

THE PIGMY FLINT INDUSTRIES OF SURREY

BY
WILFRID HOOPER, LL.D.

THE Stone Age is broadly divided into two main periods, the Paleolithic, or old, and the Neolithic, or new, Stone Age. Between them lay, it was commonly supposed, a wide gap following the close of the Pleistocene period, during which man, in Europe at least, had left no trace of his existence. This view, though it did not pass unchallenged, prevailed until recent years and it is not yet entirely abandoned. Thus the section dealing with Early Man which was contributed by Mr. George Clinch to the *Victoria County History*, 1902,¹ classifies the flint industries of the County in this dual fashion, omitting all reference to any intermediate types. Pigmy flints, though they were beginning to receive attention in England, are unmentioned by Mr. Clinch; while the authors of *Neolithic Man in North-East Surrey*, written in 1903, could claim to possess "only five specimens which, with some probable ones recorded from Lockner Holt, near Chilworth, appear to complete the County's record."² The large and important class of implements known as burins, characteristic of the Upper Paleolithic period, and surviving in its sequels, was unrecognized by English archæologists of the period.³

This neglect is the more surprising seeing the wide field for discovery which the County presented. Some of the pigmy-yielding sites were indeed known as early as 1881, but their special character was as yet unrealized. Pigmy implements when found were usually dismissed as arrow-tips. Advance in general was arrested and confusion fostered owing to the indiscriminate use of the term Neolithic by writers like Sir

¹ Vol. I.

² *op. cit.*, 13.

³ Burins are dealt with later. They were tools used for engraving and scoring on bone and other material, and probably had other uses.

John Evans and his school to cover the mass of surface finds, and by the failure to study surface industries as a whole. The chief aim of collectors was the gathering of finished implements and fine flakes, and the Ordnance Survey added an incentive to their zeal, since the discovery of an arrow-head or celt, even though in isolation, was often considered worthy of indication on the map of the locality.

The great advance in prehistoric archæology during the present century, and particularly since the War, has tended to discredit the hiatus theory. The theory held by most living prehistorians is that the supposed gap was represented by several cultures, some of them widely diffused, which so far as previously known at all were promiscuously labelled Neolithic, but are now grouped with the Mesolithic (Middle Stone Age) or Epipaleolithic (post-Paleolithic) series, though by some regarded as early Neolithic. Man during this transitional period remained in the hunting stage, agriculture, pottery, and the use of metals being unknown. Animals, with the possible exception of the dog, were as yet untamed; the mammoth had vanished, and the reindeer retreated northwards with the ice and snow before the advance in Europe of a temperate climate. Of these transitional cultures the only one to be well represented in this country is that styled Tardenoisian after the French town of Fère-en-Tardenois, some twenty miles west of Rheims, where small finely worked flints of the type popularly known as pigmies were early recognized. A contemporaneous and partially similar culture, the Azilian, was discovered in 1887 at the cave of Mas d'Azil in the French Pyrenees. Both cultures seem to have had their origin in North Africa and to have reached Europe by way of Spain and the south of France. The description Azilio-Tardenoisian is often employed interchangeably with Tardenoisian, though the distinctive products of the Azilian were small bone harpoons and painted pebbles, and the sites were usually in caves and rock shelters; whereas the Tardenoisian generally occur in the open and at or near the surface. Precise chronology is impossible, all that can safely be surmised is that in England the manufacture of microliths flourished at some time between about 10000 and 2500 B.C., and in Surrey probably towards the end of this period.

The industries to be described belong to the Tardenoisian rather than the Azilian, and they are styled microlithic or pigmy on account of the diminutive size of their characteristic implements. In using the term pigmy it is important to guard against two common misconceptions. The term does not imply that all the products of a pigmy site are of tiny dimensions. In Surrey—and the same generally speaking is true of the rest of England—pigmyies are not found alone but in company with artifacts of normal size. Nor does it refer to the makers of these little tools. They were, as far as we know, people of normal stature, whose physical structure differed in no essential particular from that of modern man.

Pigmyies are sometimes assigned to the Beaker period or Bronze Age because of their frequent appearance in the proximity of barrows of those periods. Some late geometric shapes, such as the rhomboid and trapeze, may possibly belong to that era, but these types have not been found in Surrey, where no satisfactory evidence is at hand to support so advanced a date. The fact that round barrows and microlithic sites sometimes occur together on sandy soil is probably a coincidence, and I am unaware of any case in which microliths have been recovered from the interior of a Surrey barrow in circumstances proving an indubitable connection. It is highly significant that the chalk regions of the North Downs, which were the natural habitat of the Neolithic folk, are destitute of microliths, and that while the Beaker and Bronze Age folk often occupied sandy soil their settlements are more frequently found on the chalk. In Surrey it is true that the round barrows which survive are more numerous on the gravelly and sandy commons and heaths of the south and west than on the chalk, but this does not displace the general conclusion nor establish any necessary correlation between the barrows and the circumjacent pigmyies.

It is the habit to disparage the Azilio-Tardenoisian cultures as poor and degenerate owing largely to the absence of any remains displaying much artistic merit. It must be admitted that the evidences of their art which have so far been recorded—principally from Spanish stations—are not of a high order nor comparable to the bold and realistic results in animal portraiture achieved by the cave artists of the Upper

Paleolithic era, consisting for the most part of conventional representations of the human figure depicted on the walls of caves and rock shelters, and of painted pebbles bearing rude signs laid on in red ochre. Nevertheless, the vast output of burins and graving points found in profusion on many pigmy sites, and to which attention will be directed later, suggests a widespread and well-developed faculty for some kind of pictorial or symbolic representation in line, executed on perishable media like wood and chalk, suited to the delicacy of the implements, but long since dissolved. It is rash to pass judgment on the æsthetic qualities of a people who have left so little behind, apart from their stone implements and the resulting debris, and to cite as evidence of their degeneracy the Azilian painted pebbles, while leaving unexplained the vast stock of graving tools and the use to which they were put. However this may be, their work in flint undoubtedly testifies to a high degree of skill, which could only have been reached as the result of long evolution of the art.

The Mesolithic Age in Britain has recently formed the subject of a comprehensive survey by Mr. Grahame Clark of Cambridge, who has published the result of his studies in a valuable monograph profusely illustrated by figures from his own drawings.¹ Mr. Clark broadly divides the country into two divisions or provinces; the one in which the *transchet*, or transversely flaked axe and pick, are most usually met with—an area confined to south-east England below the Thames, and the other where this type is rare. Another partial distinction between the two provinces is that worked pigmies of triangular and other geometric shapes are generally absent in the south-east while present on certain sites in the other province. The type-station for these geometric forms is Scunthorpe in North Lincolnshire, where they occur in great abundance on the sandy warrens of the neighbourhood, and are often of minute size. Mr. Clark has also found that the implement known as the hollow-based point reached what appears to have been its final development in Surrey and Sussex, as will be more fully explained later. His general conclusion is that the microlithic industries of these two counties are to be referred to the late Mesolithic period, and

¹ *The Mesolithic Age in Britain* (1932).

that the introduction of the *tranchet* and hollow-based point in South-east England was, substantially, coeval with the evolution of geometric forms elsewhere.

