

A HAND-AXE MADE OF *HÄLLEFLINTA* FOUND AT ANREEP, NEAR ASSEN
(PROVINCE OF DRENTE, THE NETHERLANDS)

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1. INTRODUCTION

The hand-axe described in this article was found on April 2nd, 1983 by P.O. (Edwin) de Jong (Assen), who was 11 years old at the time. The find was reported by him to Mr. J.R. Beuker of the *Provinciaal Museum van Drenthe*, in Assen. In the meantime this museum has acquired this remarkable find.

The find is remarkable partly because the hand-axe is not made of flint like all other hand-axes from the Netherlands (as far as I am aware), but of *hälllefinta*. This rock occurs regularly in the northern half of the Netherlands in the form of erratics, transported here by the ice sheet (as flint was also) during the last part of the penultimate glacial, the Saalian.

In addition the find is also typologically important, as the hand-axe fits in well within a late phase of the Middle Paleolithic, the so-called *Moustérien de tradition acheuléenne* (M.T.A.; see Bordes, 1968 for a general characteristic). This tradition can be dated fairly certainly in the first half of the last glacial (Weichselian). To the same tradition we can also most probably ascribe two other hand-axes from the Northern Netherlands, namely the triangular hand-axe from Anderen (Stapert, 1976a; 1976c), and notably the small sub-triangular hand-axe (made out of a flake) from Mander (Stapert, 1980; this volume). Consequently the presence of this tradition in the Netherlands now appears to be very probable.

Finally also the site of the find is of interest. Although it cannot be determined exactly (the hand-axe was not found *in situ*), it is reasonable to suppose that the site lies along the fringe of a valley, as is also the case with many other Middle Paleolithic finds from the Netherlands.

For the realization of this article I am indebted to a number of persons. In the first place to Edwin de Jong for the opportunity to study the hand-axe; in addition to Messrs. J.R. Beuker and O.H. Harsema (*Provinciaal Museum van Drenthe*, Assen) for their cooperation; to Mr. M.W. ter Wee (State Geological Survey) for providing a geological map (unpublished) of the area concerned; to Mr. A.P. Schuddebeurs (Norg) for the petrological identification of the tool; to Mr. H.R. Roëlink (B.A.I., Groningen) for the drawings of the hand-axe; to Mr. J.M. Smit

(B.A.I., Groningen) for the other drawings; to Mr. F.W.E. Colly (B.A.I. Groningen) for the photos of the hand-axe and for making prints of my microphotographs; to Sheila M. van Gelder-Ottway for translating the text into English; to Hillie Klaassens (B.A.I., Groningen) for typing the manuscript. To all of these persons I am very grateful.

2. THE SITE

Edwin de Jong discovered the hand-axe by walking into it where it lay on the surface of a dam across a ditch, alongside a sand-path. The site (figs. 1–3) lies ca. 800 m south of the hamlet of Anreep (municipality of Assen). The coordinates on the Topographical Map of the Netherlands are: sheet 12D (Assen) 235. 225/554. 288.

Unfortunately it is no longer possible to ascertain exactly where the hand-axe came from. From a boring it is evident that the dam itself consists entirely of black soil containing semi-decomposed plant remains and very occasional small lumps of weathered boulder-clay. This material is thus topsoil (presuma-



Fig. 1. Map of the Netherlands, showing the site of the hand-axe from Anreep. (Drawing J.M. Smit, B.A.I.).

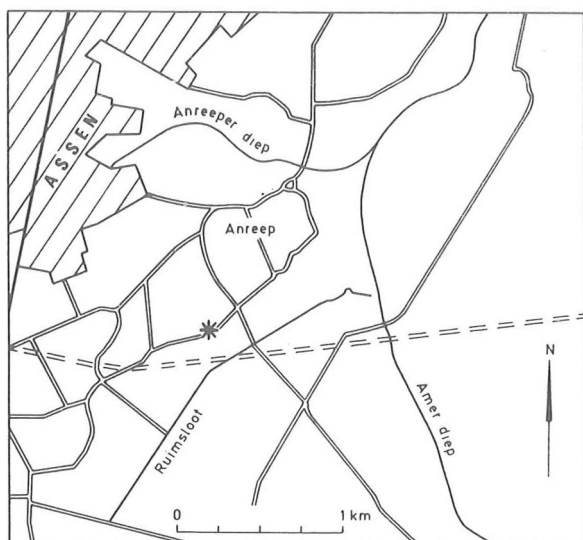


Fig. 2. Map of the site, based on the Topographical Map of the Netherlands 1:25,000, sheet 12D (1970). (Drawing J.M. Smit, B.A.I.).

bly transported from somewhere in the surroundings), and not *e.g.* soil dug out of the adjacent ditch in which *i.a.* boulder-sand is exposed. It is unlikely that the hand-axe originates from this material, also in view of the fact that it lay isolated on the surface of the dam, that was covered with vegetation.

