

ART. IV.—*Flint-chipping sites at Drigg*. By J. CHERRY,
B.Sc., with an Appendix by Dr. WINIFRED
PENNINGTON.

Read at Kendal, April 4th, 1964.

FOLLOWING upon their discovery of a microlithic flint site just north of the sand-hills at Drigg,¹ Macdonald and Nickson turned their attention to the south, searching the gravel-beds and patches of exposed boulder-clay which occur in that region. They spent two or three years following 1954 making an exhaustive study of the area, and since 1959 my wife and I have carried on the search.

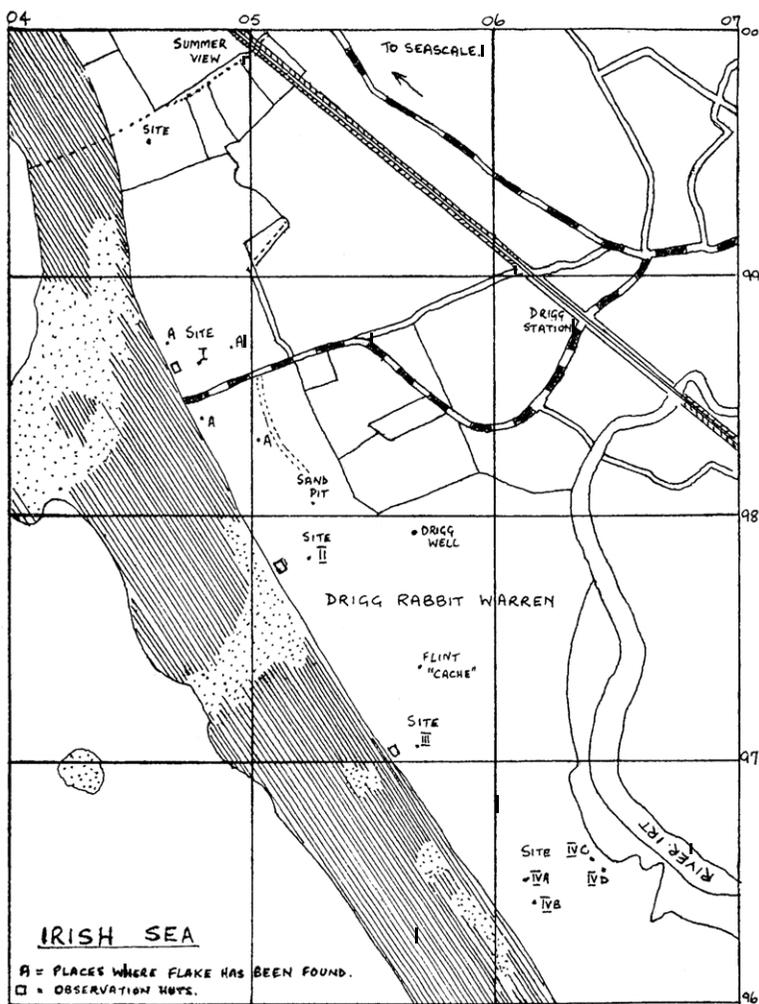
The purpose of this paper is to place the sites on record and to illustrate and discuss some of the finds which have been made. Map references are taken from sheet SDog(34/09) of the Ordnance Survey.

Site I (Map Ref.: 30484986).

This site, which lies to the north of the road from Drigg station to the shore, has already been described.¹ Some of the flint artefacts found here more recently are described in Fig. 1.

Since the publication of the report in 1955, there has been considerable cliff erosion and a band of peaty-soil has become exposed in the face of the cliff, several feet down. We found flakes of flint and broken stone in this layer, all of them at about the same level — 6 or 7 in. from the base of the peat.

Dr Winifred Tutin of the Department of Botany in the University of Leicester, who was engaged on a pollen survey of the Lakeland tarns, agreed to carry out an analysis of the cliff peat. The results are given in the Appendix.



Map of Drigg flint sites.

Based on the Ordnance Survey map with the sanction of the Controller, H.M. Stationery Office.

Site II (Map Ref.: 30524979).

This site lies in a sandy hollow and extends up a slope of boulder-clay to a sand-dune partially stabilized by marram grass. This dune has receded from the edge of the boulder-clay leaving a narrow, sandy platform.

While carrying out a small excavation near the base of the sand-dune in an effort to ascertain the full extent of the site, Mr Macdonald found a flint knife of excellent workmanship. 6 in. or so below the surface of the sand and about 1 in. above the boulder-clay. At the same depth about 1 ft. away were a tangled and barbed arrow-head and a leaf-shaped arrowhead.

Site III (Map Ref.: 30584971).

This is a small site which lies immediately behind a wooden observation post used by the War Department in connection with Eskmeals Gun-range. It is the second wooden observation post south of the Drigg road, the first one being just to the north of site II.

The chipping-floor is composed of clay and stones sparsely covered with grass. At the eastern end is a small pond which dries up in summer, a steep bank of clay and stones marks the western edge of the site.

There was nothing here with marked cultural characteristics, the only things found being flint flakes and a few scrapers.

Just to the north of site III on the eastern fringe of the sand-hills, I noticed some flint pebbles lying in a sandy patch on the side of a low grass-covered dune. On closer investigation I exposed a pocket of flint pebbles lying in very coarse sand. I cannot offer a satisfactory explanation of this "cache" of flint, but think that it is worth recording.

Site IV (Map Ref.: 30644966).

This is the most extensive of the Drigg sites, covering several acres. It is different in character from the more

northerly sites and, like those at Eskmeals, lies on the remains of a raised beach, with a complete absence of boulder-clay. There are four areas of chipping-floor which I have called A, B, C and D for the purpose of identification. Sites IVA and IVB lie north and south of each other in the sand-dunes, while IVC and IVD are due east of these on the banks of the Irt.

Flints from sites IVA and IVB are particularly rounded and polished by continual bombardment with wind-blown sand. All four sites are nearer to sea level than sites I, II and III; storm debris is to be found a few feet below the seaward edge of site IVB.