GENERAL REMARKS ON THE SITES.

Any attempt at the present day to trace and map the prehistoric flint sites of the County is bound to be very incomplete, owing to the large proportion of ground covered by grass and heath—a difficulty which in recent years has, unfortunately, tended to increase. Many spots show indications of flint work but are too overgrown to permit of exploration in their present condition. On the other hand a distinction must be drawn between sites, properly so called, where worked flint is concentrated in marked quantity within narrow limits, indicating settlements of longer or shorter duration, and the numerous places where it occurs but sparsely. Sprinklings of such flint, which may be found in widely scattered situations throughout the region of the Lower Greensand, are suggestive of passing settlements by small groups. The evidence both of the sites and the sporadic finds is consistent with what would be expected of a nomadic people forced to shift its quarters from time to time, and constantly sending out small foraging parties.

The sites with few exceptions are open-air ones, and the majority may be classified as Lower Greensand and Wealden, according to which of these formations the soil composing them belongs. The Lower Greensand sites follow the sandy belt which crosses the southern portion of the County below the North Downs and spreads out fan-wise in the south-west. The industries may be traced from Limsfield on the east to the extensive heaths and common-like expanses that form so marked a feature of the south-west, and they spread over the borders of the County into Kent on the one side and Sussex and Hampshire on the other. The soil of this formation was chosen for its dryness and freedom from heavy vegetation, though the beds most esteemed appear to have been those of the Folkestone and Hythe series. The red loam, which forms so striking a feature of the landscape between Godalming and Farnham, was for some reason not now apparent, but possibly because of the thick vegetation

resulting from its greater fertility, generally neglected by Tardenoisian man. These loamy beds have been assigned to the Folkestone series, but are now regarded as being part of the underlying Sandgate series, and they have recently been re-labelled the Puttenham Beds after the Parish of that name in which they extensively outcrop.

Though worked flint occurs on this horizon it is usually of poor class and suggestive of a much later period. Pigmy artifacts, to judge from my experience, are with rare exceptions met with only sporadically and not in congregations. A possible exception occurred at Gomshall where on high sandy soil of this formation microliths in small numbers appeared in a road-side cutting. The site, if such it was, has been almost completely destroyed by recent widening. The same remark, broadly speaking, appears to hold good of the remainder of the Sandgate beds, though at Shackleford, which lies on the Bargate sand, a member of this series, microlithic flakes and cores with a few implements and the characteristic burin have recently been traced. Another site on the edge of this deposit occurs at Snowdenham Farm, Bramley. The Bagshot Beds of south-west Surrey appear to be equally barren, only one site, that at Horsell, which is subsequently referred to, having been located hitherto in that region.

The commonly accepted idea of the Weald as an all but unbroken waste of swamp and forest, which remained uninhabitable until the Middle Ages, has tended to discourage prehistoric research in that region, and perhaps more so in Surrey than in Kent and Sussex, since the Wealden area of Surrey lies principally on the clay.

It is not surprising therefore that so far few sites have been noted there, though sufficient to expose the fallacy of the popular view. The fact that primitive man could penetrate this inhospitable scene, and chose to make his dwelling there, implied a range of movement sufficient to enable him to search for food and procure the raw materials required for his tools. If only to obtain his flint, he had to face a journey of several miles to the chalk, the nearest source of that material in the Downs—clearly an impossibility if the intervening country had been impassable. Moreover it should be noted that the clay of this region is not

always of uniform texture ; thin patches of sandstone frequently crop out, and, when well placed, open up possibilities which would often repay investigation.

Topographically the sites may be divided into four classes :

(a) Hill sites, occupying the summit or more often the slopes of hills or ridges.

(b) Valley sites, found in valleys usually though not invariably watered by streams.

(c) Plateau sites, with a flat or sloping surface occupying elevated ground above the bank of a river or stream.

(d) Heath sites, which, as the name implies, occupy heath or common land.

Class (d) though a convenient is not an exclusive division, and may embrace sites that fall under one or other of the remaining divisions.

A factor in the choice of many of the sites in (a) (c) and (d) was their high and open position, affording a wide outlook and security against surprise. It is often asserted that preference was shown for ground having a southern aspect, but this is not supported by my experience. Many of the best sites known to me pitch to the north or in other than a southerly direction. Water was more important than aspect, though not all sites were well chosen in this respect, and a constant supply without recourse to artificial means of catchment was not always to be had close at hand.

DESCRIPTION OF THE IMPLEMENTS.

The best implements are of flint obtained from the chalk, and this was the material normally employed and common to all sites. In the south-west of the County, however, as in North-west Sussex, chert was extensively employed on many grounds to supplement flint, thus affording another interesting parallel with the Tardenoisian industries of Yorkshire and Belgium, in which chert or other stone was used in addition to flint. The chert here referred to is a calcareous sandstone found in the Hythe Beds, and must be distinguished from the coarse sandy inclusions which go by that name and occur more or less freely in all flint. It varies much in hue and texture, and breaks with a splintery fracture, but less tractably and cleanly than flint. In Surrey

its prevailing tint is blue-grey or sandy red, from which it has long been known about Leith Hill as "red flint."¹ Its coarseness rendered it unsuited for fine secondary work, though splinters and small flakes were often converted into points and burins, while many of the larger fragments were utilized for the same purpose. Worked chert may often be detected in the field by its fresh unweathered appearance, though form alone is a fallacious guide. Occasionally pieces are found possessing a shiny surface somewhat resembling the lustre on flint, though this effect is more probably due to use than to exposure or other natural causes. The presence of humanly worked chert has not, I think, been previously recorded in the County, though Mr. Winbolt was struck with its possibilities in this respect during his recent excavations at Holmbury and Hascombe.²

The characteristic implements of all pigmy sites, and those after which they are so called, are the worked microliths, consisting of small points and other small flint tools, showing fine secondary chipping along the whole or part of one or more of the edges. It may, however, be as well to point out that worked pigmies are by no means abundant on the Surrey sites, and it is possible to search a ground for hours without lighting on a single specimen. By far the commonest worked pigmy is the obliquely worked or blunted point (Fig. III, Nos. 2, 3 and 4), blunting being the term applied to chipping along the steeper edge of a flake.³ Next comes the double point worked along the whole of one side, which may be either blunted to give it a straight or slightly curving (Fig. I, No. 1a) or angular edge (Fig. I, No. 1, and Fig. II, Nos. 4 and 5), producing in the latter case an obtuse-angled triangle. Another type, of which certain varieties are common in Surrey, is the hollow-based point. Mr. Clark distinguishes no less than ten forms of this implement, which

¹ Cf. Topley, *Geology of the Weald*, 380. The name is still in use in the locality.

² Vol. XXXVIII, *S.A.C.*, 168; and XL, 92. The Haslemere Museum contains a few chert implements found on the Surrey and Sussex border.

³ Mr. Clark is preparing a classification of non-geometric pigmy implements which will appear in the *Archæological Journal*, Vol. XC, Pt. I. This will, it is hoped, supply the much needed want of an exact terminology, and facilitate in identifying the finds from any site and comparing them with others.

