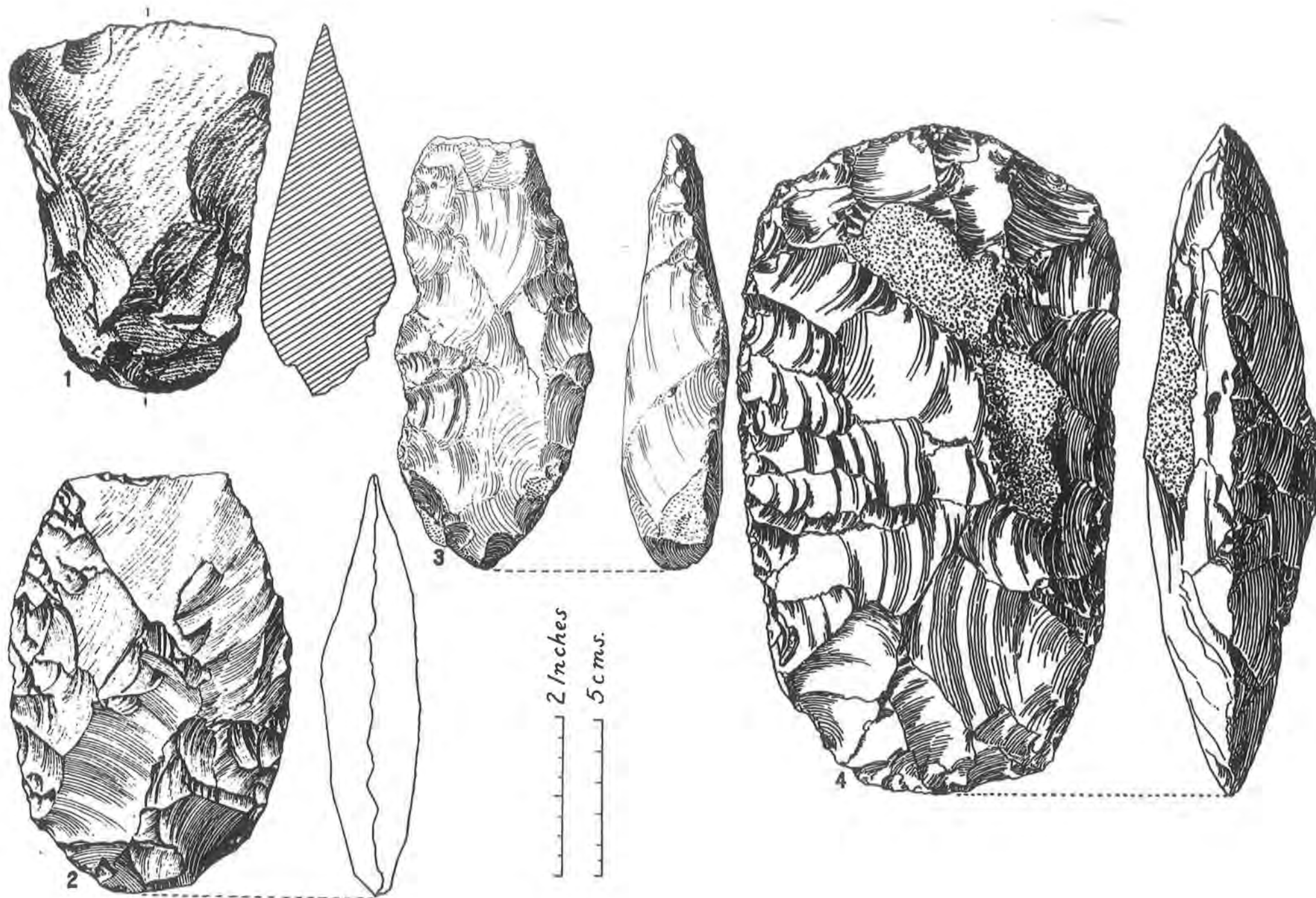


FIG. 4. Palaeolithic cleavers: 1, Tanganyika, South-East Africa; 2, Bournemouth, Hants.; 3, Burnham Beeches; 4, Iwer. (Nos. 1 and 2 after B.M., 1950.)