Site IVC has been disturbed by a later occupation in the form of an iron bloomery and there is a considerable scatter of slag and broken stones. Along the river bank is a line of circular depressions caused by the detonation of anti-personnel mines, after the end of World War II.

Site IVD lies on a grassy plain about 50 yards south of IVC. and this area produced a surprisingly high proportion of worked artefacts compared with the amount of flint debris.

The sand-pits (Map Ref.: 30534982).

To the south of the road from Drigg to the beach are two derelict sand-pits. Flint debris and artefacts have been picked up in both of these. The worked material from here included microliths, leaf arrowheads and a tanged and barbed arrowhead. Because of the disturbed nature of the area and the possible intermixture of material, we have not given this site a number.

“Summer View” (Map. Ref.: 30474996).

This small site was found in 1963 by my daughter and myself, quite by accident, while following a fox across the common between Seascale and Drigg. It consists of a few square yards of clay and gravel, sparsely covered with grass, about 50 yds. south of the Seascale-Drigg

parish boundary and about $\frac{1}{2}$ mile west of the hamlet known as "Summer View".

A small quantity of flint flake and a few scrapers were all that we found here.

Fig. 1.

Nos. 1, 2, 3, 4, 7 and 9 are from the sand-pit.

1. Microlith in grey flint; the bulb has been removed and the blunting although pronounced, is not extensive.
2. Microlith in creamy flint; the bulb has been removed and the whole of the edge has been blunted. This piece is typical of the worked points found on site I.
3. Microlith in grey flint; another worked point from which the bulb of percussion has been removed, it is blunted along most of its edge.
4. Microlith in honey flint; a fragment of a larger piece, blunted down one edge.
7. Small piece of grey flint from which the bulb has not been removed, it is blunted along two of its edges.
9. Leaf-shaped arrowhead in creamy-honey flint; it is small and of good workmanship.

Nos. 5, 6 and 8 are from site I.

5. Microlith in heavily patinated white flint; a very small worked point 0.9 cm. long, blunted along the length of both edges.
6. Microlith in yellow flint; blunted down the whole of one edge and part of another. It seems to be an unfinished point or one damaged in manufacture.
8. A fine example of a core with the narrow blade scars of the Mesolithic tradition. It seems to have been abandoned as a core because of the poor quality of the flint and retrimmed for use as a scraper.
10. This is either an unusually steep-sided plano-convex knife or a superior form of fabricator. If it is the latter, it has never been used and I am inclined to look upon it as a knife. This beautifully-worked artefact which is from site II, is the largest flint tool found so far, either at Drigg or Esk-meals.^{1 2}

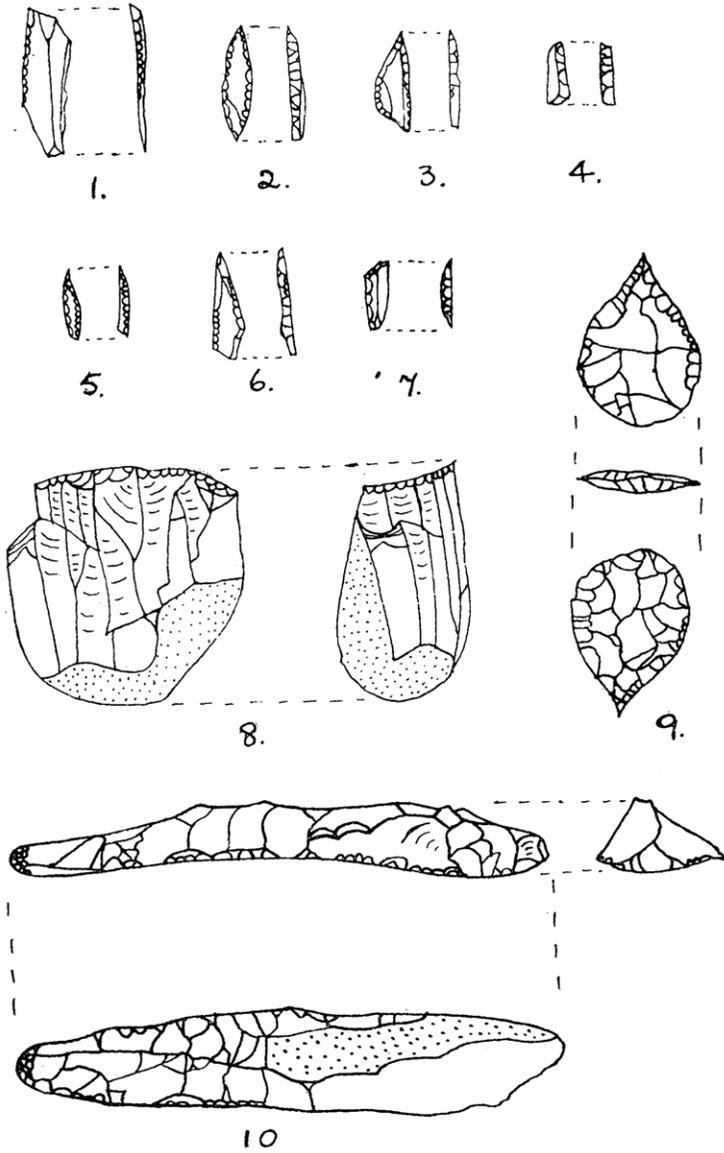


FIG. 1.—(Scale 1 : 1).

Fig. 2.