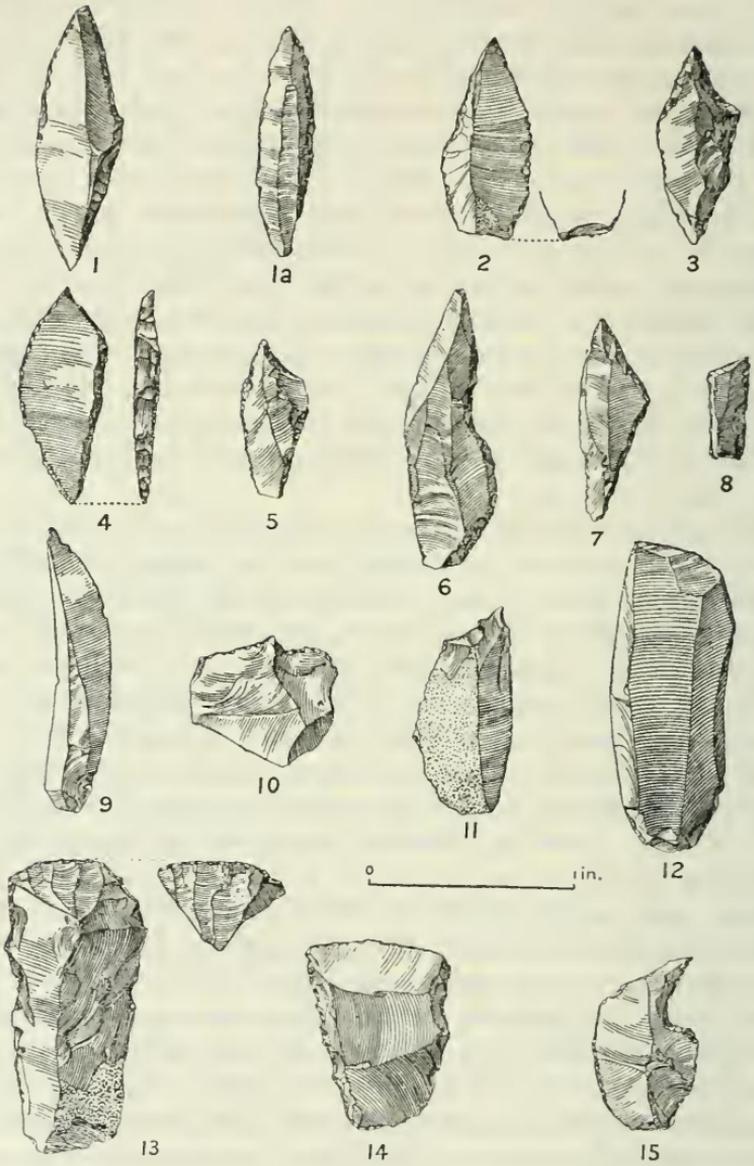
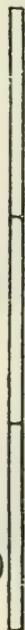
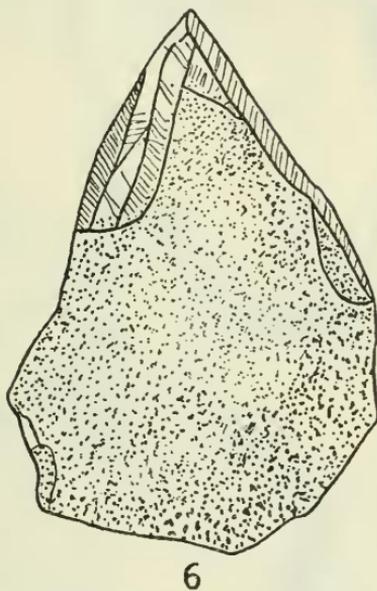
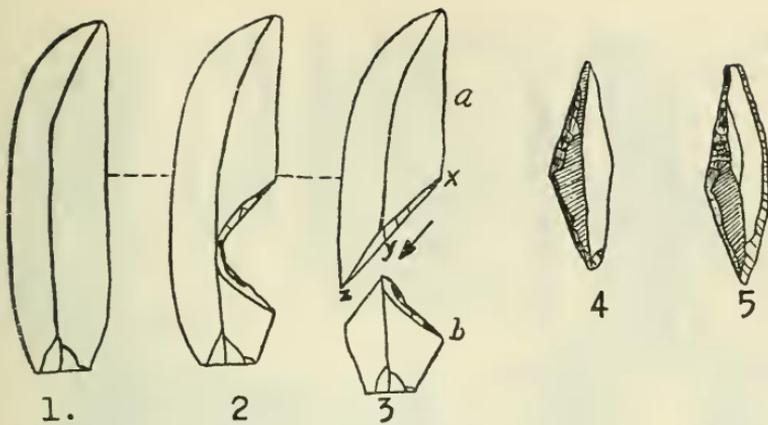


FIG. 1.



(After J.G.D.C.)

FIG. II.

