MESOLITHIC CHIPPING FLOORS IN THE WIND-BLOWN DEPOSITS OF WEST SURREY

WITH NOTES ON TRANSECT DIGGING

BY

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(A) Wind-Blown Sand Deposits.

As a geological feature, wind-blown sand deposits are well known on the Surrey greensand occurring extensively in patches, or pockets, mainly over the outcrops of the Folkestone and Hythe beds. They are only apparent where sections are exposed, either by quarrying or erosion, but good sections for study may easily be found, here and there, on the uncultivated stretches of the greensand country. On the cultivated areas these deposits have been ploughed in. To quote a few examples, wind-blown deposits are visible above the exposed Folkestone sands on Westcott Heath, and fairly deep pockets are to be seen left and right of the road running south from Albury to Brook. Shallow deposits are to be found on Blackheath, and another good instance can be studied in the pits at Tyting, St. Martha's, while the sunken trackways on Hankley Common, Tilford, and Kettlebury reveal deep pockets of wind-blown sand.

These deposits vary remarkably in depth and extent ; sometimes they lie in deep pockets mainly in hollows, small valleys, and on low-lying ground where they may be as much as four feet in depth. On elevated surfaces, such as Leith Hill and Hindhead, they are represented by a few inches of deposit which indicates that some of the deposit has been removed by denudation. Incidentally, these wind-blown sands are not restricted to the greensand. Excellent exposures by erosion, and digging, are to be found over the Eocene sands, particularly in the region of Cæsar's Camp, west of Aldershot.

The junction of these deposits with the underlying beds is usually without much definition, but sometimes, where good sections are observable on sloping ground, they show that the blown sand rests on an eroded surface which, in some instances, may be furrowed and, on or near Bargate areas, these eroded surfaces may be thinly overlaid by water-worn Bargate rubble. This is particularly characteristic of the sections exposed at the base of the northern slopes of the Hindhead upland as, for example, in the Churt and Kettlebury areas, in which case the Bargate rubble is down-wash from the Hindhead slopes.

These drifts vary in colour from a grey through buffish-pink to a rich brown tint ; they are structureless and contain fragments

of carstone, or ironstone, and Bargate with occasional large quartz grains. The carstone fragments, which derive from the ironstone deposits in the Folkestone beds, may have sharp edges, or slightly smoothed edges, but sometimes they are wind-faceted. Such specimens represent successive stages of attrition by wind action, and the wind-faceted carstone pebble is a remarkable object, as the following note, taken from Memoir 285[1] of the Geological Survey, will indicate :—

> "On the high ground around Godalming wind-faceted pebbles of carstone are found. These were first noted in the Foxburrow quarry, about a mile west of Bramley Church, where the pebbles are irregularly dispersed throughout about two and a half feet of dark brown sandy drift overlying the Bargate beds. The sandy drift in which they are found contains large numbers of grains showing a rounded and polished outline, and is easily distinguishable from the Folkestone beds.
>
> "The buff structureless loam from Farley Heath and from Abinger Hammer, the former in a valley and the latter near the top of a hill, and the wind-faceted pebbles of the Godalming district may be of contemporary formation, of post-glacial age, and point to dry climatic conditions, with a wind blowing constantly from one direction."

Thus these wind-polished pebbles of carstone become important as witnesses to the climatic conditions contemporary with the accumulation of the sand deposits in which they occur ; they point to a dry climate with a wind blowing constantly in one direction—a climate characteristic of the Boreal Period which preceded the Atlantic phase. This latter phase set in after the severance of the British Isles from the continent, to which the approximate date of 5000 B.C. is usually assigned by geologists and climatologists. The full scientific argument bearing on this subject is obviously outside the scope of this discussion, but further information may be sought in geological textbooks.

The extent of these drifts implies that at the time of their deposition the greensand carried a minimum of close vegetation on the open, or exposed, areas ; in fact, in all probability it was a barren sandy waste which does not exclude the possibility of trees. Today, for example, the Long Valley, just north of Cæsar's Camp, is a miniature desert owing to the disturbance of sand by strong winds which, at times, raise local sand-storms. Again, on the eastern shore of Frensham Great Pond there is a barren strip where the sand is being constantly moved by the prevailing wind. Presumably similar surface conditions obtained all over the Surrey greensands during the Boreal Period when carstone fragments were being faceted by the one-direction wind.