The terrain to which the dam gives access has been used since about the beginning of 1982, off and on, for the purpose of winning sand, by a farmer in the area. Just before the moment when the hand-axe was found sand-moving operations had taken place, in connection with the construction of a new barn elsewhere. As a general rule sand was dug away down to as far as the top of the boulder-clay.

From a few borings done on the terrain the following stratigraphy can be deduced:

0 -	35cm	topsoil
35 -	90	cover-sand (at the top with a B-horizon of a heath podsol); locally thinner
90 -	120	boulder-sand
120 ->	130	grey boulder-clay; weathered

The hole resulting from the sand-digging operations was subsequently filled up with material (containing a lot of rubble and stones) from a spot in the neighbourhood. This task had been about half completed by May 13th, 1983 (on which date we made a reconnaissance

of the site). According to the finder of the hand-axe this work had not been started on April 2nd, when the hand-axe was found. It thus appears that the possibility that the hand-axe originated from this transported material can be excluded.

For the meantime it can therefore most probably be assumed that the hand-axe originates from the spot where the sand was dug out. As previously mentioned, digging operations were carried out down to about the top of the boulder-clay, so it is certain that also boulder-sand was removed in which the hand-axe presumably must have been present originally (see under 3). It must then be assumed that the hand-axe fell from a fully loaded lorry being driven over the dam. This does not contradict the finder's communication, that the hand-axe lay close to one edge of the dam. Nevertheless, this can be described as a highly fortuitous situation, as indeed occurs quite often in archeology.

Assuming that the hand-axe does indeed originate from the terrain concerned, it can be pointed out that the position of the site in the landscape corresponds to those of a number of other hand-axe sites in the Netherlands, namely along the fringe of a valley. The above-mentioned sand-path near the find-spot follows fairly closely the northwestern fringe of a small side valley of the Amer diep, through which the Ruimsloot now passes. The site lies c. 1 km SW of the point of confluence of both the Ruimsloot and the Amer diep with the Anreep diep.

Together with the Andersche diep these streams with their side-streams form the valley system of the Drentsche Aa. In figure 3 is shown the geological map of this region (kindly provided by M.W. ter Wee). Part of the upper reaches of the valley system of the Drentsche Aa is clearly visible in this figure. Indicated on the map is the site at Anreep, and also the site of the triangular hand-axe of Anderen. The latter came to light along the southern fringe of the Scheebroekerloopje, a small side-valley of the Andersche diep, at the top of the valley slope that is clearly visible in the topography there (see Stapert, 1976a: pl. II).

According to De Gans (1981) the valley system of the Drentsche Aa was first formed during the late Saalian or early Eemian. A subsequent erosion phase, that was possibly more intense, occurred in the Middle