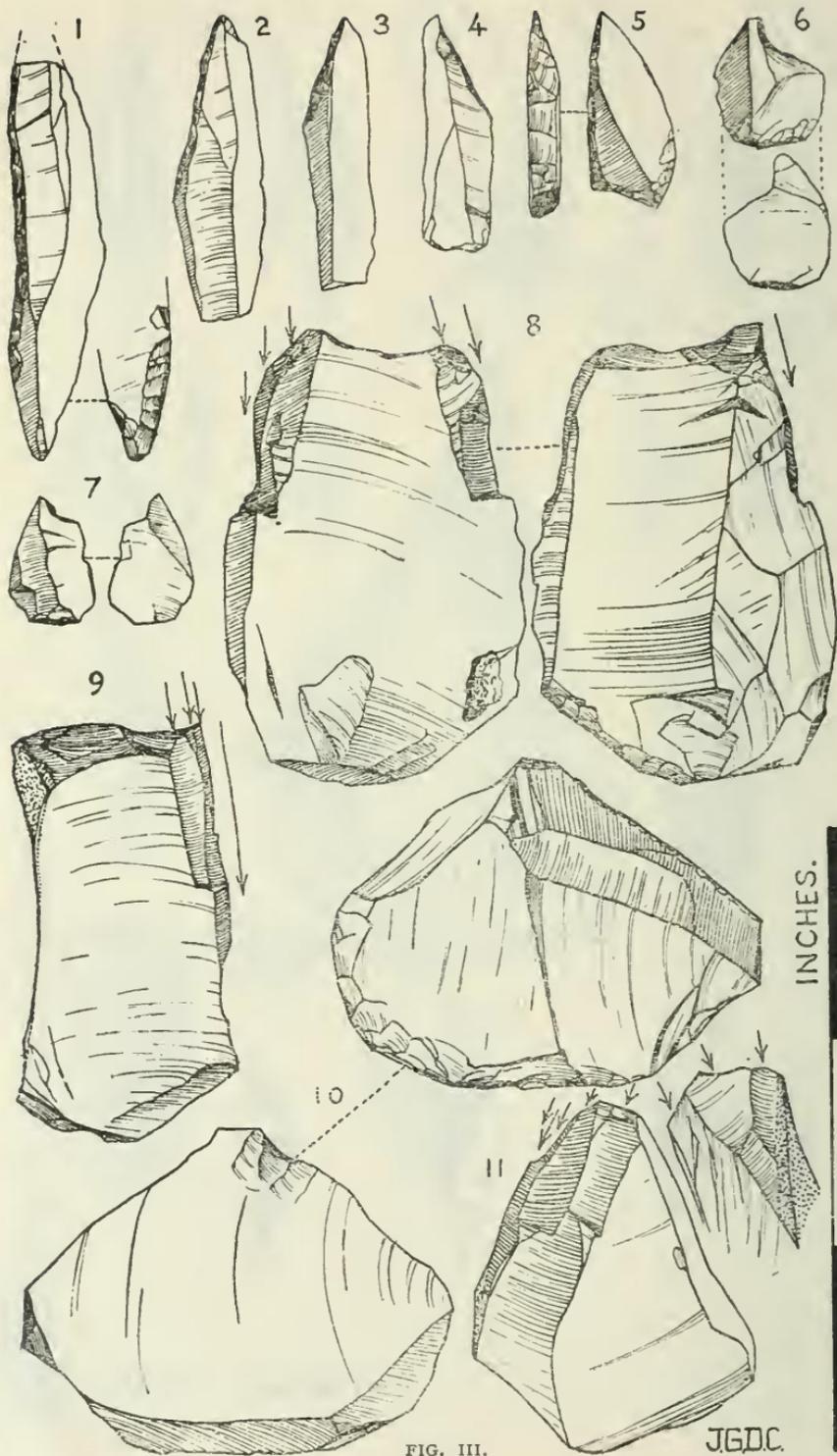


FIG. III.

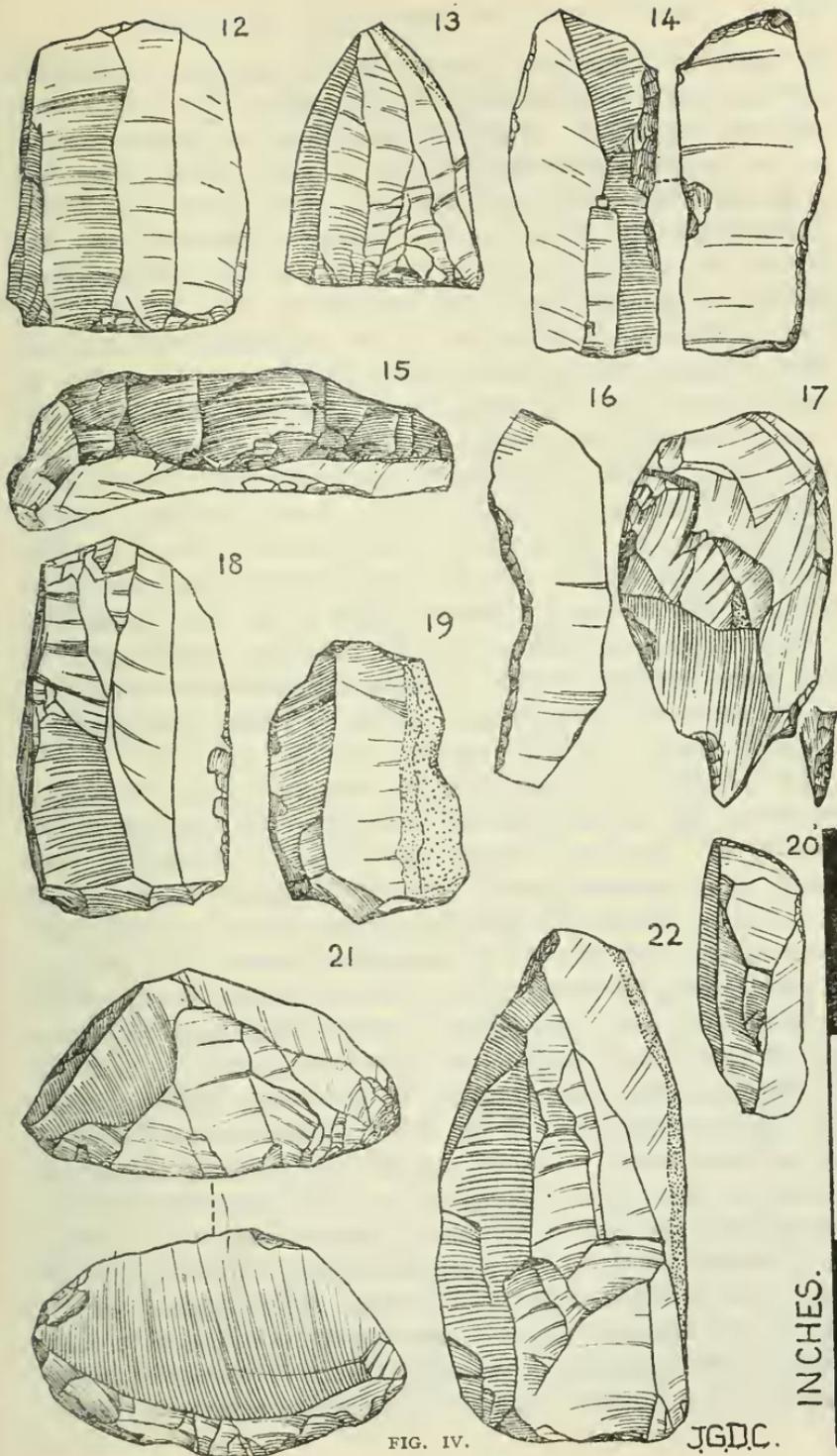


FIG. IV.

J.G.D.C.

he distributes into two groups—the symmetrical and asymmetrical—in accordance with what appears to have been their order of evolution. The fully developed stage was reached in the tanged or Horsham point, a form which, according to the evidence so far available, seems to be peculiar to Surrey and Sussex (Fig. I, No. 3). In Surrey symmetric forms like Fig. I, No. 2, are scarce in contrast to asymmetric forms which are plentiful (Fig. I, No. 3, and Fig. III, No. 5). The tang becomes even wider and more pronounced in some examples from the Horsham sites, which can, however, be matched in Surrey. As already indicated, true geometric forms are extremely rare in south-east England. Single examples have been found in Surrey approximating to the scalene triangle (three unequal sides) (Fig. I, No. 7), and the crescent (Fig. II, No. 9). Less rare are sub-geometric forms, such as the trapezoid (Fig. I, No. 8) and the sub-triangular point (Fig. II, No. 8); these indeed might prove to be numerous if their minute size did not render detection so difficult. In the same category could be placed well-executed examples of the common triangle with two of its sides, approximately equal in length, blunted (*e.g.* Fig. II, No. 4).

Fig. II, Nos. 7 and 10, illustrate forms of shouldered points, which though not atypical are among the less common of the local types. The two implements represented by Fig. I, Nos. 5 and 6, are unusual, and I have not observed them outside the County, though as they have been found on more than one site they can hardly be accidental forms. No. 5 might at first sight be classed as an imperfect example of the advanced hollow-based point, though in another specimen hollowing occurs at the butt end of the flake, and not as is usual at the opposite end, which appears to have been left unpointed. The distinctive feature of No. 6 is the hollow notch worked in the steep edge. In this instance the blunting is not extended to the point, though in another example, which is not figured, the point is trimmed on each side. No. 4 (Fig. I), a double point, is also uncommon, and I have only one other comparable example. The base, which appears at the top in the illustration, is blunted along both sides to form a point, the blunting in one case being from above downwards with an inverse tendency, and in the other from below

upwards. Steep-ended scrapers or blades, like No. 13, and small round, or "button," scrapers are fairly prevalent, though seldom so small as to be truly pigmy. More often indeed the scrapers found are of normal shape and size.