Important as the polished carstone pebble may be as an index

[1] The Geology of the Country around Aldershot and Guildford, *Geological Survey Memoir*. H. G. Dines and F. H. Edmunds, 1929.

of Boreal conditions, a point of still greater importance derives from the occurrence of Mesolithic chipping floors in these wind-blown deposits. They occur sporadically, widely distributed, on the greensand, at varying depths in the deposits. They consist of unpatinated flints, implements and wastage, and their occurrence in such conditions clearly implies that the Mesolithic nomads were active in the Weald when these sands were accumulating, when a cold, dry climatic condition was prevailing. Thus these drifts assume great importance, and they offer data to the geologist and the prehistorian who may, eventually, be able to narrow the vague time limits which, at present, we must accept when assigning an appropriate date to the Mesolithic occupation in this region. From the evidence of the blown-sand deposits and the wind-faceted carstone pebbles this occupation would appear to have commenced prior to 5000 B.C.

(B) THE MESOLITHIC CHIPPING FLOORS.

The floors contain unpatinated flints,[1] that is flints which have not been exposed to weathering agents for any appreciable period of time—cores, mainly of the microlith type, blades, microlith primaries, flakes of all sizes, and the usual wastage familiar to the student of a Mesolithic industry in the Maglemose tradition. There are occasional implements and, invariably, fire-crackled flint. The latter will be found to occur in recognisable areas when the floors are plotted after being explored by the transect method and these areas are the hearths.

The flint débris occurs at varying depths in the sand, but, usually, it is found in the lower level; sometimes the flint is encountered just below the heather mat in which case some surface scatter is generally evident. This nearness of the flint to the surface seems to indicate some denudation of the deposit. The flints do not occur at one level, but are dispersed very much as the finds occurred in the Farnham Pit Dwellings; they are usually in a horizontal position but, after working in many floors, one gathers the impression that some movement of the material has been brought about by natural causes, probably analogous to solifluction. In some areas the possibility of disturbance by prehistoric tillage must be kept in mind, particularly in the case of sites in the vicinity of tumuli as at Frensham Pond for instance.

Although slightly irrelevant at this juncture, an important discovery connected with the nature of these floors should be recorded. During the transect digging of a site at Kettlebury, which is a carstone district, groups of large carstones were found at the base of the wind-blown sand deposits. These stones were not faceted. Flint flakes and fire-crackled flints were found below them. At Crooksbury similar groups of carstones were found in similar circumstances with flint flakes below and around the

[1] In the sense that the flints have suffered no "skin" change although occasionally, they are discoloured.

stones. From these discoveries it may be inferred that, either the Mesolithic folk responsible for the flint arranged these stones on an ancient surface in the early stage of the blown-sand deposits, or that they lived in pits which, subsequently, were filled in by the drift.

These chipping floors, sealed in by blown sand and thus preserved intact since Mesolithic times, are of prime importance to the prehistorian apart from the climatic evidence of the deposits themselves. It is possible to recover from them the whole flint output of the site excepting, of course, the implements used in the chase. Such material is of enormous importance to the student of the Mesolithic industry. Although it is a slow process demanding sustained patience, transect digging offers the most satisfactory method of investigating these floors. This means digging the area unit by unit of a pre-determined dimension. A cut measuring two feet by two feet according to local condition is a useful unit, and the depth of digging is decided by the deposit itself. In exceptionally deep drifts a larger unit is essential. The sand is removed, sifted, and every fragment of flint extracted and placed in marked containers.

The transecting is plotted to scale and the finds recorded. Thus one finally arrives at a plan of the site showing the disposition of all the finds. From the account of the pieces of flint taken from each cut the intensity of chipping may be assessed (see Fig. 1). A similar count of fire-injured pieces will help to determine the hearth areas. An examination of cores and primary flakes will reveal (*a*) the nature of the flint employed—whether it was brought from the chalk outcrop or taken from the gravel beds—and (*b*) the industrial nature of the flaking, namely, whether short microlith primaries were being prepared or the longer blades used as knives and other implement types. Each investigator may devise his own particular technique of treatment. An interpretation of the implements themselves should always be aimed at and this will help to throw light on the activity of the people who knapped the flint. These methods and aims are demonstrated, rather imperfectly perhaps, in the following notes on the transect exploration of a site in a wind-blown sand deposit immediately north of Frensham Great Pond.

Explanation of Illustrations, Plates I and II.