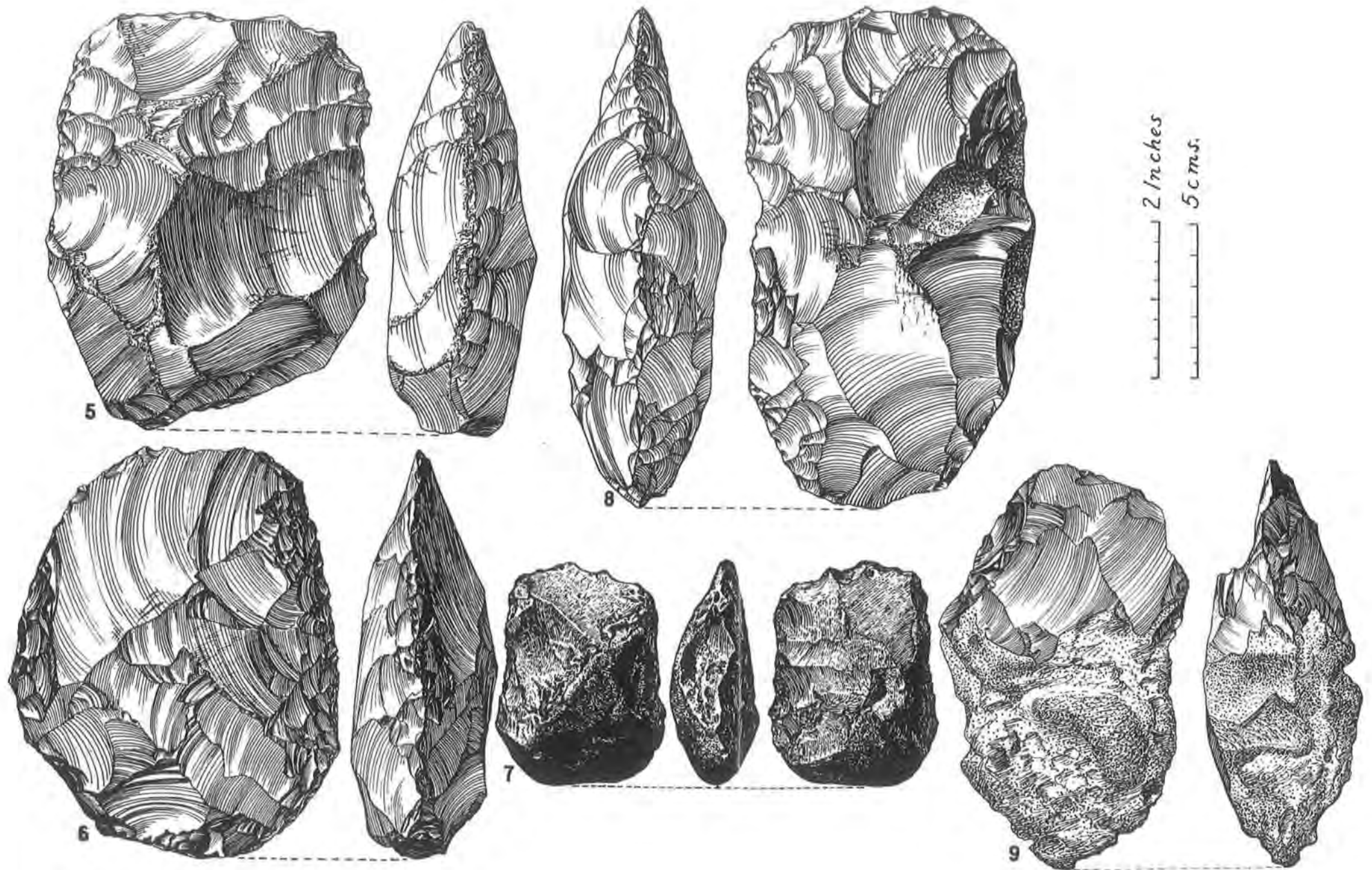


FIG. 5. Palaeolithic cleavers: 5, East Burnham; 6, Lent Rise, Burnham; 7, Shirehampton near Avonmouth; 8, Baker's Farm near Farnham Royal; 9, Furze Platt, Maidenhead