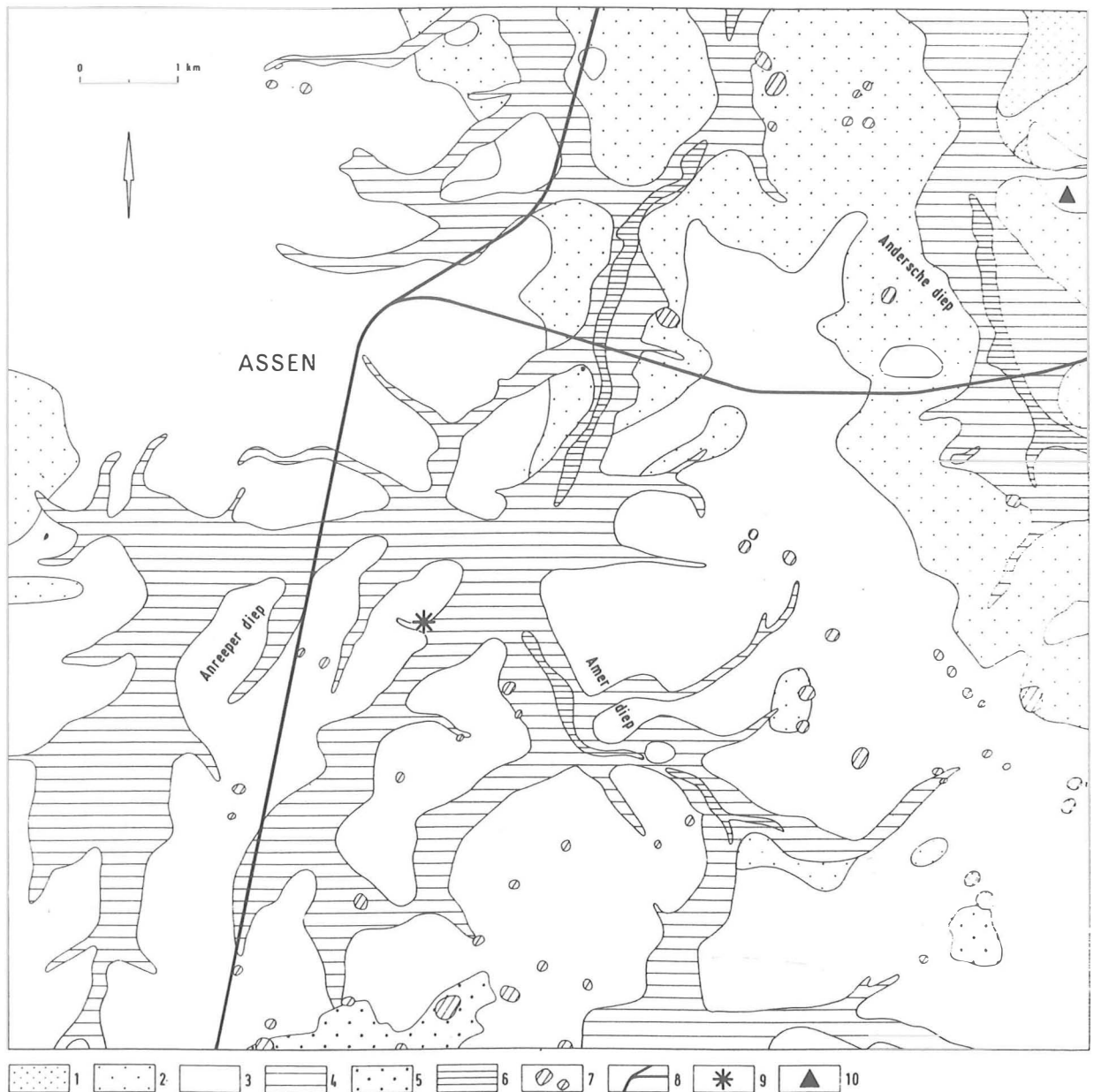


Fig. 3. Geological map of the vicinity of the site, provided by M.W. ter Wee (State Geological Survey). Key: 1. clay (Peelo Formation, Elsterian), partially covered by max. 2 m cover-sand (Twente Formation, Weichselian); 2. eolian sands (Peelo and Eindhoven Formations, resp. Elsterian and Saalian), partially covered by max. 2 m cover-sand; 3. boulder-clay (Drente Formation, Saalian), partially covered by max. 2 m cover-sand; 4. brook deposits (Twente Formation, Weichselian), partially covered by max. 2 m cover-sand; 5. wind-blown sands (Holocene); 6. fen peat (Holocene), more than 1 m thick; 7. peat in pingo remnants or depressions in cover-sand; 8. railway; 9. site of the hand-axe of Anreep; 10. site of the hand-axe of Anderen. (Drawing J.M. Smit (B.A.I.).)

Weichselian. According to Ter Wee (1979), at that time many new stream valleys became established on the Drents plateau. It is not known exactly when the side-valley was formed through which the Ruimsloot near Anreep now passes. In view of the fact that in

the uppermost course of the Andersche diep deposits dating from the late Eemian are found (De Gans, 1981: p. 27), it seems reasonable to assume that also the valley near Anreep existed then already.

The most obvious dating for the MTA finds

from Anderen and Anreep is the Early Glacial of the last ice age (see under 3). The conspicuous position of the sites of these two finds along valley fringes would be difficult to explain if these valleys had originated only later, in the Middle Weichselian. De Gans (*ibid.*) found in the upper course of the Andersche diep also a few loamy or sandy organic layers, that on the basis of pollen analysis could be dated to *i.a.* the Early Weichselian interstadials Brørup and Odderade. The Amersfoort interstadial was not in evidence. It thus seems clear that these valleys already existed during the Early Weichselian, although a phase of deep cutting action during the Middle Weichselian partly changed their course (see De Gans, *ibid.*: fig. 21).