Plate I, A, shows a typical wind-blown sand deposit exposed in a small sand pit at Brown Loaf Hill, the Ranges, near Cæsar's Camp. Its map reference is Surrey Sheet, XXII, S.W. 10·5 inches from left inner margin and 6 inches from bottom inner margin. Although situated in Hampshire, it is only one and three-quarters miles N.N.W. of the Farnham Pit Dwellings and a quarter of a mile from the Surrey border. It is the focus of the Ranges site located by the late Canon O'Farrell and described in the Farnham Volume on page 117 under the reference of Site U. The section illustrated may be seen in the small pit on the north-west slope of

Brown Loaf Hill beside the 200 yards range. Canon O'Farrell collected much Mesolithic material from here and in 1940, by curious fortune, the range was allotted to the author's Home Guard platoon, and as a consequence a chipping floor was located in the deposit which overlies Bagshot sands, in which, incidentally, there is no carstone. A backed blade with a quantity of flint including hearth stones, thoroughly fired, were taken from the spot marked in Plate I at a depth of 2 ft. 9 in. The trench section shown in the same figure belongs to the army field training of 1914-18.

As a point of interest it is worth noting that the wind-blown deposits are thicker on the north-west slopes of the hills than elsewhere, which seems to indicate that they were put down by a wind blowing from that direction. Although nothing to do with prehistory, the grass capture of the sand-pit bottom in a pure heather country is interesting.

Plate IIA, illustrates a section exposed in a sunken track at Kettlebury. Map reference on Surrey Sheet, XXXVII N.E., is $5\frac{1}{2} : \frac{1}{2}$ with co-ordinates measured as above. The underlying beds of Folkestone sands could not be photographed in section. The blown-sand deposit is exposed to a depth of about two feet and the platform of Folkestone sand with much carstone rubble is seen in the photograph. It forms the floor of the track. The two flints indicated in the explanatory diagram were replaced after being disturbed *in situ*, and the large cubical block of carstone is wind faceted and *in situ*. Horsham points were taken from this deposit with a quantity of Mesolithic material. Wind-blown sand deposits are well developed in this area, and some prolific Mesolithic floors have been explored in the immediate vicinity. These, it is hoped, will be published in a later volume.

(C) Transect Digging.

Site at Frensham Great Pond (North).

1. *The Site.*—This site was located in 1937 beside an old drift road north of the Great Pond. A few flakes unearthed by rabbit-hunters when retrieving a ferret led to its discovery. The exact position of the site can be fixed on O.S. Surrey Sheet, XXXVII, N.W. 11 inches westward of the east inner margin and $4\frac{1}{4}$ inches north of the bottom inner margin. Digging was much restricted by extensive gorse scrub. Permission to carry out the investigation was granted by the late Mr. Richard Combe of Pierrepoint.

2. *Method of Investigation.*—A unit 18 inches square was adopted and in all 42 cuts were made. Thus nearly 100 square feet of surface were dug. In all some eighteen hours were spent on the investigation with two people operating. The surface of the site is level and the blown-sand deposit fairly shallow, measuring on an average one foot in depth. Wind-polished carstone was not encountered.