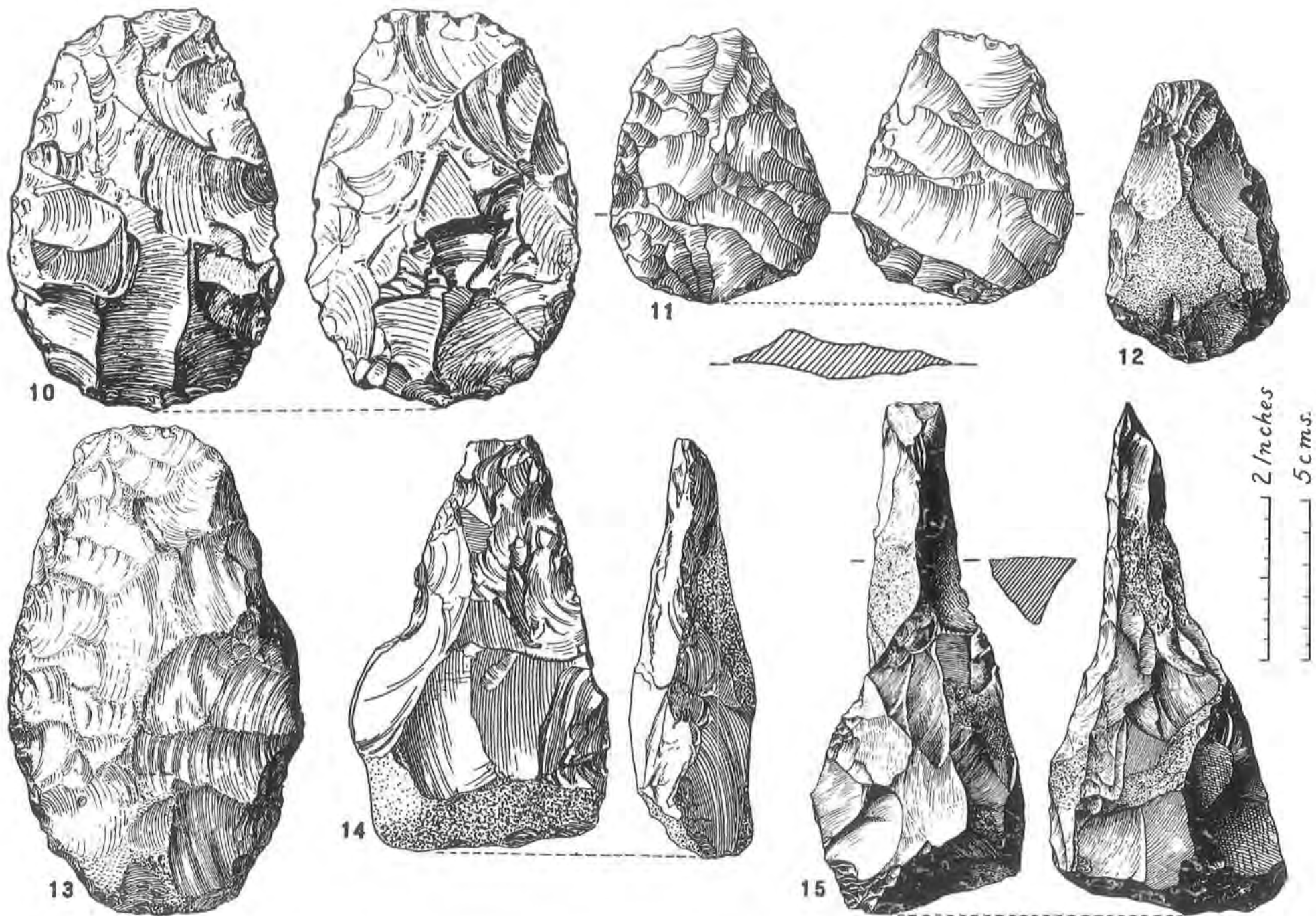


FIG. 6. Palæolithic cleavers: 10, Coldwatham, Sussex (after Garraway Rice et al., 1910-11); 11, 14 (after B.M., 1931), Iver; 12, La Rochette, Saint-Léon-sur-Vézère (Dordogne); 13, Burnham Becches; 15, Allonne (Oise).