The location of Middle Paleolithic sites along valley fringes is a fairly general pattern. It applies in the Northern Netherlands also for the sites of the hand-axes of Exloo and Wijnjeterp (Stapert, 1976b). Also in the southern half of the Netherlands a number of examples of this phenomenon can be pointed out (see, for several finds in the provinces of North Brabant and Limburg: Stapert 1977; 1979).

In the Central Netherlands many Middle Paleolithic finds occur in river sediments, *e.g.* near Rhenen (Stapert, 1981), as is the case at many sites in neighbouring countries too. It is probable that both the availability of drinking water and the hunting methods used are connected with this pattern.

3. THE HAND-AXE (figs. 4, 5)

As previously noted the hand-axe is not made of flint, in contrast to all other hand-axes from the Netherlands (from the sites near Rhenen choppers and chopping-tools are known that are often made of quartzite, but the few hand-axes there are made of flint).

The rock has been identified as *hålleflinta* by A.P. Schuddebeurs, who is a specialist in crystalline erratics. This is a compact metamorphic rock derived from *i.a.* tuffs. It is a very fine-grained type of rock, consisting mainly of quartz.

Hålleflinta is a regularly occurring erratic in the Northern Netherlands, transported by the ice sheet from Scandinavia during the Saalian (as flint was also). Notably in boulder-clays

with rocks mainly originating from Småland in Sweden there are many *hålleflintas* present, constituting up to 10% of all crystalline rocks (Schuddebeurs, 1980: p. 174). Van der Lijn (1973) mentions that *hålleflinta* has a somewhat 'greasy' gloss; the rock hardly weathers at all, although a superficial coloration may develop. Especially with the very dense varieties, as in the case of the hand-axe from Anreep, on which no granular structure can be observed macroscopically, the rock may strongly resemble flint at first sight; also the fracturing properties are comparable.

With the hand-axe from Anreep the rock is light brownish-purple in colour; in it light coloured phenocrysts of feldspar are present, and in addition fine parallel striping (flow structure) is visible. Here and there small hollows are present (possibly from dissolved feldspars?) in which pale-coloured sand occurs, in a few cases with grains measuring to max. c. 1 mm in diameter.

Running through the hand-axe are a number of distinct cracks. In a few cases it is clear that these were already present in the rock before it was worked by prehistoric man: a few flake negatives have reacted to these, in as much as they end in a step-fracture alongside such a crack (*i.a.* visible in the middle on face I—see the drawing, fig. 4). This is an indication that the lump of rock was originally picked up by someone from out of the (then present) 'boulder-sand', *i.e.* on the surface: relatively many stones in that level are (and undoubtedly also were then) affected by weathering processes like frost-splitting. There are no clear indications of secondary frost-splitting (from after the time of working).

Although a fine striping is present in the rock, one nevertheless cannot speak of distinct anisotropy—the rock has approximately the same (splitting) properties in all directions, like flint. It does however split more irregularly and in such a way that more splintering occurs, and consequently the specimen looks rougher than it would do if it were made of flint. Percussion waves are less clearly developed than in flint, but percussion 'rays' are more pronounced.

Since in general flint was preferred by Middle Paleolithic men because it has a higher quality than for instance *hålleflinta*, one must assume that at the spot where the hand-axe

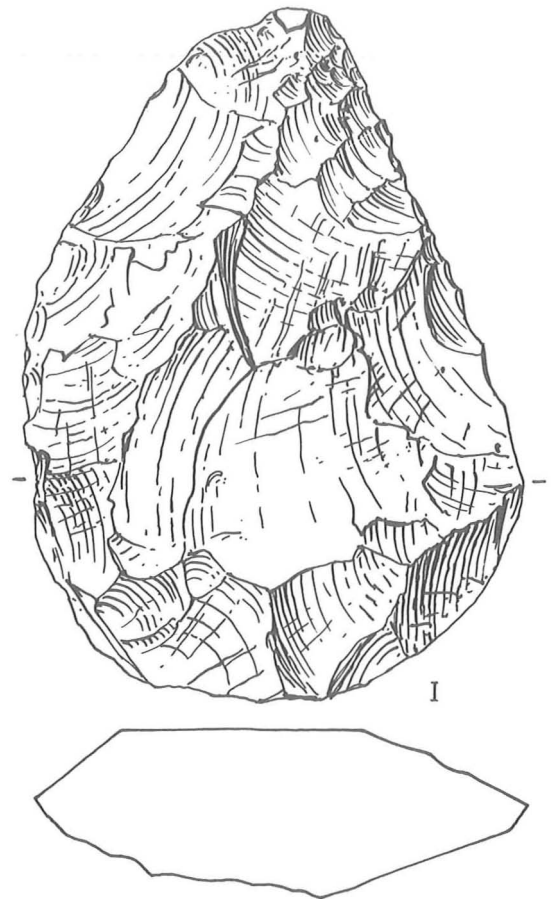


Fig. 4. The hand-axe from Anreep. Near the top there is a little recent damage, that has been left white in the drawing. (Drawing H.R. Roelink B.A.I.).

was made (not necessarily the site where it was found: Stapert, 1980), good lumps of flint were scarce, and *h lleflinta* provided the next best material to be found. It is known that the proportion of flints present in the moraine may vary considerably between different spots.