Various theories have been advanced to explain the purpose of these little artifacts. Some writers consider them to have been designed merely as toys or ornaments, or amulets, others regard them as implements for drilling or tattooing, or for fishing and the chase. Some of these suggestions may be partially correct, though it seems inherently improbable that these elaborately worked points were designed merely for ornament or amusement and not for practical use. Some of the types were probably used collectively and assembled in hafts of wood or bone to serve as the teeth of saws or sickles ; while the hollow-based points served possibly to barb harpoons.

Allusion has already been made to the wealth of small points, and graters or burins, that formed so large a proportion of the output of many microlithic sites. Being devoid of the characteristic edge blunting and trimming they might be styled untrimmed pigmies, to distinguish them from the species which has hitherto monopolized the name. Apart from the micro-burin, no mention is made of them in the textbooks, and they are as a rule ignored by collectors as waste chippings. Yet the way in which similar forms constantly recur proves that they were not wasters nor mere improvisations, and carefully examined they show unmistakable signs of use and adaptation to answer some everyday need. Fig. I, Nos. 9 and 10, are two common examples of the points in question. The first is a tapering flake which has been notched on one side of the tip and delicately snicked on the other to define a point. The other is a broad bulbar flake with a slender spur, produced by the removal of flakes on either side, projecting at right angles to its face. The tip of the spur shows evidence of trimming. No. 11 is a burin formed at the bulbar end. The flake was first sliced horizontally, leaving a tooth projecting, which was then carefully fashioned to resemble a busked burin in miniature. These and other varieties of the same class have been more fully described by me elsewhere.¹ Apart from these regular types,

¹ *Proc. of the Prehistoric Soc. of E. Anglia*, Vol. VI, Pt. II, p. 136.

the flint knapper was quick to take advantage of any sharp projection or angle that presented, and could be turned to account, regardless of its position and the size or shape of the flake on which it appeared. Flakes tapering to good original points were often made use of without any further working. Square ended flakes, similar to Fig. I, No. 12, seem to have been purposely produced as a stock pattern for the sake of the rectangular point at the top corner.

The micro-burin, which is looked upon as the type fossil of the Tardenoisian culture, is certainly the most distinctive of its surviving products. This bizarre little object seems to me to afford strong presumption of the common origin of the Tardenoisian industries, and serves as a basis for correlating the local industries, in which as a rule it is strongly represented. It is difficult to reconcile so singular a product with the theory that implements identical in form and workmanship were independently evolved in different parts of the earth in response simply to man's common needs. If, as seems probable, it was not intended to serve as an implement but is to be regarded as a by-product in the manufacture of implements, which could have been and often were produced without recourse to so elaborate a technique, the credibility of the theory of spontaneous evolution is strained still more severely. The typical micro-burin bears a more or less pronounced notch, usually in the right-hand side of the lower or butt end of a flake, surmounted by a beak, which on being reversed reveals a burin facet running more or less obliquely down the opposite side of the flake, the result of a burin blow (Fig. III, Nos. 6 and 7). Incomplete micro-burins are sometimes found in which the burin blow, while decapitating the flake, has failed to complete its mission, leaving the notch entire (Fig. I, No. 15). These miscarriages may possibly have been utilized as notch scrapers or spoke-shaves. The micro-burin is usually treated as a self-contained implement of the class indicated by its name. This assumption, however, fails to explain the difficulty which confronts one in the field of discovering what became of the other end of the flake which was detached, and presumably discarded, when the completed implement emerged. So far from being in evidence, these discarded ends seem to have completely

disappeared. After delivery of the burin blow the flake is severed into two parts as shown in Fig. II, No. 3, *b* representing the micro-burin and *a* the tip end of the flake, which tapers below to a point forming the complement of the burin facet.¹ Mr. Clark contends that this tapering portion was now utilized to form an obliquely worked point, all that was required being to blunt the steep edge between *y* and *z*; the edge between *x* and *y* having already been blunted in making the notch. Mr. Clark, in support of his contention, points out that obliquely blunted points are in the majority of instances blunted on the left-hand side, and further that the business end is towards the bulb end of the flake. In my opinion this explanation provides the only satisfactory solution. There remains the question whether the micro-burin was a self-contained implement or merely a by-product. Mr. Clark regards it as the latter, while admitting the possibility that it may have served some useful end. It seems to me unlikely that it was discarded as a matter of course except where the beak was too immature to be of service. The beaks of many of these so-called burins show signs of use, while frequently the tips have been fractured possibly as the result of use. In view of this some employment was probably found for them, or at least for the larger specimens, possessing well-marked beaks and notches, which may have served also as spokeshaves.

Surrey has furnished few examples of the *tranchet* axe and arrow-head, though implements of this type are definitely associated with the microlithic industries of this part of the country. The authors of *Neolithic Man in North-East Surrey* figure a *tranchet* celt or axe-head found by them at Headley Heath,² and four others known to me have been found since at Albury, Blackheath, and Farnham. Probably other unpublished examples have been recovered.³ On three other sites, moreover, the sharpening flake detached by the *tranchet* blow has been met with (see Fig. III, No. 10; Fig. IV, No. 21). This blow was delivered transversely for the pur-

¹ Fig. II, Nos. 1 and 2, represent the original flake before and after being notched.

² *Op. cit.*, 156.

³ Since the above was written, Dr. J. H. Gibson has shown me six such axes found by him at Farnham.

pose of giving the cutting end of the celt a keener edge—like that of a chisel. Sometimes a second and wider flake of like kind was struck off the same implement. One of the flakes referred to bears the scar of a previous flake of the same character. The *tranchet* arrow-head, which terminated in an edge and not a point, was manufactured on the same principle and appears to be even rarer in the County. Besides the specimen figured (Fig. I, No. 14) I have met with only one other good example: both collected on the same site.

Among the varied output of microlithic factory sites figure numerous small and nearly bulbless flakes or blades (flakes with parallel edges), representing the efforts of the flint worker to produce the desired shapes suitable for conversion into the pigmy points already described.¹ The cores or remnants from which such flakes have been stripped are correspondingly plentiful. They take conical or other shapes, and were frequently adapted for use as planes or scrapers by minute secondary chipping round the basal edge. The cores vary much in size and are often larger than the manufacture of pigmies demanded. Their resemblance to Aurignacian cores is often a matter for remark, and regarded alone or in company with other selected pieces they may give the impression of an Upper Paleolithic provenance. Some of the sites have on this account been regarded as Aurignacian or Magdalenian in aspect, an impression which can only be corrected by studying and comparing their contents as a whole.

DESCRIPTION OF SITES.