Curiously enough, no wide square cleavers are known from the same fluviatile gravel which at Baker's Farm, less than two miles away to the east, and in former workings at the same elevation nearer Slough, has proved as rich in fine Middle Acheulian bifaces as at Lent Rise in Buckinghamshire and at Cannoncourt Farm, Furze Platt, Maidenhead, Berkshire. At Baker's Farm, however, the author obtained several fine, typically scarred and unblemished cleavers. Fig. 5, no. 8, shews a good heavy example of the form, the length of which is twice its width. The same observation seems to hold good for the Lower Palæolithic assemblages from still farther downstream. It would therefore appear that the heavy square sort of cleaver was not general, but in contradistinction, so far as Buckinghamshire sites go, that important site Lent Rise has yielded no good, elongated, narrow cleavers of the kind here mentioned from Baker's Farm. Quite evidently all these objects are akin to some of the well-flaked choppers noticed in the preceding section, as Fig. 1, no. 4, and Fig. 2, nos. 5 and 6. Again, identical gravels of the Lower Boyn Hill (Furze Platt-Lent Rise) Terrace at Cannoncourt Farm, Furze Platt, have given a cleaver which, though crude in appearance, affords a perfect type-specimen of the bezel-end. Absolutely fresh-looking and sharp of edge, this instrument, Fig. 5, no. 9, exemplifies the form with obliquely set cutting-edge struck in a rough nodule of light brownish-grey flint from the Chalk.

VARIOUS BEZEL-ENDED PALÆOLITHS

Having seen some cleavers that were apparently manufactured as basic forms, we shall now look at a few ordinary shapes of Palæolithic tools to which the characteristic bezel was applied. To any such object the old French prehistorians, with a peculiar flair for nomenclature and having regard to the truncated end, gave the name *bout-coupé*. In this connexion it may occur to the inquirer that an implement like the heavy cleaver, Fig. 5, no. 6, from Lent Rise, is essentially an ovate. The tool, however, is perhaps too bulky to be admissible to this order, but it is certainly otherwise with numbers of cleavers found in England and France. In Africa, too, cleavers are often trimmed to ovate form. It would therefore not be surprising if, after a survey of great collections from every other region yielding palæoliths, an analysis shewed that this shape in its principal variants was the most favoured for adaptation.

Several examples of Acheulian thin standard ovates with a bezel at the upper end have been illustrated from the Pleistocene gravels of south-eastern England, including the Thames valley and London suburbs. So far, however, no really good specimen combining the characteristic scar with other marks of workmanship can be advanced from these deposits in Buckinghamshire. It will therefore be helpful to the student looking for a typical example to see the drawing of a true specimen recorded from Coldwatham, Sussex,²¹ Fig. 6, no. 10.

Besides being widely diffused geographically, the ovate form comprising the cleaver bezel had a long chronological range. Although no interesting ovate with bevelled cutting-end can be shewn from Pleistocene fluviatile gravel in Buckinghamshire, yet alone from the county there can be displayed examples produced in industries later than the well represented Middle Acheulian. Thus, in Iver parish, west of the site at Mead's Bridge, which yielded the large pro-

fusely bifacially flaked implement, Fig. 4, no. 4, there was recovered from brickearth in Lavender's pit, Mansion Lane, a delicate, thin chert, cordiform ovate, Fig. 6, no. 11, made on a flake struck from a prepared core. So far there is no reason to revise the Levalloisian ascription suggested in the reports²² on the Pleistocene deposits and their Palæolithic contents in this old pit. Exhibiting a bold scar, the specimen finds a rightful place among the cleavers. Each of its faces is treated differently, fine flaking on the one and open on the other contrasting in an interesting way. Ranking with this tool is an even later object, a small Mousterian cleaver of quartzitic rock from La Rochette, Saint-Léon-sur-Vézère (Dordogne). Its significant face is illustrated here by a drawing, no. 12, made in the Musée de l'Homme, Paris. It will be immediately evident that the specimen embodies a very narrow end like that of a chisel.

As recorded in publications on regional Palæolithic finds, linguates (i.e., implements tongue-shaped in plan) have proved fairly numerous in Buckinghamshire Pleistocene deposits. One such specimen in the author's collection from Burnham Beeches bears a bezel that denotes the cleaver, no. 13. Although short, the flake-scars are typical but regrettably abraded.