No distinct old faces are visible (with more severe weathering), so the tool must have been worked over the whole surface.

A few measurements of the hand-axe are as follow:

L max. (L)	9.2 cm
B max. (m)	6.4
T max. (e)	2.5
B in the middle	6.1
T in the middle	2.4
B at � distance from the top	4.3
B at � distance from the base	6.2
distance from base to point of	
B max (a)	2.9

distance from base to point of T max.	5.1
angle of left edge (of I), measured in the middle over c. 1 cm	c. 68�
angle of right edge (of I), measured in the middle over c. 1 cm	c. 51�
weight	141. 6 g

This gives us the following indices according to Bordes (1961):

L/a	3.17
n/m \times 100	95.31
L/m	1.28
m/e	2.56

Consequently the specimen can be classified, according to the typology of Bordes (*ibid.*) as a *biface subcordiforme*.

In my opinion it is not correct to classify the tool as a *biface   dos* or *Keilmesser* (Bosinski, 1967). The left edge of face I is indeed blunter

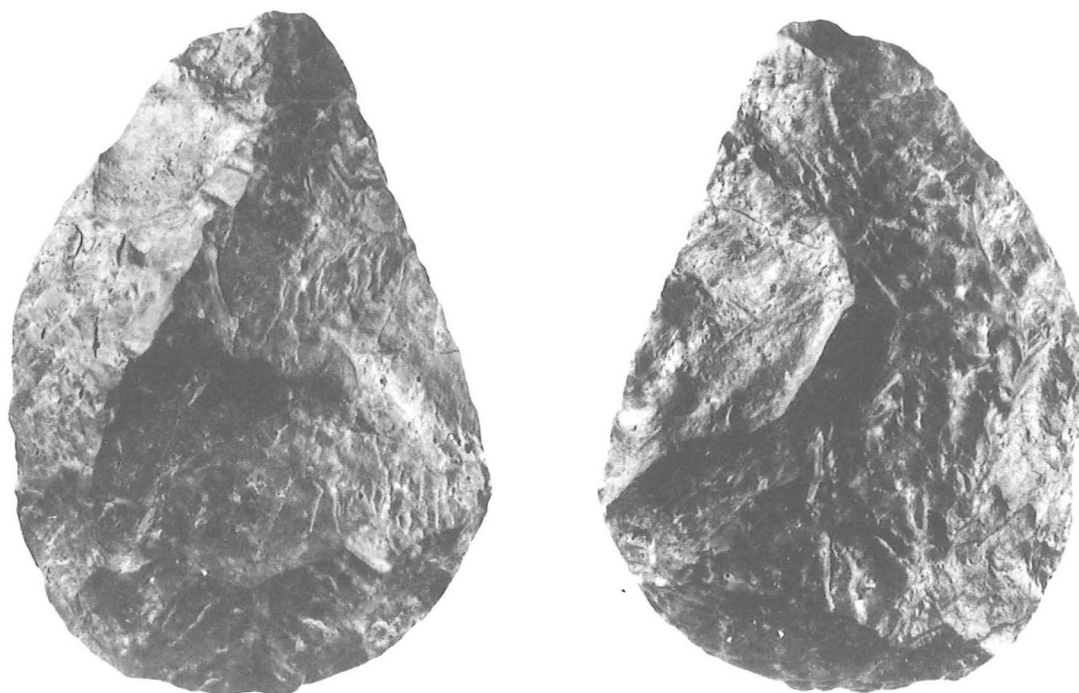
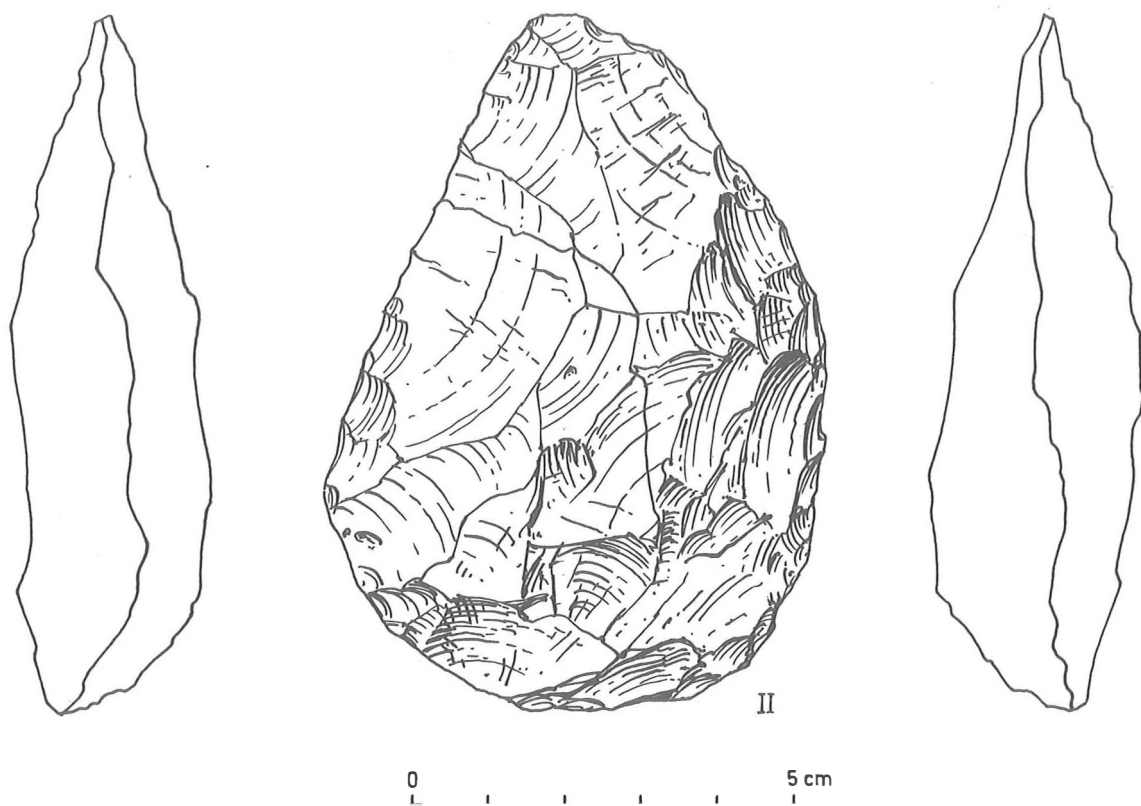