11. A crudely-made thick arrowhead in honey-grey flint. It is rather lopsided and clumsy. There is a slightly pronounced barb at one side. This is possibly a very late arrowhead, made when the skill of the flint worker had degenerated because of the increasing use of other materials. It was found in the middle of site I and could have been made many years after the abandonment of the site by the people of the Mesolithic traditions.
12. A beautifully-made tanged and barbed arrowhead in creamy patinated flint. The barbs are the same length as the tang; this type of arrowhead is usually given an Early Bronze-Age date. The point of the arrowhead was broken in antiquity, and it was found about 6 ft. from no. 11 in the area marked C in the Drigg Report of 1955.¹
13. Tanged and barbed arrowhead in pink flint with rather a squat appearance and not very pronounced barbs. It is well made and was found within a few feet of no. 10 on site II.
14. Arrowhead of creamy-white flint from site IVA. It has been tanged and barbed; the workmanship is not so good as that of nos. 12 and 13, and it is rather sand-blasted.
15. Fragment of a tanged and barbed arrowhead from the sand-pit, finely made on a thin flake, similar to some which have been found on Walney.
16. Broken knife in dark grey flint from site IVA. It is most unusual in that it is heavily worked on the bulb.
17. A core-trimming flake from site IVB. It has been suggested that this could have been used as a scraper, since it has a very convenient hollow for the thumb.
18. An excellent example of an end-scraper in caramel flint with brown and white cortex.

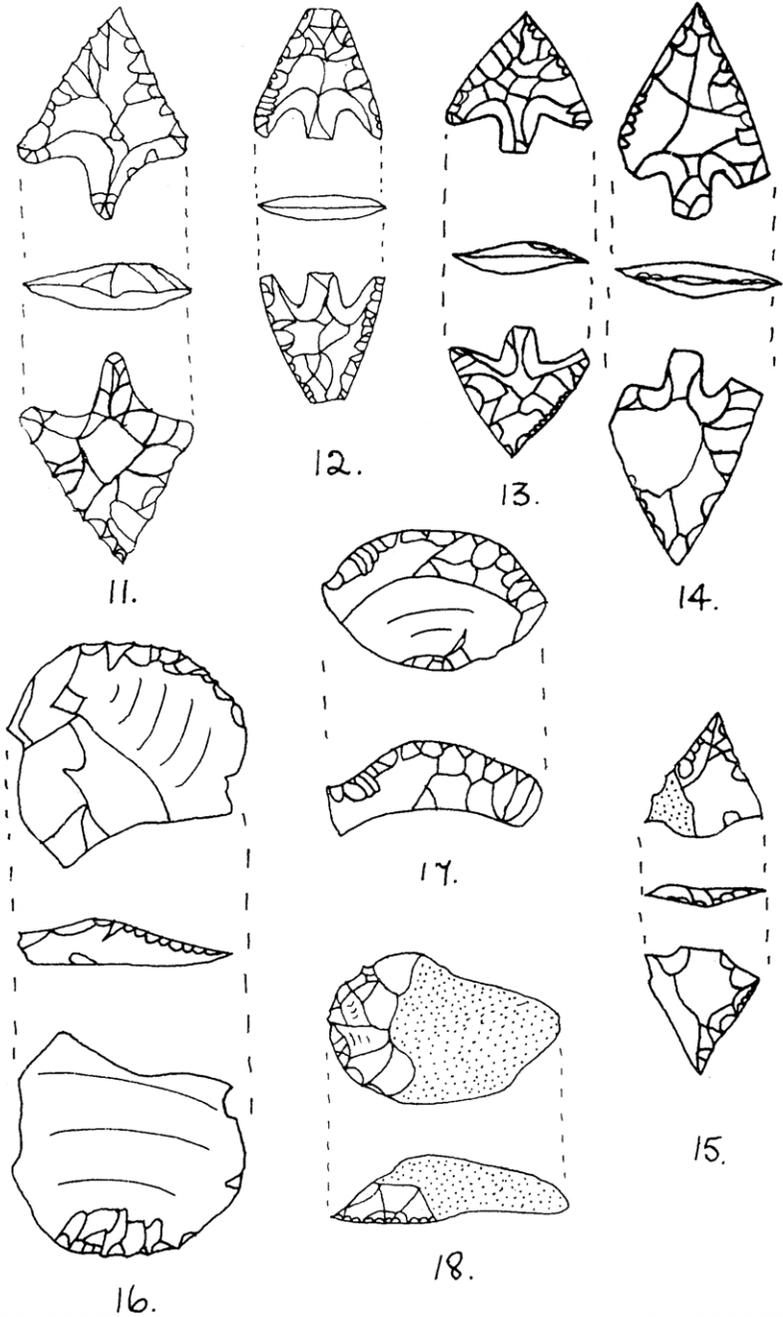


FIG. 2.—(Scale 1:1).

Fig. 3.

19. Fragment of a leaf-shaped arrowhead from site IV_A. This is an excellent example of a "birch-leaf", with the flaking giving a veined effect.
20. Leaf-shaped arrowhead from site IV_A; it is rather clumsy, with a blunt point.
21. Leaf-shaped arrowhead in honey flint, finely worked. The flint is identical in colour with no. 10, near which it was found on site II.
22. Honey and black-mottled leaf-shaped arrowhead from site IV_D.
23. Grey flint saw found on sand in a hollow between sites II and III. The workmanship on the cutting-edge is amazing, it is barely visible with the naked eye and yet small pieces of flint have been removed at fairly uniform intervals to give a bread-knife effect. A double-scale drawing is given to illustrate the cutting-edge. The retouch here is definite and could not be confused with the effect sometimes produced on the edge of a utilized flake.