In regard of their outlines, the last and the bezel-ended ovates are doubtless commonplace. Of more arresting look is a hand-axe of *ficron* type from fluvial gravel at Iver, no. 14²³, because its projecting narrow end has been treated in the same way as a cleaver. With its tapering tip brought to a bevel by flaking, it certainly is a rarity among palæoliths. However, it is not unique, since it is possible to cite and illustrate alongside an even more slender Acheulian example with perfectly bevelled narrow end, like that of a modern chisel rather than an axe, from Allonne (Oise), north-east of Paris, no. 15.

DISTRIBUTION OF CLEAVERS IN THE MIDDLE THAMES BASIN

It is thought unnecessary to seek other examples to demonstrate that the bezel of the cleaver was imposed on ordinary older Palæolithic tool-forms, particularly Middle Acheulian. The foregoing makes plain some actual differences that may help dispel the idea of bracketing all the divergent forms of cleaver on the strength of a generally applicable classification. The identification of the type in collections and the recognition of its variants enlarge one's knowledge of the Palæolithic industries represented in our Pleistocene deposits. Not only so, but such appreciation enables one to rate yet more highly the ingenuity of those remote prehistoric workers in stone who devised yet another form of specialised tool to cope with the needs of their environment.

From his observations the writer is prompted to say that cleavers are on the whole more plentiful in south-eastern England than in France. Nevertheless, their frequency is inconstant, for in some of the districts where the palæolith-yielding beds are otherwise most prolific cleavers appear to be very rare. In this respect the enormous yield of Middle Acheulian bifacial and other tools from the famous Middle Gravel of the Barnfield or Milton Street pit at Swanscombe, Kent, seems not to have included a single implement remotely like a cleaver. In the Upper Loam, however, cleavers are a strong element in the industry (*teste* John Wymer) which is unquestionably later than the one below it. On the other hand, as one searches upstream and surveys all collections from east and

north-east London, the Surrey side of the Thames, north and west Middlesex, the Hertford and Bedford marches, and from as far westward as the borderlands of Buckinghamshire and Berkshire, cleavers are seen to be so well represented as to shew that in the Middle Thames area the form was indeed much favoured.

EPILOGUE

THE TRANCHET

With the passing of conditions during which the older Palæolithic cultures flourished, the manufacture of cleavers declined. The place of these tools was taken during later Pleistocene times by new forms of implements. For among the rare bifaces and the wider of the chisel-like graters made by Upper Palæolithic stone craftsmen no example scarred in the same way as a cleaver can be cited. A special bevelled cutting-edge very much like that of the ancient cleavers was, however, to re-appear strongly in the *tranchet* and its derivatives of early post-Pleistocene industries. So far as concerns us here, the principal industries which produced the *tranchet* were those of the Mesolithic, or Middle Stone Age, culture known as the Maglemosean that arose in an environment of developing forests. Cradled in the Baltic region, this culture eventually spread to Britain over the fenlands of the extended European plain. Its elements were carried up the basins of such rivers as the Thames, then marshy areas similar to those traversed by the migrant bands over the upraised North Sea floor.

Assigned to the Boreal climatic phase, about 8,000 years ago, flint artifacts of Maglemosean facies have been found in Iver parish, Buckinghamshire, upon Flood Plain gravel under the peat that entombs the remains and pollen of forest trees. From one of the sites excavated and long studied by the author²⁴ on the banks of the Alder Bourne, near Mansfield House, there comes a small, but typical *tranchet*, Fig. 7, no. 1. The drawing shews well the characterising scar at the cutting-end of the tool flaked in a rod of flint. So clearly does this working-edge, formed by the intersection of the flaked faces, resemble that on the wide bezel on the Palæolithic cleavers illustrated in these pages, that it is evident it was achieved in the same way by a side blow at a corner. Waste flakes, e.g., no. 2, after a diagram by Professor J. G. D. Clark,²⁵ indeed confirm this. One can imagine that the axe-like *tranchet* and the implements derived from it would serve admirably for removing bark from trees for canoes, shelters and tents, and for dealing with wood of inconsiderable section.

The tradition of the *tranchet* persisted in the region of the Chalk in England and on the Continent, one may say so long as flint and other tractable rocks were used for making into tools. Particularly does this appear in the abounding surface-found so-called Thames picks of the Neolithic and Bronze Ages. When metal quite superseded stone the sloping facet, descended from the Palæolithic cleaver and ultimately from the crudest of choppers, was embodied in edge-tools, bronze at first, then iron and lastly in the steel axes, adzes, chisels and the like that are with us to-day.