Fig. 5. The hand-axe from Anreep. (Photo F.W.E. Colly, B.A.I.).

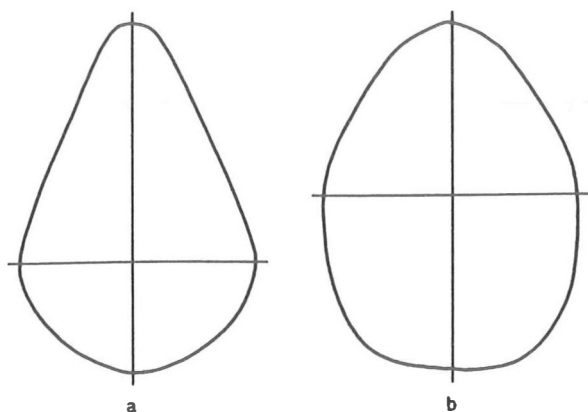


Fig. 6. Two alternative forms, based on the mirror-image reflection of both edges of the hand-axe with respect to the longitudinal axis. *a.* right edge (of face I) with its mirror-image reflection, *b.* left edge with its mirror-image reflection. (Drawing H.R. Roelink, B.A.I.).

than the right edge, especially in the middle, but it is a cutting edge nevertheless, and near the top sharp angles occur ($41\text{--}43^\circ$).

A conspicuous feature of the specimen is its asymmetry: the two edges are not the same shape. Ulrix-Closset (1975) has included in her typology a form that she calls *biface mixte*. In this category she places hand-axes with one straight edge (as in the case of triangular hand-axes) and one convex edge (as in the case of *cordiformes*). To give an idea of what the hand-axe could have looked like if it had been shaped symmetrically, fig. 6 was constructed, in which is shown the mirror-image reflection of both edges with respect to the longitudinal axis.

In case *a* the following indices would apply:

L/a	3.17
$n/m \times 100$	82.81
L/m	1.44

Accordingly this form could be described as a *cordiforme vrai*. Seeing that the edges run straight, however, and not convex, this form is strongly reminiscent of (sub) triangular hand-axes, especially on account of the 'knick' between the straight edges and the round base.