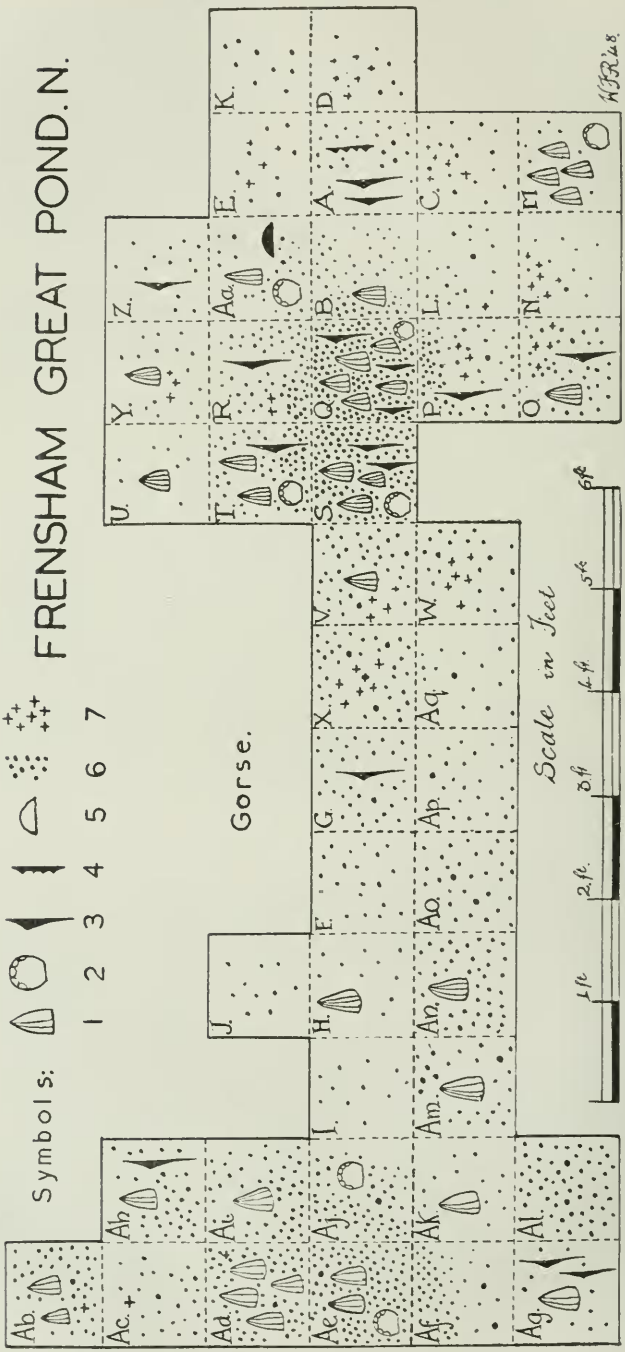
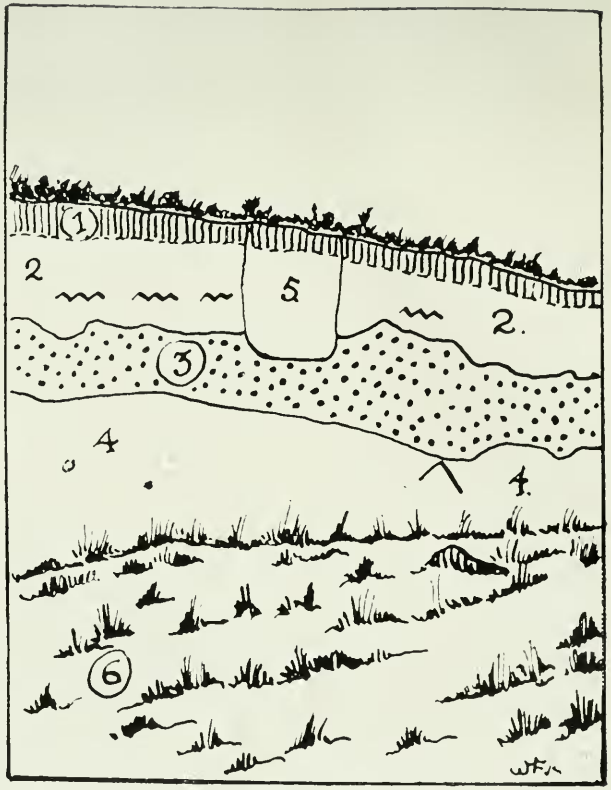


FIG. 1.—SCALE PLAN OF A MESOLITHIC CHIPPING FLOOR AT FRENSHAM, PARTIALLY INVESTIGATED BY THE TRANSECT METHOD

Symbols: 1, microlith core; 2, scraper; 3, microlith; 4, saw; 5, axe sharpening flake; 6, flint flakes to indicate intensity of flaking; 7, fire-injured flint.

Photo: Winifred Rankine]

(A) Wind-blown Sand Deposit exposed in Sand-pit, Ranges, Bourley Road, near Cæsar's Camp, Hale.



(B) Explanatory Diagram.

1, Humus; 2, wind-blown sand; 3, Bagshot sands; 4, Talus; 5, section of old military trench; 6, floor of pit. Zig-zag sign indicates chipping floor.