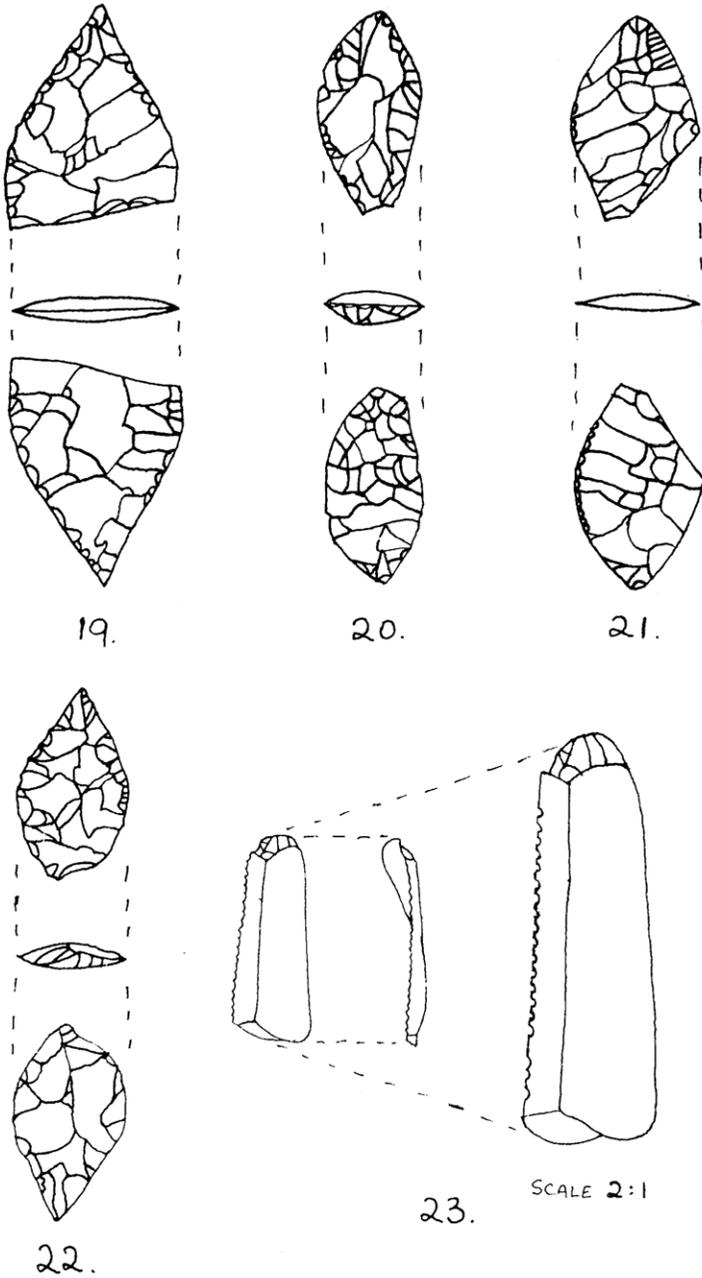


FIG. 3.—(Scale 1:1).

Fig. 4.

24. Creamy-white arrowhead from site IVA, very steeply worked down its long straight edge. It is also flaked along its shortest edge and along part of its curved edge. The steep trimming is mesolithic in character and the arrowhead is a petit tranchet derivative, type H in Professor Clark's classification.³
25. Petit tranchet derivative arrowhead in grey flint from site IVD. The tranchet blow is clearly indicated by the conchoidal rings on the face of the flake bordering the cutting-edge. This piece lies in class C of Professor Clark's classification.
26. Single-barbed arrowhead in coarse grey flint, flaked all over one face. On the other side of the flake the only retouch is on the cutting-edge. This artefact, which was found on site IVA, has a pronounced tang and seems to be a well-developed version of class H of Professor Clark's classification.
27. Worked point in grey flint from site II. This piece is well trimmed, triangular in section and has no tang.
28. Worked point in pink flint from site II. This is not so well proportioned or finely trimmed as no. 27.

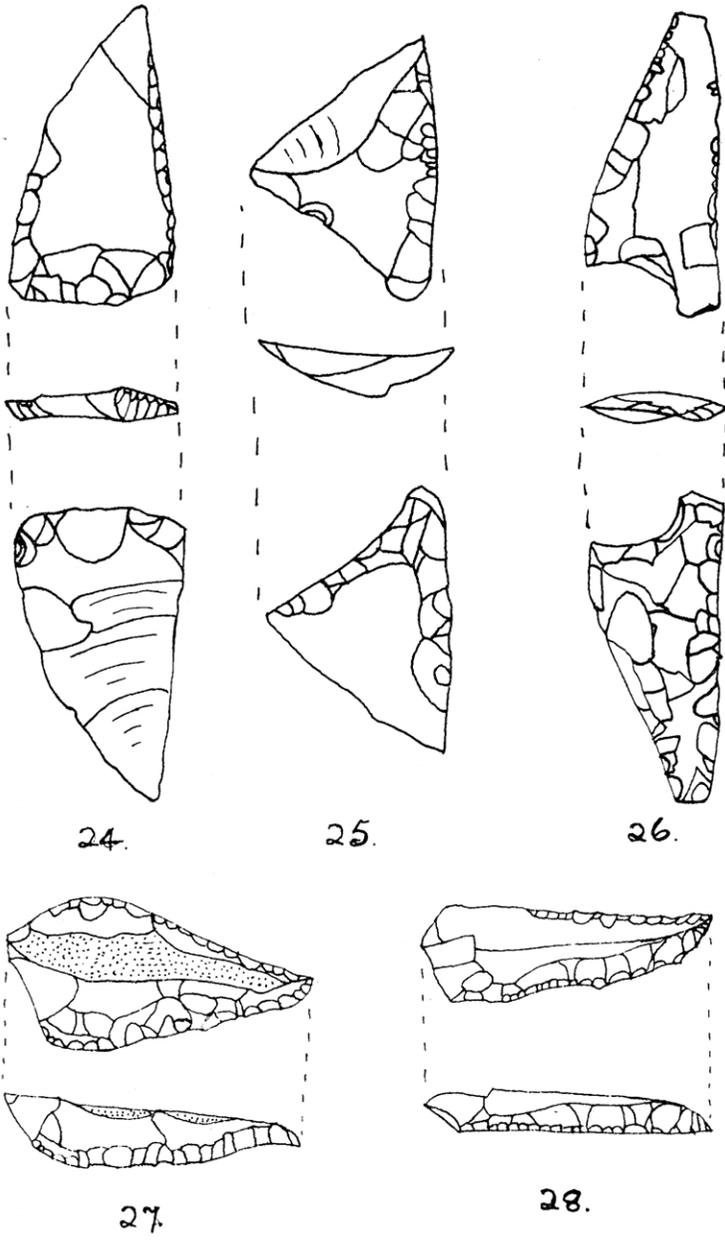


FIG. 4.—(Scale 1:1).