ACKNOWLEDGMENTS

During the course of the investigations that have led to the compiling of this article the author has incurred a debt of gratitude to many persons who have so kindly assisted him in various ways. Curators of museums in England, on the continent of Europe and in Africa have freely placed much material at his disposal for study. Owners and keepers of private collections have proved equally obliging and helpful. To all he expresses his warm thanks. Especially is he grateful to Mr. Harper Kelley, of the Musée de l'Homme, Paris, for making available for study a wealth of specimens and for providing two drawings which are used in this communication. Dr. E. Ashworth Underwood, Director of the Wellcome Historical Medical Museum, and the Wellcome Foundation Limited, London, have very greatly favoured the author by their generosity in affording him liberal facilities and every aid to carry out inquiries and to bring this work to a useful close. He also acknowledges his obligation to the Director of the British Museum, Bloomsbury, and the Councils of the Society of Antiquaries and Prehistoric Society for the illustrations of certain artifacts mentioned with references in the text. In conclusion he thanks Misses M. O. Miller and M. A. Walton and Mr. J. A. Stokes for executing several of the drawings included in the series of figures.

¹ A. D. Lacaille, "The Palæolithic Contents of the Gravels at East Burnham, Bucks.", in *Antiq. Journ.*, vol. xix, 1939, pp. 170 ff.

² *Idem*, "The Palæoliths from the Gravels of the Lower Boyn Hill Terrace around Maidenhead", in *ibid.*, vol. xx, 1940, pp. 245-71.

³ *Idem*, "The Palæolithic Sequence at Iver, Bucks." With an Appendix on the Geology, by K. P. Oakley, in *ibid.*, vol. xvi, 1936, pp. 420-43.

⁴ *Idem*, "Palæoliths from Brickearth in South-east Buckinghamshire", in *Records of Bucks.*, vol. xvi, 1959, pp. 274-88.

⁵ *Ibid.*, pp. 278 ff.

⁶ "Le Paléolithique ancien en Europe Occidentale et sa Chronologie", in *Bull. Soc. Préhist. Franç.*, vol. xxix, 1932, pp. 573-4.

⁷ A. D. Lacaille, "The Evolution of the Knife in the Old Stone Age" in *Science, Medicine and History: Essays on the evolution of scientific thought and medical practice written in honour of Charles Singer*, edited by E. Ashworth Underwood, Oxford, 1953, p. 16.

⁸ The products of the Kafuan industries of South-east Africa, which shew this so well, are regarded by many as the most ancient objects trimmed recognisably by intelligent beings. See K. P. Oakley, *op. cit. infra*, 1949, pp. 40-1.

⁹ Among recently published and easily accessible works on prehistoric technology are K. P. Oakley's *Man the Tool-maker*, British Museum (Natural History), 1949, and *Flint Implements* [by William Watson], British Museum, 1950.

The writer (A.D.L.) has also described experiments in flaking stone and imitating prehistoric implements by a French colleague, M. Léon Coutier, in a paper "Stone Age Tools" included in *Trans. Glasgow Archaeol. Soc.*, N.S., vol. xiii, 1954, pp. 17-32.

¹⁰ R. H. Chandler, "On the Clactonian Industry at Swanscombe", in *Proc. Prehist. East Anglia*, vol. vi, 1928-31, p. 102 and Fig. 17, p. 17.

¹¹ Breuil, "Le Clactonien", in *Préhistoire*, T.I., fasc. ii, 1932, Fig. 24, 3, and pp. 178-80.

¹² Chandler, *op. cit.*, *passim*.

¹³ British Museum, *op. cit.*, 1950, pp. 32 and 62, Pl. II, no. 1.

¹⁴ *Ibid.*, Pl. II, no. 2, and p. 62.

¹⁵ *Préhistoire*, Paris, 1938, p. 62.

¹⁶ "Geology and Palæolithic Studies", reprinted from *A Survey of the Prehistory of the Farnham District (Surrey)*. Surrey Archaeological Society, 1939, Fig. 19 on p. 43, and p. 45.