I. WEALDEN.

Outwood.—A site of great interest was discovered by Lieut.-Col. E. R. Meade-Waldo in 1923 at Outwood, near Redhill. It lies on the southern slope of a ridge running east and west, which attains its greatest prominence at Outwood, where it rises to more than 300 feet O.D., and owes its form to a band of *Paludina* limestone. The soil is clay, and there is no stream in the vicinity at the present time. Yet the finds indicated an undoubted microlithic site, or group of sites, and in one spot a working floor was discovered. Pigmy cores

¹ Cf. Fig. I, Nos. 9 and 12.

and cones and several worked pigmy points, which included a well made example of the hollow-based point (Form 9), were collected in addition to larger cores, ordinary burins, blade and button scrapers, borers, fabricators and other tools. Many of the flints are stained a dark brown which is often coated by a filmy white patination. Col. Meade-Waldo has found scattered flakes and implements on neighbouring fields at the foot of the slope. He holds the opinion, probably correctly, that more than one period and culture are represented. Yet the close resemblance of much of the material to the output of microlithic sites on the Greensand entitles one to conclude that it belongs to a similar industry.

Alfold.—In a field near the church above a deep gully I have recently found an obliquely blunted pigmy point and an incomplete micro-burin together with a core and flakes.

Chiddingfold.—Mrs. Halahan reported four places in this parish where struck flint had been observed.¹ Three of these—Goldhorde Field, Prestwick Manor Farm, and Riddingsfield—prove to be microlithic sites, all of the plateau type. The largest and most productive is Goldhorde Field, already known as the site of a Bronze Age barrow, which was opened in 1790 by the Rev. Jas. Douglas, and is still visible in spite of the reduction it has suffered by generations of ploughing.² The field occupies a commanding position with a generally level surface, except to the south-east, where it falls sharply in that direction. Material is abundant round about the barrow, which stands on the level, and towards the slope. The soil comprises much silt and clay, and becomes heavy and sticky after rain.³ The site recalls certain of the pigmy sites near Horsham. A good proportion of the flint, for example, has the mottled blue and white patination characteristic of the Hastings Beds, while many of the cores and flakes bear a somewhat squat and stumpy appearance like those of the Horsham sites; some showing specks or patches of iron-moulding.

Micro-burins are plentiful here, as are several varieties of

¹ Vol. XXXVII, *S.A.C.*, 239.

² *Ibid.*; Vol. XXXV, 3.

³ The elevation may form an inlier of the Hastings Beds.

worked pigmy points. These include numerous asymmetric hollow-based points, among them several examples of the tanged type (Form 10). Worked chert of a brown or greenish tinge is fairly prevalent. Some large smooth quartz pebbles occasionally met with may have been used for polishing.

The two other sites lie near together in the western part of the parish. Riddingsfield is on clay. Lighter soil comes out at Prestwick Manor Farm. One field facing south contains sandy patches, and thereabouts some of the best material is congregated, though worked flint is widely scattered over the adjoining land.¹

II. LOWER GREENSAND SITES.

Limpsfield and Tandridge.—Flakes of pigmy aspect occasionally appear in the banks of a disused sand-pit on Limpsfield Common. These may indicate nothing more than one of the many thin patches of humanly worked flint that are found dispersed over heathland, or may possibly be the remains of a site that occupied the interior of the pit before excavation. A few miles farther east a field in Tandridge parish has stronger claims to be called a site, though the material turned up on the surface is not very abundant. The finds include the micro-burin and a few pigmy cores, and obliquely blunted as well as untrimmed points. The flint is of good quality with a prevailing white and bluish-white patination. The ground comes on the sandy series of the Hythe Beds, and occupies part of the lower northerly slope of a broad valley which is traversed by a brook.

Redhill Common.—The northern slope of this tract is covered by Sandgate Beds interspersed with a few small outliers of pebbly Folkestone sand. On one of these patches I have traced the micro-burin with a few worked pigmies and untrimmed pigmy points mixed with flakes and chippings. Some well-worked end scrapers have also been found here and on other parts of the slope. The summit of the Common rises to nearly 500 feet in height, and is capped with sand of the Hythe Beds. Worked flint including pigmy flakes appears in

¹ I have since found another Wealden site at Sidlow, south of Reigate.

the paths and occasional excavations in this quarter. Two low circular earthworks marked by trees crowning the summit have been thought to be ring barrows, but until they have been opened their true object must remain obscure. In 1897, when ground to the west of these rings was laid out for the Jubilee Plantation, several fragments of pottery and some worked flint were uncovered, but no steps were taken to record or preserve the remains.

Reigate Heath.—This extensive tract is covered by the silver sand of the Folkestone Beds. The proportion of rounded quartz grains contained in the sand has encouraged the belief that the sand is wind-blown whether *in situ* or derived from another land surface.¹ Worked flints may be picked up anywhere in this area, but microliths are found principally in the vicinity of the barrows, of which the best marked are a group of four on the northern edge.² Two, or possibly three more, lie to the south at the end of a low ridge crossing the Heath. Besides the micro-burin and obliquely blunted points, a fine specimen of the tanged hollow-based point was found in 1927 on one of the northern group. The flints were probably thrown up with the soil when the barrows were constructed, and the connection cannot be considered proof that they were the work of the barrow-makers.

Just off the Heath at Buckland Corner traces of a working site were uncovered in the banks of a new road cutting. Several well made cones and cores, which showed both bold and narrow flaking, are at first sight suggestive of Aurignacian influence. The flint which is found below a capping of sandy humus is as a rule unpatinated, and in fresh unglazed condition, and some of the flakes are 6 inches or more in length. With these were associated scrapers and a few blunted points and micro-burins. The sand here is similar to that on the Heath, and the site may possibly have formed the working base of the Heath sites where cores are noticeably scarce.

Box Hill Sand-pit.—This, like many other ancient sites,

¹ F. Gossling, "Geology of the Country around Reigate" (*Proc. Geologists' Assoc.*, Vol. XL (1929), 253-4).

² Vol. XXVII, *S.A.C.*, 238.

was occupied in divers ages though not necessarily in unbroken continuity. The nearest natural supply of water—the River Mole—is now a quarter of a mile distant, but other conditions were more favourable. Stationed on a gently rising slope, it enjoyed the shelter of the Downs to the north where a constant supply of raw material was at hand. Soon after the pit was opened in 1928 by our member, Mr. Bargman, he encountered worked flint, much of which was unpatinated and in mint condition, including end scrapers and part of a polished celt.¹ Subsequently the micro-burin and several worked pigmies with cores and narrow flakes were detected, which seemed indicative of a Tardenoisian industry, and marked what was probably the earliest phase of man's occupation. The further discovery of pottery of different ages, ranging from Neolithic to Romano-British, while adding to the interest of the site increased the difficulty of dating the flint otherwise than on typological grounds.²

The triangular double point (Fig. I, No. 1), which was found here, measures $1\frac{1}{4}$ inches in length and $\frac{3}{8}$ -inch in width, and is a rather large specimen of its kind. Hollow-based points both symmetric and asymmetric are represented, the latter form appearing to predominate and including a poor specimen of the tanged variety (Form 10).

Wotton.—On high cultivated ground, between the valleys of the Pipp Brook and Tillingbourne, microliths occur over a considerable area. They are nowhere assembled very thickly, while there is a considerable admixture of Neolithic forms, which, coupled with signs of re-use borne by some of the artifacts, point to later intrusions. Clear-brown or honey-coloured flint was preferred. This in some cases has acquired a bluish patination, or has changed completely to a lustrous white. The micro-burin is prominent. Worked pigmy and untrimmed points are found in considerable variety including later forms of the hollow-based type. Some of the pigmy cores show exceptionally neat and regular flaking. The soil is generally light sand, but turns to a light loam at the foot of the slope, which trends downwards from south to north.