Fig. 5.

29. Grey flint knife from site IVA, 4 cm. long by 1.5 cm. wide, very sand-blasted and smooth.
30. Honey flint knife steeply trimmed on one edge. The flaking must have been very pronounced when made but the cutting-edge is now heavily patinated. This was one of the few worked pieces found on site III.
31. Fabricator in grey flint with a rough grey cortex. It has had little use, and that on one edge only. It is 5.5 cm. long and in section is a triangle of 1.8 cm. side. In size, colour and triangular section it is similar to the Eskmeals fabricator.²
32. Grey scraper from site IVC, all the cortex has been removed and the flint trimmed at one end and down part of one side. The negative bulb is well defined and the pressure flaking on the scraping-edge is fairly shallow, at an angle of 30°.
33. Microlith from site IVA, a small grey blade blunted along part of one side. As far as I know, this is the only microlith found south of the sand-pit.
34. Worked fragment of a leaf-shaped arrowhead, found together with no. 35 in a newly-ploughed field, some 50 yds. east of site I. Although ploughing was carried out here for a considerable distance inland, flint debris was found only in a band of disturbed soil about 20 yds. wide, nearest to the sea.
35. Honey scraper worked on a tiny fragment of flint, all the cortex has been removed and the workmanship is good.
36. One of the four scrapers found at "Summer View". It is made from creamy-white flint with a grey cortex.

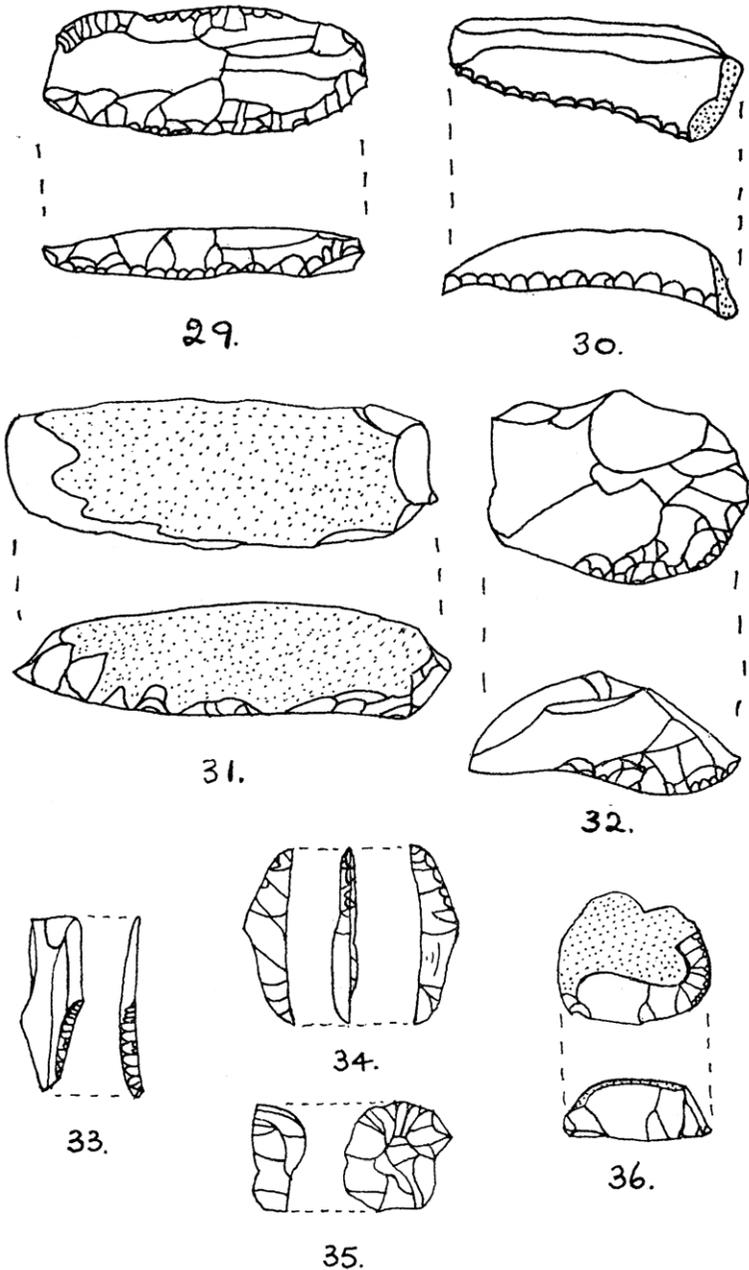


FIG. 5.—(Scale 1:1).

Discussion.

The material from Drigg, with a possible range from late Mesolithic to the Bronze Age, is more akin to that from Walney than that from the sites at Eskmeals, which are mainly Bronze Age in character.

Microliths were found at Walney⁴ some years ago, and again in 1957 by Mr Macdonald⁵ at the corner of Black Butts Lane and Central Drive. More are now being turned up by the plough near Trough Head and Cross Dyke Scar.⁶

The blunted-back technique on microliths from site I is Mesolithic in character, as are the cores with narrow blade scars and secondary retouch along the edge of the striking platforms, but the complete absence of micro-burins is unusual. Macdonald and Nickson have already noted that the material from site I does not compare closely in form with a developed Tardenoisian culture.

There are sites with somewhat similar features in the Western Highlands and the Pennines. Late Tardenoisian sites in Weardale have already been described by Miss C. Fell.^{7,8} A pollen survey at Stump Cross⁹ in the Pennines showed that Mesolithic artefacts, stratified in mud, dated from zone VI-VIIa transition to the middle of zone VIIa.