¹⁷ R. A. Smith, "Origin of the Neolithic Celt", in *Archæologia*, vol. lxxvii, 1915-16, p. 36; *idem*, *The Sturge Collection*, British Museum, 1931, Fig. 390, pp. 95-6; Lacaille, *op. cit.*, 1936, Pl. LXXXI, no. 38, pp. 430 and 442-3; *idem*, *op. cit.*, 1959, pp. 279-80.

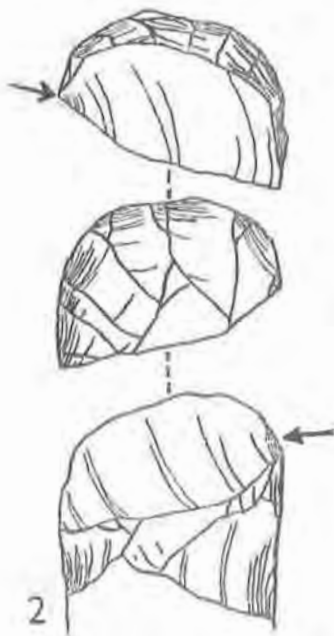
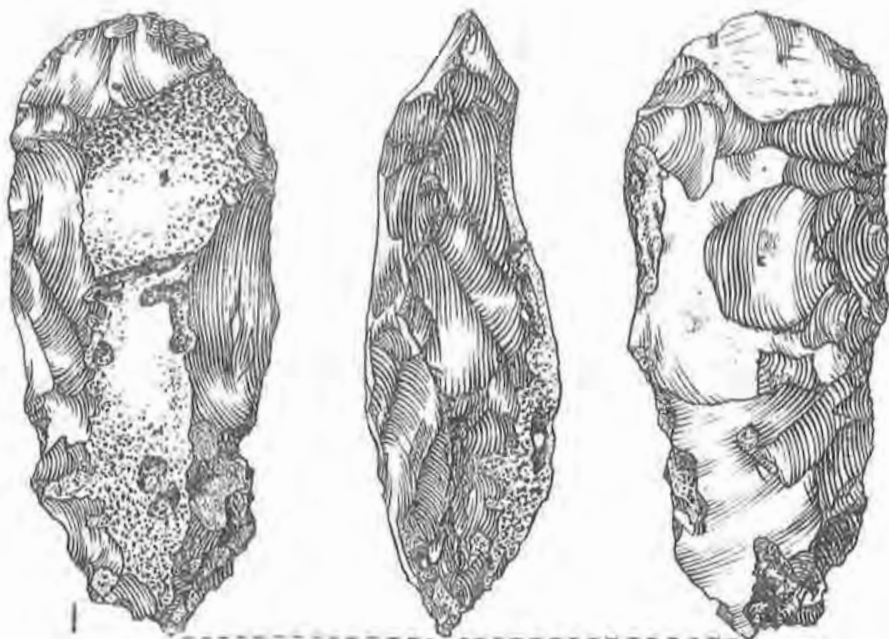


FIG. 7. 1, Mesolithic *tranche* from Sandstone, Iver; 2, waste flake and scar resulting from the production of the cutting-edge of such a *tranche* (after Clark, 1932).

¹⁸ Lacaille, *op. cit.*, 1939, Pl. XXXVIII, and pp. 173 and 179.

¹⁹ *Idem*, *op. cit.*, 1940, Pl. XLV, and pp. 257 and 269.

²⁰ *Idem*, "Palæoliths from the Lower Reaches of the Bristol Avon", in *Antiq. Journ.*, vol. xxxiv, 1954, pp. 7 and 24, Fig. 1, no. 1.

²¹ R. Garraway Rice *et al.* on various antiquities from Sussex, *Proc. Soc. Antiq.*, vol. xxiii, 1910-11, Fig. 1, p. 373.

²² Lacaille, *op. cit.*, 1936, pp. 430 and 442, and Pl. LXXXI, no. 37; *idem*, *op. cit.*, 1959, pp. 278 ff.

²³ Smith, *op. cit.*, 1931, Fig. 388 and p. 96.

²⁴ For a brief account see "Pre-history at Iver Sub", in *Southern Beam* [the magazine of the Southern Division of the Central Electricity Board], Portsmouth, vol. 10, no. 7, April 1959, pp. 18-21, and *ibid.*, no. 8, May 1959, pp. 10-14.

²⁵ *The Mesolithic Age in Britain*, Cambridge, 1932, p. xxii.