¹ Vol. XXXVIII, *S.A.C.*, 92-3.

² Vol. XL, *ibid.*, xii, xxi and 133.

Round about Tankard's pond, which is higher up on the same watershed, microlithic flakes and occasional implements appear in the loose sand.

Leith Hill.—Two sites appear to be distinguishable, one on the Hill itself, the other on the slope of the farther ridge which rises from Cockshott Hollow. The O.S. Map marks the latter as the scene of the discovery of "Neolithic Flints and Implements" in 1885. Since that date it has attracted occasional attention, though it remained unrecognized as a microlithic site until 1925-6, when Mr. J. Langdon Davies made the discovery of several pigmy graters within a few inches of the surface.¹ The prevalence of these graters and untrimmed points is the most striking feature, though micro-burins and worked pigmy points are also in evidence. The choice of so exposed a position at a height of over 900 feet and without water has caused surprise, though it can be paralleled in these respects by a number of other hill sites. Some indeed, including the one next described, lie even more exposed. In this instance the absence of water could have been overcome by resort to the head-streams of the Tillingbourne, which rise a short distance to the north.

On the Hill itself worked flint in scattered pieces is met with on the crest and also the south face where the tracks leading to the summit have been worn into gullies of loose sand and sandstone. Worked pigmies are hard to come by and their blunting is not usually of a high order. Cores and end scrapers are better represented and several of the flakes show signs of use or secondary work. The industry was to all appearance a small one and of limited range. The flint has the appearance characteristic of that found on the surface of sandy heaths, being generally unpatinated and more or less lustrous with occasional patches of silicious glaze.

A third site is included here for convenience since it lies below the escarpment. The soil is, however, Weald clay, so that strictly speaking it ranks as a Wealden site. The ground is sheltered on the north and falls perceptibly to the south, advantages which served as a set-off to the heavy soil, though in bad weather this is retentive of wet in spite of the natural

¹ The *Antiquaries' Journal*, 1926, 82-3; Vol. XXVII, S.A.C., 89.

drainage. Flints are dispersed over a large field of several acres, but only in one corner of approximately 100 yards square are they thickly assembled. This area is also littered with brown and reddish coloured chert, some of which shows clear signs of having been worked, and there are quantities of fragmentary sandstone about the field. No natural stream flows near at the present day, so that the occupants probably relied on springs breaking out at the foot of the Hythe Beds for their chief supply of water. The site is interesting in more than one respect and shows some features distinct from those usually found on Surrey sites.

Mr. Clark, who kindly examined a collection of the flints, has been good enough to supply me with the following description, and at the same time to illustrate it with the two plates of graphic drawings by his own hand which are reproduced in Figs. III and IV :

“ Preservation.—None of the flints show any signs of patination or mechanical rolling. A number show a characteristic pale reddish-brown colour, though greys and blacks also occur. The evidence from state of preservation supports Dr. Hooper’s experience in the field as to the homogeneous character of the industry.¹

Types.—A. Awls. A few rather unconvincing awls occur, of which No. 17 is the best.

B. Burins.

(i) Angle burins. A magnificent double example of the concave transverse angle gouge burin is illustrated by No. 8. Another typical example of the straight transverse variety is shown by No. 9.

(ii) Others. A fine polyhedric or double faceted gouge burin is illustrated by No. 11. (See also Micro-burin.)

C. Cores.

(i) Conical in form with flakes removed all the way round.

(ii) Ditto with flakes removed part of the way round, *e.g.* No. 13.

(iii) Keeled cores with one striking platform, *e.g.* No. 12.

(iv) Cores with two striking platforms, *e.g.* No. 22.

¹ Only one fragment which appears alien in character to the industry as a whole has occurred. This is a section of a curved blade flaked by pressure over both faces, apparently part of a curved flint sickle blade.

D. Flakes.

- (i) Untrimmed flakes are very numerous and show a high percentage of long narrow examples.
- (ii) Flakes with battered keel are fairly common. They appear to represent trimmings from cores. It is certain that the battering is subsequent to the removal of the primary flake since many of the flake scars are truncated, *e.g.* No. 15.
- (iii) Notched flakes are fairly common, *e.g.* No. 16.
- (iv) A fair number of flakes show light secondary trimming of a different character from the steep blunting chipping seen on microliths, *e.g.* No. 14.
- (v) Of very great significance are three examples of flakes removed in sharpening chipped axes or picks by the *tranchet* or transverse technique. Two of these are illustrated by Nos. 10 and 21.

E. Micro-burins. Four typical micro-burins occur, of which two are illustrated by Nos. 6 and 7.

F. Microliths.

- (i) Points blunted obliquely on the left side and on the right are illustrated by Nos. 2, 3 and 4 respectively.
- (ii) Of especial importance is an example of the asymmetric hollow-based point (Form 9) illustrated by No. 5.
- (iii) A large point, of which the tip is missing, illustrated by No. 1, has oblique blunting on the left side with basal trimming directed from the upper surface.

G. Scrapers. The scrapers are not very numerous and call for little special comment. We illustrate two end-scrapers by Nos. 18 and 19.

Summary and Conclusions.—The presence of microliths accompanied by cores and flakes typical of microlithic industry is the first fact we notice. Furthermore the occurrence of the micro-burin tells us that we have to reckon at least with Tardenoisian influence. The asymmetric hollow-based point, with which we are so familiar from the Horsham area, as well as from numerous other sites in Surrey and Sussex, indicates the local character of this Tardenoisian. Finally the presence of the axe sharpening flakes denotes the presence of the transverse axe or pick of the type found at Hassocks and Peacehaven. We have thus to deal with a local facies of the Tardenoisian with transverse or *tranchet* axe admixture. Similar hybrid in-

dustries are known from Sussex, as at Peacehaven, Hassocks, and Selmeston. Industries of this type would seem to belong to the later half of the Mesolithic Age. In conclusion we would draw attention to the presence of true burins in the industry. It is becoming clearer than ever that the burin did not fall into disuse with the close of Upper Palæolithic times, but formed a strong element in Mesolithic industries which has not always been recognised."

Coldharbour.—A typical plateau site is stationed above the Pipp Brook near Coldharbour. It is exposed on the north and west, and gains but slight shelter from a gentle rise on the east. Microliths are fairly numerous, but the material on the ground is mixed in character and not all of one period. The microlithic points are generally speaking of two varieties: small regular neatly worked points, and those of larger size showing less refinement in form and workmanship. These appear to represent two stages, corresponding perhaps to the narrow blade or later, and the broad blade or earlier industries which have been distinguished on the Pennine sites in Yorkshire. The micro-burins, which are common, lend support to this dual division; some measuring a quarter of an inch or less in width while others measure twice this, and one minute double form has been found.