Dating of sand-hill sites is difficult and is usually based on typology. My discovery of flint flakes in the peat band in the low cliffs at the western edge of site I has made pollen dating possible for at least one period of its use. It is unfortunate that the flint flakes cannot be assigned to a particular culture, but Mesolithic material has been traced almost to the cliff edge, in one or two places where erosion of the sand has occurred.

The sites to the south of the Drigg road are mainly Bronze Age in date, although the sand-pits have produce material with Mesolithic, Neolithic and Bronze Age affinities. Of the Bronze Age sites, no. II has produced the best workmanship, whilst no. IV had by far the greatest use.

Other pockets of flint have become exposed from time to time in the sand-hills, the most notable of which lies on the side of a sand-dune overlooking the modern beach, 50 yds. south of the Drigg road. No worked material has been found, but we have picked up a considerable amount of flint debris.

It would appear from the evidence, that the first people to use the Drigg sites followed a Sauveterrian tradition, formerly described in this country as Late Tardenoisian.¹⁰

The sites were occupied during the Neolithic period and had their greatest use during the Bronze Age.

Acknowledgements.

The paper was written at the suggestion of Miss C. Fell in order that the sites should be permanently recorded. I would like to thank her for the help and advice she has given me in the compilation of this report.

I am most grateful to Mr Macdonald for the loan of a selection of his Drigg artefacts, and for his kindness in discussing the sites with me.

Permission to search the Drigg sand-hills was given by Mr I. McWilliam on behalf of Sir William Pennington-Ramsden.

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Appendix.

Pollen analysis at a microlithic site at Drigg.

By WINIFRED PENNINGTON (Mrs T. G. TUTIN).

The organic band exposed in the low sandy cliff at Drigg is clearly visible in Plate I. A vertical series of samples, through the organic band and the sandy material which underlies and overlies it, was taken in September 1963 at a point B (Plate I) which is directly seaward of the site where microliths were found at ground level some yards back from the cliff face (Nickson and Macdonald, 1956). The microliths were found on clay, and no connection has as yet been demonstrated between the microliths and the organic layer, but in October 1963 Mr Cherry found a struck flake of flint *in situ* in the exposure of the organic band, at point A in the cliff, about 6 ft. south of point B. At my request he took a very closely-spaced vertical series of samples at this point. Both series of samples have been analysed for pollen and spores, and the two pollen diagrams are shown in Fig. 6.

1. *Nature of organic band.*

This is a dark fine-grained deposit in which carbon makes up 15% of the dry weight. Small cellular fragments of plant tissue can be seen when it is examined under the microscope, but no macroscopic pieces of plant detritus are present, so it is not a peat. It appears to represent an accumulation of raw humus plus sand. The clear stratification indicated by the two corresponding pollen diagrams shows that no mixing by earthworms occurred during the formation of this layer, but that successive layers of raw humus built up in temporal succession. Pollen preservation is good, which shows that the humus must have been acid, with a pH of 5.5 or lower (Dimpleby, 1957).

2. *Relationships of organic band.*

Some twenty yards to the north of the sampling site, a layer of large tree branches or trunks, in a sandy matrix, is visible at the base of the cliff exposure. It seems probable that this layer of wood is present at the sampling site beneath the beach sand which forms the foreground of Plate I, and represents forest which was submerged at the time of the maximum of the post-glacial marine transgression, dated to *c.* 4000 B.C. in North-west England by Oldfield (1960a). The sand which makes up the lower part of the cliff section in Plate I, and the organic band, therefore represent deposits which accumulated on the emerging beach as the land rose relative to the sea after the maximum of the

transgression. The sand below the organic band contains marks of large roots; this is consistent with the interpretation of the organic band as an accumulation of raw humus on a sandy forest floor. Above the organic band, intercalated layers of sand and dark humus (see Plate I, extreme left) appear to represent the encroachment of blown sand and replacement of the forest by dunes.

3. *Dating the organic band.*

The flakes found *in situ* in the organic band cannot as yet be dated, and according to Professor Clark may be as late as well on into the Bronze Age. The organic band can therefore be only broadly dated, to within the period between the marine transgression of *c.* 4000 B.C. and some time in the Bronze Age. Within this period there is only one vegetational change which has been proved to be synchronous and sufficiently widespread to be used as a dating horizon — i.e. the *Ulmus* horizon, or Elm Decline, at *c.* 3000 B.C. (Godwin, 1960; Clark and Godwin, 1962). In most of the samples from the two vertical series, pollen of *Ulmus* is very sparse (less than 2% of the total tree pollen) or absent, which means that almost certainly the organic band was formed *after* 3000 B.C.

It seems possible that the rather small but consistent increase in elm pollen, which is seen in both profiles in samples of sand from just below the base of the organic layer, and has been confirmed by counting samples of up to 500 tree pollen grains, means that the organic band began to form just after 3000 B.C. — but until a long pollen diagram from the West Cumberland coastal plain is published, it is not possible to say this with certainty, because in Furness and Lowland Lonsdale (Oldfield, 1963) there are several minor falls in *Ulmus* pollen after the Primary Elm Decline at 3000 B.C. In view of the imminent publication of Dr Donald Walker's detailed pollen diagrams for Lowland Cumberland, no further comment on the dating of this site will be made here, beyond the very tentative suggestion that the base of the organic band may coincide with the Elm Decline of 3000 B.C.

4. *Vegetational succession shown by pollen diagrams.*

Below the level of the flint flake, the pollen in all samples is almost entirely that of *Alnus* (alder), *Betula* (birch), *Quercus* (oak), *Corylus* (hazel) and *Salix* (willow), with the already-mentioned small amounts of *Ulmus* (elm) pollen below the base of the organic band — that is, all tree and shrub species.