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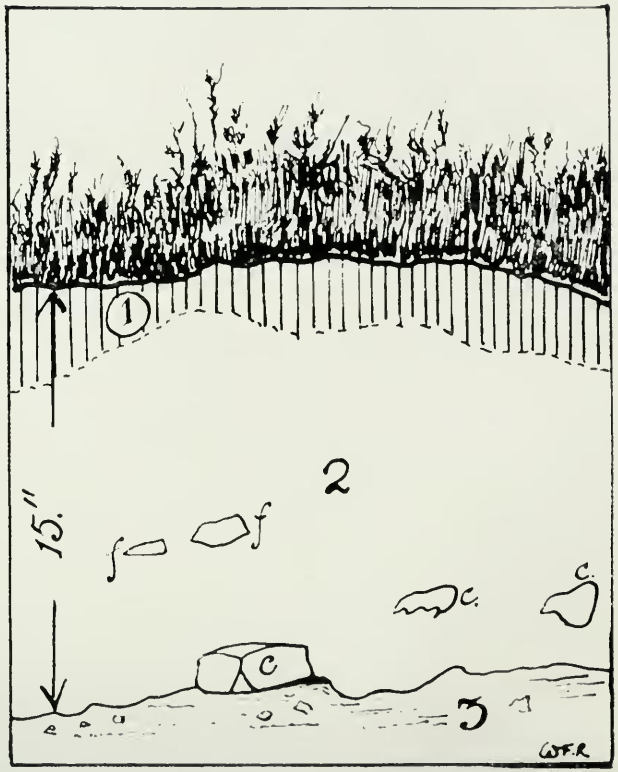
Photo: Winifred Rankine]

(A) Typical Blown-sand Deposit beside sunken track at Kettlebury.



(B) Explanatory Diagram.
1, Humus; 2, wind-blown sand; 3, platform of Folkestone sand; *f*, flint flakes (replaced); *c*, wind-faceted blocks of carstone.

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3. *The Finds and Explanation of Figure.*—The finds were neither numerous nor spectacular, but were decidedly instructive. Some 1,400 pieces of flint, large flakes and small flakes and wastage in general, with some implements, were taken from the sand. Of these 12½ per cent. were fire injured. Cuts F to M yielded no fired flint and similarly cuts Ag to Ap were free of it. The implements included :—

16 microliths, all obliquely blunted points, including fractured specimens, which occurred thus—cuts A (2), G, O, P, Q (3), R, S (2), T, Z, Ag (2), Ah.
7 knife flakes from cuts Q, X (2), Y (3), Ag.
1 serrated flake from cut A.
7 scrapers made up of four end scrapers and three convex scrapers—
End scrapers from cuts Q, S, T, Aa.
Convex scrapers from cuts M, Ae, Aj.
1 tranchet sharpening flake from cut Aa.

Most interesting of all the finds were the 35 microlith cores which occurred mostly in groups. Many of these cores were reduced to the utmost limit of flaking. They were found in cuts B, H, M (4), O, Q (5), S (3), T (2), U, V, Y, Aa, Ab (2), Ad (4), Ac (2), Ag. Ah, Ai, Ak, Am, An.

A fragment of flaked chert was found in cut Y.

The site plan, Figure 1, represents the area investigated and indicates the disposition of the important finds. The squares, or cuts, are assigned literal references indicating the order of investigation, and the stippling represents the intensity of flint flaking. The degree of stippling is based on a count, to the nearest five, of the pieces of flint taken from each cut. Thus, for example, A yielded 65 pieces, Q 110 pieces and V 40 pieces. Important flint forms such as cores and implements are represented by symbols : of these the core is regarded by the author as the outstanding index of the flint industry. Obviously the size of the symbols bears no relation to the actual size of the objects represented.

With regard to the disposition of the flint débris indicated by stippling and the cores, represented by symbols, it is interesting to note that cuts S, Q seem to have been the focus of one flaking group and microlith making. It was not found practicable to represent or indicate microlith primaries which were always numerous around the cores. In fact, as these small blades became apparent it was quite safe to predict the appearance of a core. Again, in cuts Ad, Ae, another flaking focus is reflected by cores and microlith primaries. These two centres of flaking are about ten feet apart and presumably one knapper sat at Q and another at Ae or thereabouts. Unfortunately, the persistence of gorse scrub prevented any inquiry into the adjoining deposit.

4. *Interpretation.*—The amount of débris suggests a brief occupation of the site by a limited group of persons. The numerous

microlith cores and microlith primaries indicate concentrated microlith production, although only 16 points, most of which were imperfect, were recovered. This is quite a usual experience on bivouac sites because, undoubtedly, the microliths were used in the chase. The scrapers are fairly numerous for such a limited area and point to the treatment of skins ; the one saw suggests the pursuit of a bone industry, and the tranchet sharpening flake implies a wood-cutting implement and a wooded terrain. Knives, or cutting blades, are a necessity everywhere and so their appearance here has no specialized import. Reviewing all the artifacts, the microlith cores and microlith primaries and the appreciable quantity of fire-injured flint, it is safe to conclude that the Frensham Great Pond (North) site was a hunters' bivouac.

All the flint used was derived from the chalk outcrop some six miles to the north as the crow flies.