In case *b* the indices would be as follows:

L/a	1.92
$n/m \times 100$	98.51
L/m	1.37

This form would have to be classified as a *biface ovalaire*.

There are indications to suggest that form *a* represents the form that was required by the maker. Along the left edge of face I (the *ovalaire*-edge) there are many smaller negatives present (especially on face II), including a number that extend only for a relatively short distance, and end in step-fractures. Also the angle of this edge is distinctly less sharp than that of the other edge, at least in the middle. It thus seems as though the maker of the hand-axe had difficulty with the working of this edge, and this is undoubtedly connected with the coarser nature of the material used, compared with flint. The specimen is furthermore worked all over, including the base that is cutting and that has been finished off to make it rounded. There are no indications that the hand-axe was made out of a flake, although this is certainly not impossible—the specimen is fairly small and not too thick for this.

Although the material used is inferior to flint, the working of the specimen was nevertheless reasonably successful: notably the top part is fairly thin and has sharp edges. The edges of the hand-axe run fairly straight in side view, and although it is not so easy to see with this material one nevertheless gets the impression that (certainly in the finishing-off process) also soft percussion was applied.

Various features of the tool make it probable that we are here concerned with a small hand-axe that belongs to the MTA of Bordes: the fact that the specimen is fairly small, and worked all over (with a cutting base), and especially the shape of the right edge of face I, that is reminiscent of the more or less triangular hand-axes of the MTA type A of Bordes. We therefore assume, for the meantime, that the hand-axe can best be placed in the MTA type A, like the triangular hand-axe from Anderen and the subtriangular hand-axe (made out of a flake) from Mander.

The ridges and edges of the hand-axe clearly show an overall slight degree of roundedness, with which we are also familiar on other Middle Paleolithic finds (made of flint), from the Northern Netherlands. The roundedness is not the result of fluvial rolling, but probably of slow solution processes in the soil.

The top part of face I shows over a distance of c. 2 cm from the point a conspicuous modification of the surface, consisting of a brown coloration, that is reminiscent of the

Fig. 7. A scratch on the hand-axe from Anreep. Photo taken through a stereomicroscope (Wild M5A) by D. Stapert (B.A.I.).

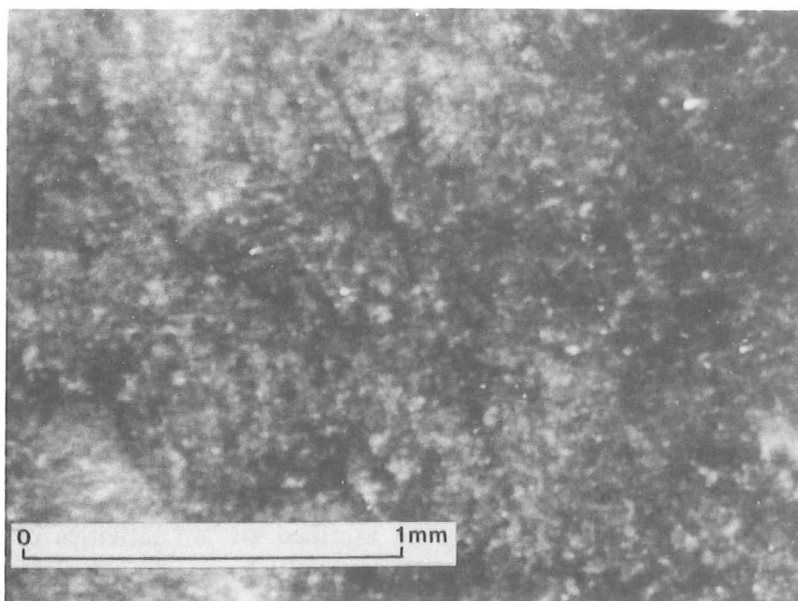
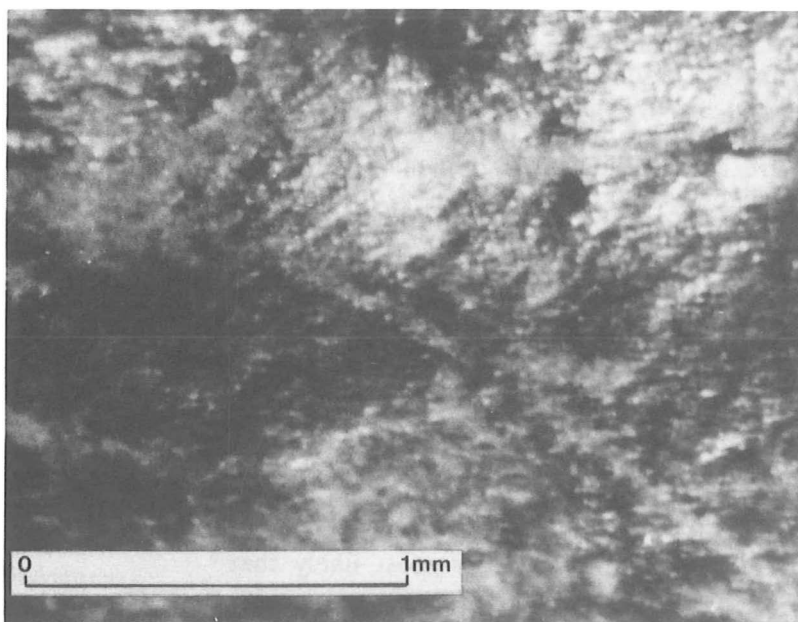


