

# TWO NEOLITHIC STONE AXE ROUGHOUTS FROM THE PROVINCE OF DRENTHÉ

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## 1. INTRODUCTION

Stone axe roughouts (Dutch: *halfabrikaten*, German: *Vorarbeite*) are partially worked artefacts, intermediate between the initial stage of the raw material on the one hand and the final stage of a polished axe, which after hafting would be ready for use, on the other.

Disregarding the effort required in actually obtaining the raw material, this process of working the stone involved the production of a basic shape by means of removing superfluous material, using one or more of the following techniques: flaking, sawing, pecking/rubbing. The aim of this process was to facilitate the final task of grinding and polishing by minimizing the amount of material that had to be removed at that stage.

Roughouts are a well known phenomenon in the prehistory of Western Europe. Especially roughouts made of flint have been found in large numbers at the most important sites where flint was obtained: in the flint mine areas, where the flint nodules were won at some depth out of the chalk deposits, often through shafts. On the surface, in the immediate vicinity of the mine-shafts, the flint nodules were broken into pieces from which proto-axes were made. In this state they were traded, or at least taken elsewhere for the most part, where after grinding and polishing they were ready for use.

Roughouts of non-flint stone axes are known in Western Europe especially from two regions. In Great Britain during the Neolithic, in addition to flint many other types of rock were used that were suitable for making axes. The material was usually collected at the spot where the appropriate rock outcropped. Sometimes production centres arose which were able to compete with flint mines in terms of distribution potential. At these sites, where the raw material was won, roughouts, misformed artefacts and waste fragments are found, as is the case with flint mines.

In Switzerland Neolithic settlements such as Niederwil satisfied their own requirements by making use of erratic material, notably rolled pebbles from the river beds. Waste material from the working process, broken roughouts and almost completed artefacts, ready for grinding and pol-

ishing, are found in the settlement there.

A more or less industrial production, exceeding the requirements of the producers sufficiently to allow trade, could only have arisen in those regions where the material could be worked rapidly in a controlled way, i.e. by flaking. For this purpose compact, fine grained, homogeneous rocks were required. Where the population only had to supply its own needs, a wider variety of rock types could be used, including sorts which required another, more timeconsuming working-technique. In the Swiss settlement of Niederwil, not only flaking (especially for the initial rough working) but also pecking/rubbing and sawing were evidently frequently applied techniques.

Roughouts made of flint of Scandinavian origin, ready for grinding and polishing, have been found on a number of occasions in Drenthe, often in hoards also containing polished axes. Most of these hoards are attributed to the TRB culture (*Trechterbeker-kultuur* = Funnel Beaker culture). It is usually assumed that these hoards represent offerings (Bakker, 1959, 1973; Nielsen, 1977), although sometimes they may have been the supply depots of traders (Van Giffen, 1944; Harsema, 1979).

In several cases at least some of the objects in these hoards consist of imported material. On these imported artefacts the flint cortex shows no traces of ice transport, indicating that these cannot be of erratic origin. There is a possibility of import, e.g. from Denmark, where in Jutland flint-mining activities were taking place during the period in question. The imported axes are very regular shaped and often more than 25 cm long, so they must have been made out of large flint nodules. It can be assumed that many of the smaller flint axes in Drenthe were made out of flint found locally.

In the Netherlands rocks other than flint were also used in the Neolithic, to a variable extent. In the early Neolithic Linear Pottery (*Bandkeramiek*) culture in Limburg the stone tools found included many made of amphibolite (ca. 50%), which are assumed to have been imported. The Dutch branch of the Battle-axe group of cultures made intensive use of diabase for making axes. One roughout made of diabase, in an advanced state of completion, is known from Drenthe (Harsema, 1976). In the Northern Netherlands diabase erratics are not at all unusual, so it is probable that this roughout was