Pitch Hill.—A small hill-top site on the escarpment above Ewhurst, excavated in 1928, was chiefly notable for the large number of micro-burins of diminutive proportions which it yielded. Worked pigmy points, on the other hand, were scarce. The ground rises in a dome-shaped eminence and is open and exposed on all quarters, and remote from any stream.

Albury.—A valley site in this parish, where the ground slopes gently down to the north, borders the small stream which descends from Peaslake. It bears a striking resemblance to the "cone culture" sites which were discovered in 1915 in the valley of the Wensum near Norwich,¹ and

¹ Described in Vol. II, Pt. II, of the *Proc. of the Prehistoric Society of E. Anglia*, 194, etc.

like them is prolific in cores and cones of all varieties. These, with flakes and trimmings, appear to be fairly evenly distributed over an area of 3 acres, and point consequently to a working site of considerable extent. Only three worked pigmy points have been found so far, one of an uncommon shape and worked all round being illustrated in Fig. II, No. 7. The micro-burin, again, is scarce and represented by but two examples which are formed on unusually thin flakes. A small *tranchet* axe-head has also been discovered. In the absence of excavation, however, it would be unsafe to attempt any estimate of the proportion of pigmies which the site may hold from those accidentally turned up by the plough.

Blackheath (near Chilworth) lies on the sandy Folkestone Beds. It has given evidence of being the most extensive centre of Mesolithic culture yet found in Surrey; and attracted the attention of General Pitt-Rivers.¹ The first published description, however, was given by Col. H. H. Godwin-Austen,² who first noticed worked flint there in the year 1881, and since then it has become a well-known hunting ground for collectors who, with rare exceptions, have left no record of their finds. At that date the ground had recently been dug over for the sake of the ironstone which occurs naturally and in great abundance near the surface, in contrast to the flint which is non-indigenous. Digging for the same purpose and over an extensive area of the heath recurred during the War when fresh quantities of flint were turned up. Pigmies were evidently found by Col. Godwin-Austen, who referred to the small size of some of the worked flints, but he did not attempt any detailed description, dismissing them with the surmise "that they were used to tip the arrows for shooting birds and small mammals." Some orthodox arrow-heads which he found on the site have since been illustrated and are now deposited in the Society's museum at Guildford.

Worked flint may be found almost anywhere on the Heath, but at certain spots more freely than elsewhere. The form most in evidence throughout the area is the obliquely blunted

¹ Some flints found by him at Postford in this neighbourhood are in the Pitt-Rivers Museum at Oxford.

² Vol. XIII, *Journal of Anthropological Institute* (1884), 137-43.

point whether of pigmy size or larger (*cf.* Fig. III, Nos. 2, 3, and 4). As if in consequence, the micro-burin is present in force, and ordinary burins of normal size are met with, one of which—a fine single-faceted burin—is figured (Fig. II, No. 6). One good specimen of the *tranchet* axe-head has been taken, and others possibly exist in private collections. The flints from the surface are usually devoid of patination though often lustred, whereas those from beneath the surface often show some degree of change towards a whitish patination. Much of the work is surprisingly rough, yet Upper Paleolithic affinities may be found here as on most of the sites, and many of the cores and flakes would pass as Aurignacian work.

An exhibition, fully representative of the series found on the Heath, is a desideratum, though a small collection made by Mr. G. J. Buscall Fox is deposited in the University Museum of Archæology and Ethnology at Cambridge. This includes, in addition to the burin above mentioned, and some obliquely blunted points, a broken point of the Horsham type.¹

Another site adjoining the north side of the Heath occupies ground which until recently lay uncultivated. The industry, though essentially microlithic in character, seems to be distinct from that on the Heath and of superior technique. Moreover, it is apparently homogeneous, despite the appearance of the ubiquitous pointed arrow-head and re-chipping on some few of the flints. Gouge burins, formed on cores or massive flakes, are a speciality, and some well executed end scrapers and finely serrated flakes deserve notice. Untrimmed points, and flakes used as points, form a common feature, though many such exceed pigmy dimensions. The flint, which is of excellent quality, is usually more or less patinated, and shows no signs of the erosive action of the sand which is noticeable in some of the Heath material.

Farnham and Tilford.—Some microlithic sites on Lower Greensand have been located by Mr. Rankine at Farnham, and Mr. Harry Smither at Tilford. They are stationed on high sandy bluffs overlooking the Wey, and on either side of that river, though generally above the northern bank.

¹ From information supplied by Mr. Clark.

III. OTHER SITES.

Alluvial Sites.—The low-lying banks of sandy alluvium bordering the Wey between Guildford and Godalming occasionally attracted settlements. One site which has not been fully investigated lies in the fork of the river by Trunley Heath, and traces of another have been exposed on Shalford Common. Though these grounds must have been liable to flooding in bad weather, yet the advantages of a riparian position on light soil were evidently sufficient to outweigh the risks of occasional inundation. Among the flints found are some typical microlithic flakes and points.

Horsell.—An interesting site was discovered about ten years ago on the Bagshot Sand at Horsell Birch near Woking by our member, Mr. H. P. Lawson, and a note on the finds was contributed to the *Antiquaries' Journal*¹ by Mr. Reginald Smith, who ascribed these to the Upper Paleolithic Period. The collection in addition to conical cores comprised some long trimmed flakes and true burins, with a sub-triangular pigmy point and one micro-burin. These two, though solitary specimens, were significant, particularly as no special search was made for microliths and the potentialities of the site have not been exhausted. It seems not improbable therefore that this industry represents another of our Tardenoisian series.

Farnham.—On a spread of the Lower Terrace Gravel at Farnham Mr. W. F. Rankine has for several years past traced microliths over an extensive area, which has in addition yielded evidence of later occupation at various periods down to Romano-British times. The position is watered by a stream, but is low-lying and retentive of wet owing to the presence of patches of brick earth above the gravel, conditions which must have detracted from its advantages in bad weather. More recently, as the result of excavating, Mr. Rankine has come upon what he considers to be the remains of a large series of hut circles or pit dwellings, varying in diameter from 6 feet to 36 feet, and some having central funnel-shaped

¹ Reproduced in Vol. XXXVI, *S.A.C.*, 125-6.

holes. The floors of these are marked by a layer of fine gritted gravel, coated in many instances by sand, brought apparently from the Lower Greensand, which outcrops about half a mile to the south. Typical sections through the pits, which have so far been opened, show the following succession downwards :

- (a) Layer, disturbed by cultivation, frequently rich in flints.
- (b) Reddish-brown loam, containing calcined flint, cores, trimmings, and microliths.
- (c) Sand, derived from Lower Greensand Beds, containing pebbles, cores, trimmings, and microliths.
- (d) Gravel, topped by a layer richly gritted.

The material utilized in the manufacture of the microliths was flint taken from the chalk, which comes up in the vicinity, including a fine quality of black flint, much of which has retained its colour unchanged. Besides cores and core trimmings, worked pigmies have been recovered in fair numbers, as also the micro-burin, and at least two examples of the hollow-based point, one of symmetric the other of asymmetric type. Another interesting find is a small *tranchet* axe-head. Further systematic investigation should throw much fresh light on a very promising area.

It remains for me in conclusion to express my cordial thanks to Mr. Clark, and also those named under the sites in which they are interested, for the help they have given me, and to all others who have allowed me to see their collections or inspect various sites.