Fig. 8. A few scratches on the hand-axe from Anreep. Photo taken through a stereomicroscope by D. Stapert (B.A.I.).



brown patinas of flint, and a higher sheen. This sheen strongly resembles wind-gloss of flint, especially on account of the presence of small flat-bottomed pits in the same area (for a description of this phenomenon see Stapert, 1976b). These small pits certainly did not originate only as a result of the solution of

feldspar-phenocrysts. The sheen is also visible on face II but only over a distance of c. 0.5 cm from the top.

Locally the brown coloration is accompanied by the presence of a superficial thin layer of iron-rust. This may be the result of soil processes, possibly connected with the

Holocene podsol at the top of the cover-sand; also the boulder-sand is locally of variegated colour here and enriched with iron compounds.

With the aid of a stereomicroscope scratches can be seen, relatively few in number but in several cases quite distinct (figs. 7, 8). Here it should be remembered that the material does not lend itself to such observations as well as flint. In addition a number of usually rather vague pressure cones were observed. Furthermore there are a few patches of slight white coloration, but it is not clear to what extent this is a patina or a characteristic of the material.

Some fine steep retouching along the edges, that in places 'break through' the straight-running edge, can probably be ascribed to periglacial soil movements, such as cryoturbation.

The natural surface modifications present (brown 'patina', wind-gloss, small pits, scratches, apparent pressure cones, roundedness and apparent cryoturbation retouch) indicate that the specimen originated from the boulder-sand (see Stapert, 1976b; 1976c).

In the above it has been demonstrated that there are typological arguments for placing the hand-axe of Anreep in the *Moustérien de tradition acheuléenne*. Thus the number of sites that can be placed with reasonable certainty in this tradition in the northern half of the Netherlands now amounts to three. In two cases (Anreep, Anderen) we are concerned, as far as we are aware, with isolated hand-axes, and in the third case (Mander) with a 'concentration' (so far 26 specimens have been collected here, including a hand-axe). If we assume that the three sites date from more or less the same time, then, as previously mentioned, it is most likely that they all belong to the MTA type A of Bordes (1968). In view of the available datings for the MTA in France and Belgium the most obvious dating for these finds would be the Early Glacial of the last ice age, notably the later part of this period (see the discussion in: Stapert, this volume). For the meantime we must assume that in this region the Lower Pleniglacial (that follows the Early Glacial) was too cold for human inhabitation, so the chances of finding MTA type B here seem to be very small.

4. SUMMARY

In this article is described a hand-axe, found on the surface of a dam, near the hamlet of Anreep (mun. of Assen). The hand-axe is made of *hällflinta*, a rock of northern origin that to some extent resembles flint. Up to now no other finds have been made at the site. At this spot boulder-clay is present at a depth of 120 cm below the surface (in some places less deep), on top of which there is boulder-sand (a weathering residue of boulder-clay) and cover-sand (dating from the Late Glacial of the last ice age). The hand-axe, that in view of the surface modifications present must originate from the boulder-sand, presumably came to lie on the surface as a result of digging activities in the immediate vicinity.

The site lies along the northwestern fringe of a side-valley of the Amer diep, that belongs to the valley system of the Drentsche Aa.

Typologically the hand-axe can be classified as a *biface subcordiforme*. The specimen is asymmetric, however, and this can probably be attributed to the relatively deficient properties of the material used. From an archeological viewpoint the hand-axe can best be placed in the MTA type A of Bordes, just like the triangular hand-axe from Anderen and the material of Mander (including a sub-triangular hand-axe made out of a flake). The hand-axe therefore can most probably be dated in the Early Glacial of the last ice age.

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