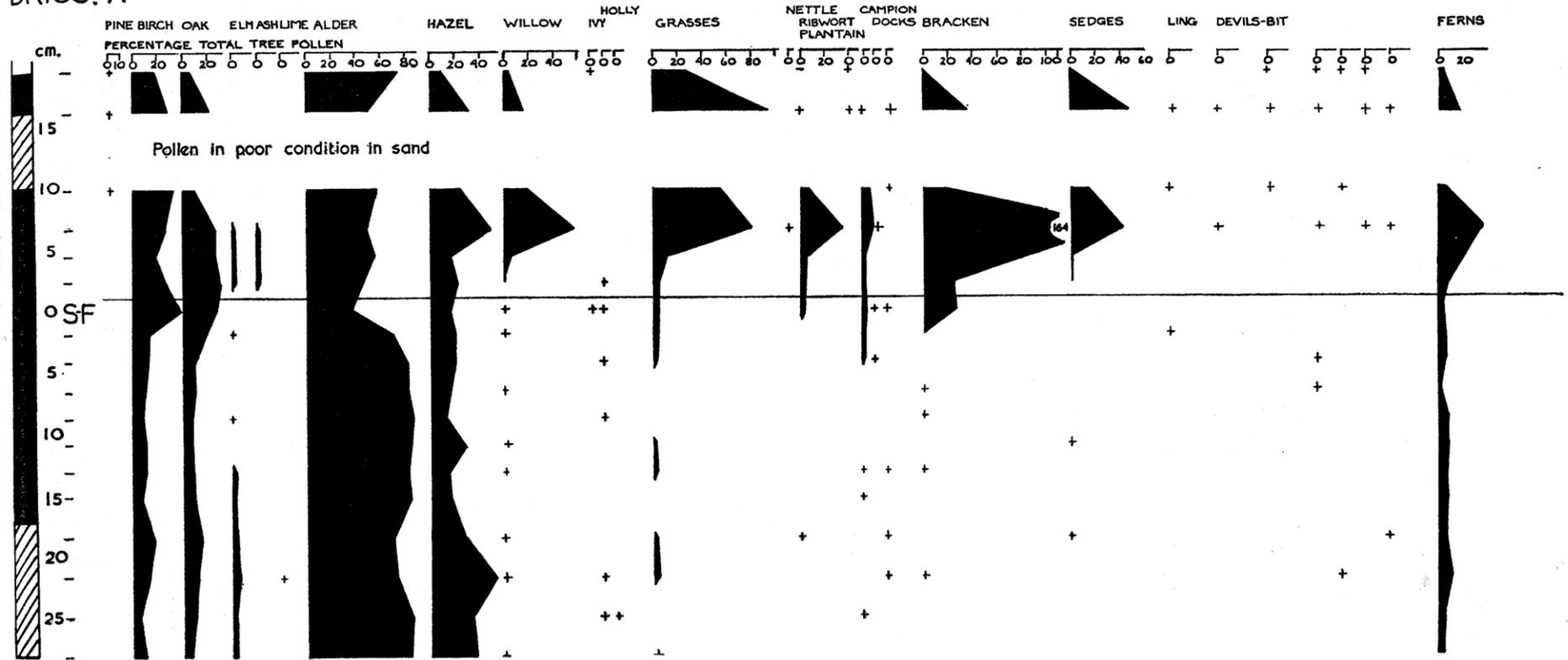
Little herbaceous pollen except the odd grain of grass pollen is present in the samples from below the horizon of the artefacts, and the conclusion must be that closed woodland occupied the site, from its emergence above the beach sand over the submerged forest until the date at which a band containing struck flakes and broken stones indicates the presence of man in the area. Overwhelming dominance of alder pollen in the samples from the organic band below this flint layer shows that it was probably damp alder woodland with little or no ground flora.

At the level of the layer containing struck flakes, both pollen diagrams indicate a change to a drier type of woodland with birch, oak and hazel well represented. It seems likely that some change in the drainage of this coastal area was responsible for this change, and rendered the site more attractive for human settlement. At the same level, there is a peak of willow and sedge pollen, which may well represent encroaching dunes bearing *Salix repens* and *Carex arenaria*, but since it is not possible to be sure of the *species* represented by the willow and sedge pollen, it is possible that both were derived from aquatic species in a small *Salix* fen nearby; it is clear, however, from diagram B, that this *Salix-Carex* peak came earlier than and separately from, the phenomena of forest clearance.

Forest clearance is indicated immediately above the flint-bearing layer by sudden steep rises in the percentages of pollen of grasses and certain herbs, relative to tree pollen, and by an enormous increase in bracken spores. The herbs, *Plantago lanceolata* (Ribwort Plaintain), *Urtica* (Nettle), *Rumex* spp. (Docks), and Caryophyllaceae — *Silene* type (Campion) are associated with clearance activities by Neolithic man at many Danish sites which have been investigated (Iversen, 1941; Troels-Smith, 1960; etc.). The large quantities of grass pollen and bracken spores, reaching several hundred per cent of total tree pollen, show that much of the woodland near this site was replaced by grassland with bracken, just as the layer with flint flakes was becoming incorporated in the accumulating humus. Forest clearance by man was certainly responsible.

Episodes characterized by changes of this type in the curves for tree and herbaceous pollens have been found in sediments from Lake District lakes (Pennington, 1964 (in the press)) at horizons from the Elm Decline upwards, but this is the first site to be recorded in North-west England at which an artefact — the struck flake of flint — has been found *in situ* in a deposit from which a pollen diagram could be prepared. It seems almost certain that the forest clearance episode recorded in this pollen