*Two Neolithic stone axe roughouts*

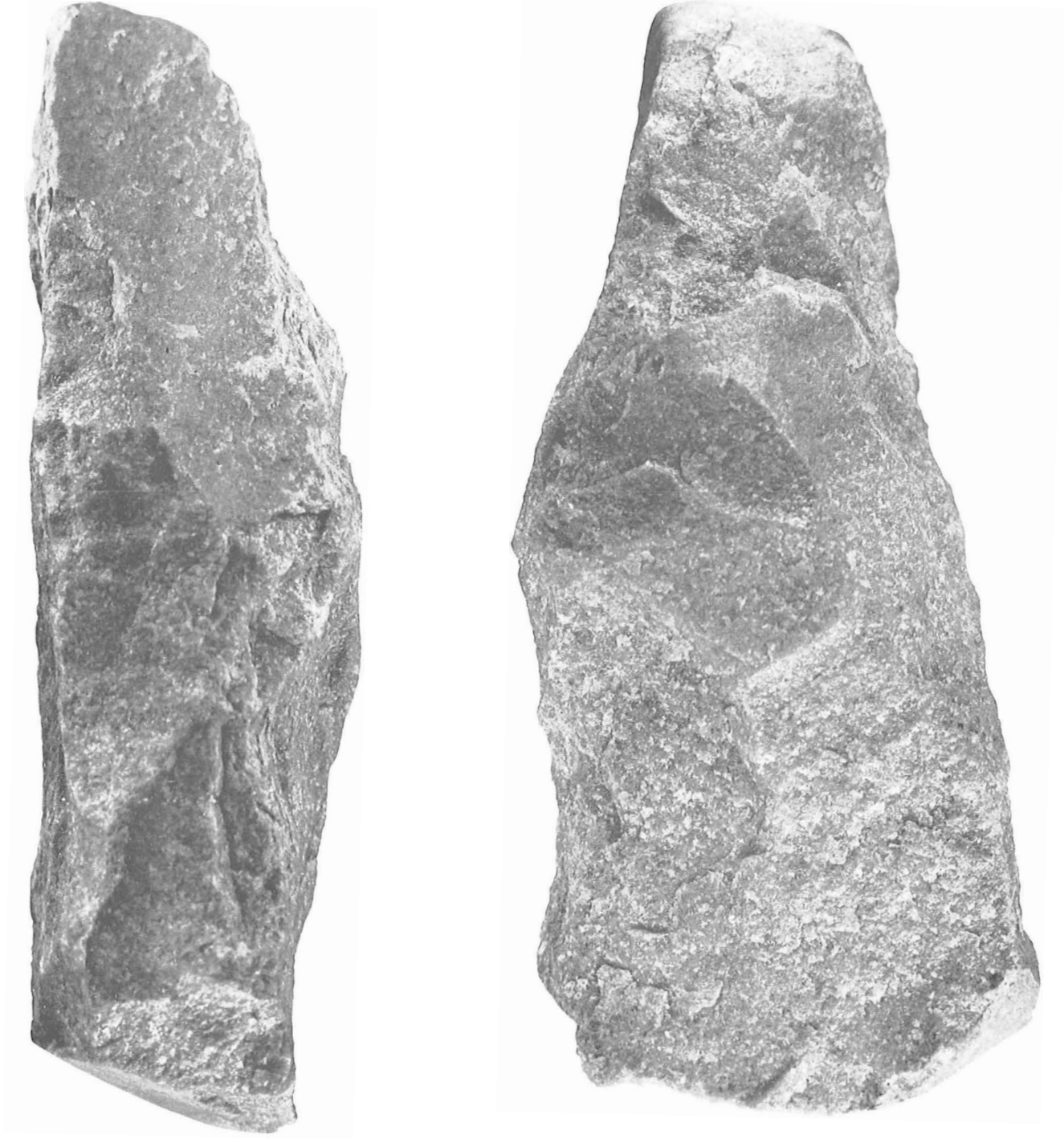


Fig. 1. Roughout from Emmen. Photo: B.A.I.; 1:1.

made locally. Various other kind of erratic stones occurring in Drenthe are also suitable for making axes.

The relative scarcity of non-flint roughouts, notably in Drenthe, must be attributed to the limited number of systematic excavations of Neolithic settlements, which is not sufficiently compensated otherwise. Although amateur archeologists especially have collected large amounts of surface material, also from settlement areas, it is well conceivable that insufficient attention has been devoted to looking for erratic fragments which could be interpreted as roughouts for axes or which could represent waste material from stone-working.

It is evident that roughouts can be expected more in this region, as is shown by two recent finds which form the subject of this contribution. The choice of this subject seems all the more appropriate because the identification and interpretation of these artefacts have been influenced to no small extent by the study made of the material from the Swiss bog settlement of Niederwil (Kt. Thurgau), excavated in 1962 and 1963 under the direction of Prof. Dr. H. T. Waterbolk (Waterbolk & Van Zeist, 1978).