DRIGG: A



DRIGG: B

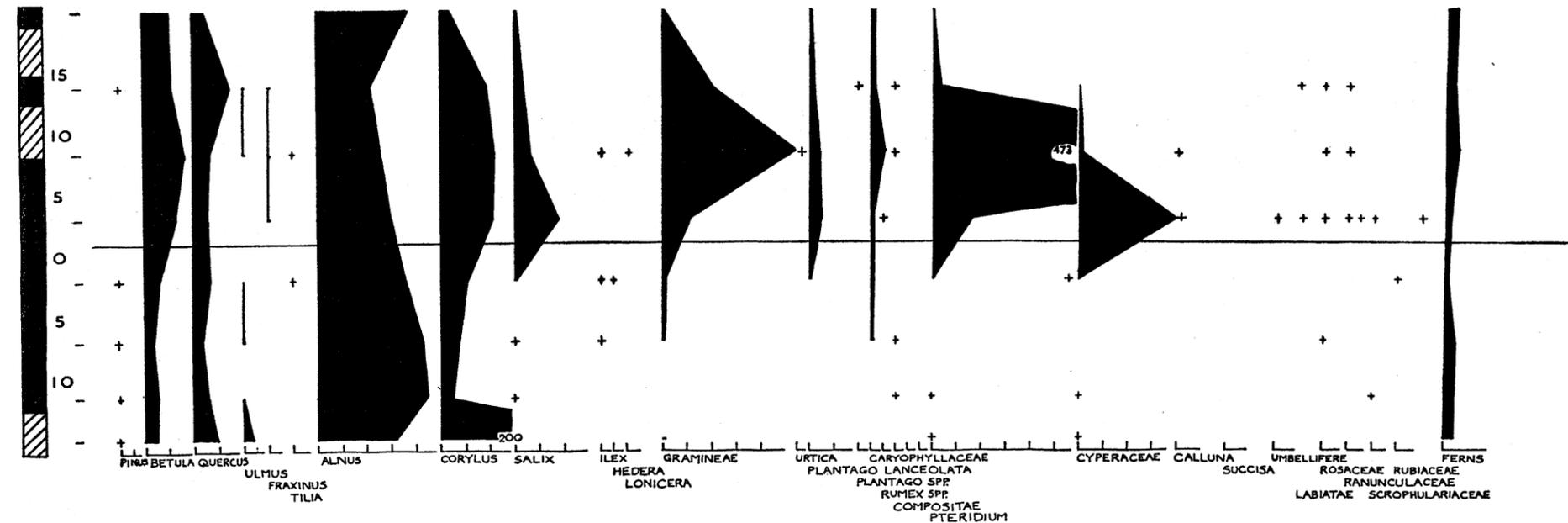


FIG. 6.—Pollen diagrams from two vertical series through the organic band at 1061097 A and B on Plate I. A is the profile in which the struck flake (SF) was found *in situ*. In each pollen diagram, the horizontal line represents the horizon at which artefacts (struck flakes and broken stones) have been found. In each profile, the organic band is represented in solid black, and sandy layers are shaded.

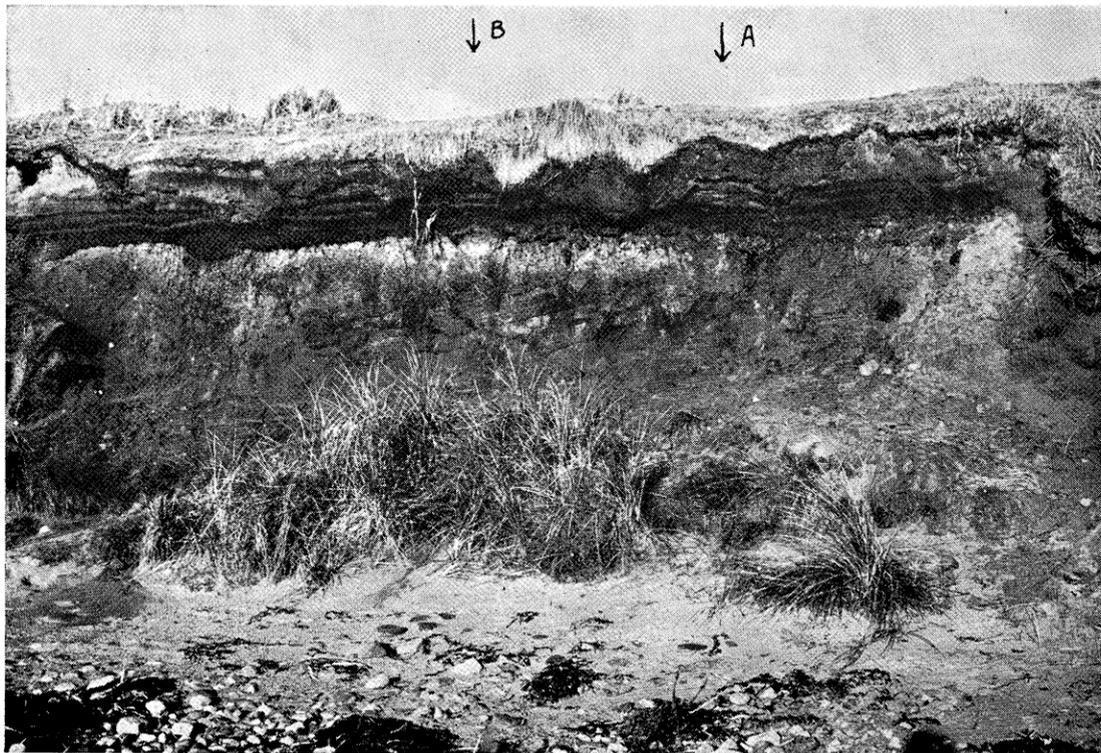


PLATE I.—The exposure of the organic band in the low cliff at Drigg.
A and B mark the positions of the two pollen diagrams.

diagram was directly associated with a flint industry, represented as yet only by struck flakes, but possibly associated with the collection of microliths found immediately inland. It is to be regretted that as yet neither the flakes nor the pollen diagram can assign an exact date to the industry, but it is satisfactory to find that plants which have been taken to indicate anthropogenic forest clearance are indeed present in direct association with the struck flakes.

All the pollen data is in favour of a date of later than 3000 B.C., but it is not possible to say how much later. The preponderance of alder pollen in the deposit and of bracken in the clearance layer, resemble Oldfield's findings in a coastal bed in S.W. France which has yielded flint and stone implements of the Asturian industry, of Neolithic age but having typological affinities with the Mesolithic; Oldfield obtained a radiocarbon date of 5,100 Before Present, i.e. very nearly 3000 B.C., for a piece of wood from this layer (Oldfield, 1960b).

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