## 2. DESCRIPTION OF THE ARTEFACTS

### 2.1. Roughout from Emmen (fig. 1-2)

Fragment ("cap") split off from the side of an erratic, consisting of lightbrown quartzitic sandstone<sup>1</sup>). Length 19.7 cm, maximum width 8.7 cm (slightly above the widest end, hereafter called the base), maximum thickness 5.6 cm, thickness in basal part 4.5 cm. Found ca. 1975 by G. Middelveld of Emmen, ca. 2 km to the Northwest of Emmen, in the *gemeente* of Emmen, on the west side of the Hondsrug, a low but long and wide Pleistocene ridge which forms the eastern boundary of the plateau of Drenthe<sup>2</sup>). The artefact is now part of the collection of R. Zoer of Emmen.

#### 2.1.1. *Shape*

An oblong block, the sides running approximately parallel from the base to the middle, thereafter converging somewhat towards the top; maximum

thickness approximately in the middle, becoming very slightly thinner towards the top and base; cross-section trapeziform in the upper half, largely determined by the shape of the natural surface, and rectangular in the lower part.

#### 2.1.2. *Surface and working*

The surface of the top and the immediately adjacent uppermost part of face A<sup>3</sup>), also the adjacent uppermost part of the left side, a small surface lower on face A and the surface of the base (ca. 7 × 4 cm) are formed by the original outer surface of the erratic. Face B is a split surface which differs in colour compared to the surface of the two flakes on this face, towards the left side near the base. In view of this colour difference, face B must predate the working surface considerably and is therefore presumably natural. The split surface is as a whole fairly straight, although the surface itself is irregular. Apart from the two flakes mentioned there is no other working on this face. The left side is formed at the top by natural surface with working from face B along one rim, in the middle by a large flake from face B and in the basal part by a number of smaller hinge fractures from face A. The left-hand corner of the base has been struck off. The right side is completely worked, predominantly by flakes from face B, several of which are large. Face A is also almost completely worked, on the upper half by a number of large flakes from the left side, on the lowermost part by several large flakes, from both the left and the right side. Presumably the hinge fractures which are present on the left side near the base, executed from face A, represent the last working of the stone.

#### 2.1.3. *Special features*

Ca. 4.5 cm from the top on face A there is some slight damage, in the form of a scratch going across the stone. Not only part of the natural surface is affected but also a small flake surface, and here there is a trace of oxidized iron ca. 13 mm long and 4 mm wide. It is possible that the damage resulted from the stone being hit by a plough. A slight iron deposit is also present ca. 2 cm higher. Compared to the artefact to be described below, this artefact shows little damage as a result of contact with agricultural

implements, indicating that it probably remained undisturbed in the soil for a long time. The fresh-looking, i.e. undiscoloured surface of the flakes also suggests that the artefact must have lain at a considerable depth, certainly below the topsoil, until shortly before the time it was found.

## 2.2. Roughout from Balloo (fig. 3-4)

Fragment (“cap”) split off from an erratic consisting of sandstone. Length 22.9 cm, maximum width 8.8 cm, maximum thickness 6.3 cm. Found in 1977 by G. R. Hollema of Rolde, in a field in the northwestern part of the Balloër Es, bordering on the valley of the Looner Diep, ca. 1.5 km north-west of Balloo, in the *gemeente* of Rolde.

### 2.2.1. *Shape*

An oblong block, becoming narrower and thinner towards the top, with a rounded base; maximum thickness approximately in the middle.

### 2.2.2. *Surface and working*

On the curved face A the natural surface of the erratic is still almost completely preserved. Face B is formed by a straight split surface, on which there are two flakes in the basal part. The right side is a curved surface, perpendicular to face B, on which barely separate flake negatives can be seen. This surface also has the character of a split surface. The left side consists partly of the curved natural surface sloping down from face A. This side shows flakes of varying width and depth from face B.

### 2.2.3. *Special features*

All surfaces are of an almost uniform brownish-grey colour. Only a number of scratches, probably caused by a plough, are present in the form of paler stripes on the stone. The stripes are present on all four faces, the deepest being on face A. On all faces – including those parts resulting from working of the stone – mostly occurring together with these stripes there are brown rust patches, presumably the remains of corroded iron left behind after contact with a plough. In view of the abundant traces of damage it must be assumed that this arte-

fact was present for some time in the topsoil. This is also evident from the surface, which, as the recent scratches show, has undergone considerable discoloration (one cannot speak of real weathering).

## 3. INTERPRETATION

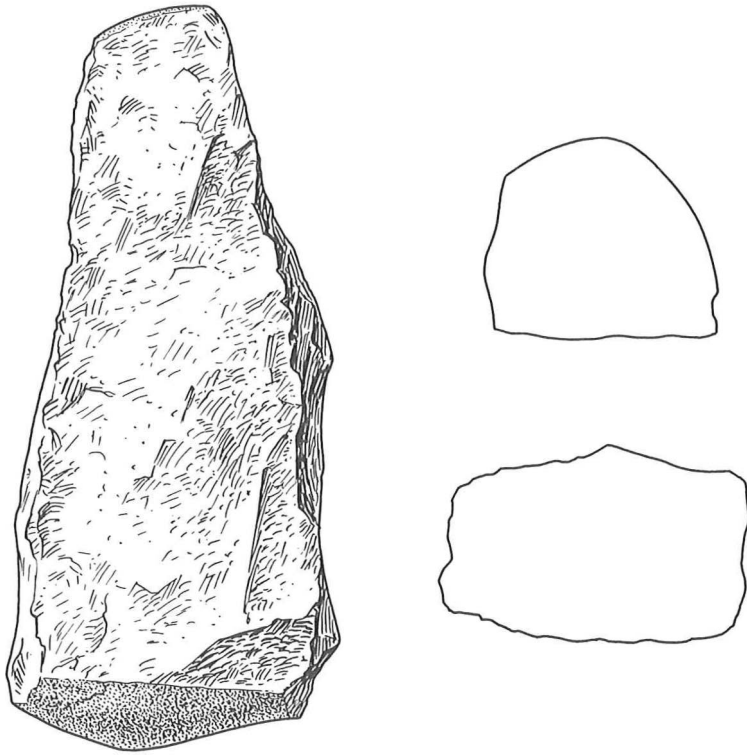
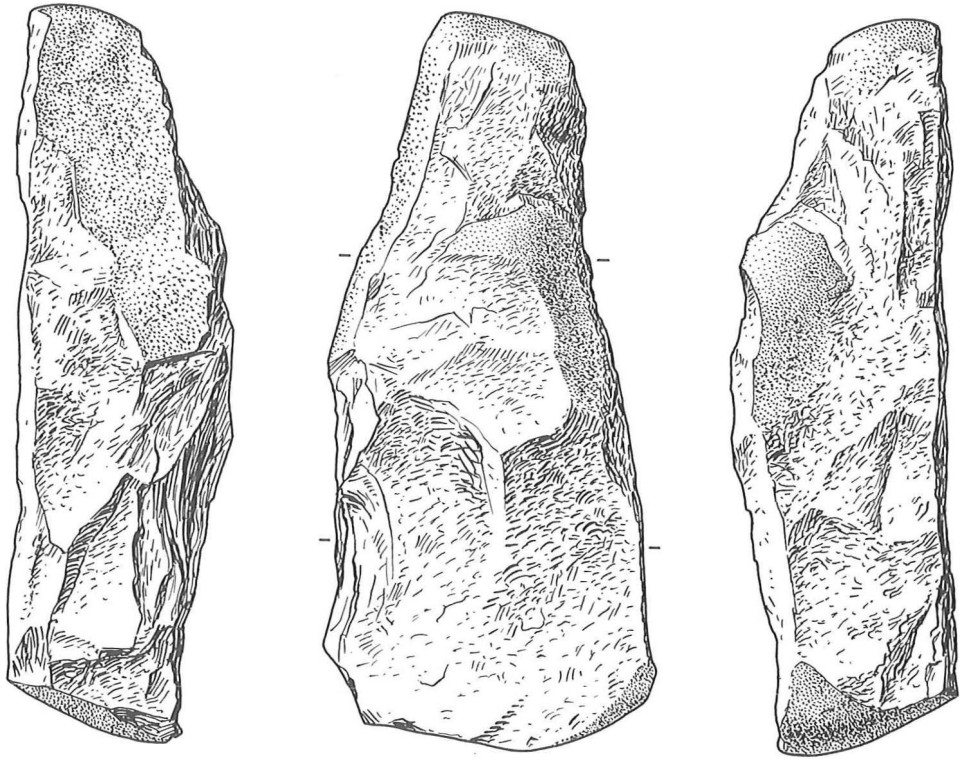
Both artefacts are roughouts which have only undergone their initial rough working by means of flaking. Before the stones would have reached their final form of axes ready for use, it would at least have been necessary to grind and polish them. The artefacts have not yet reached the stage of being ready for grinding and polishing however. Before making any presumptions on the way in which the stones would have been worked subsequently, it is first necessary to present the arguments for the above-mentioned proposition. The interpretation is based on the overall shape of the stone as brought about by working, on the measurements, on the type of rock used and especially on the kind of working technique employed and the places where it has been applied. With regard to this last the presence of traces of working in certain places is just as conclusive as the absence of these traces on other parts.

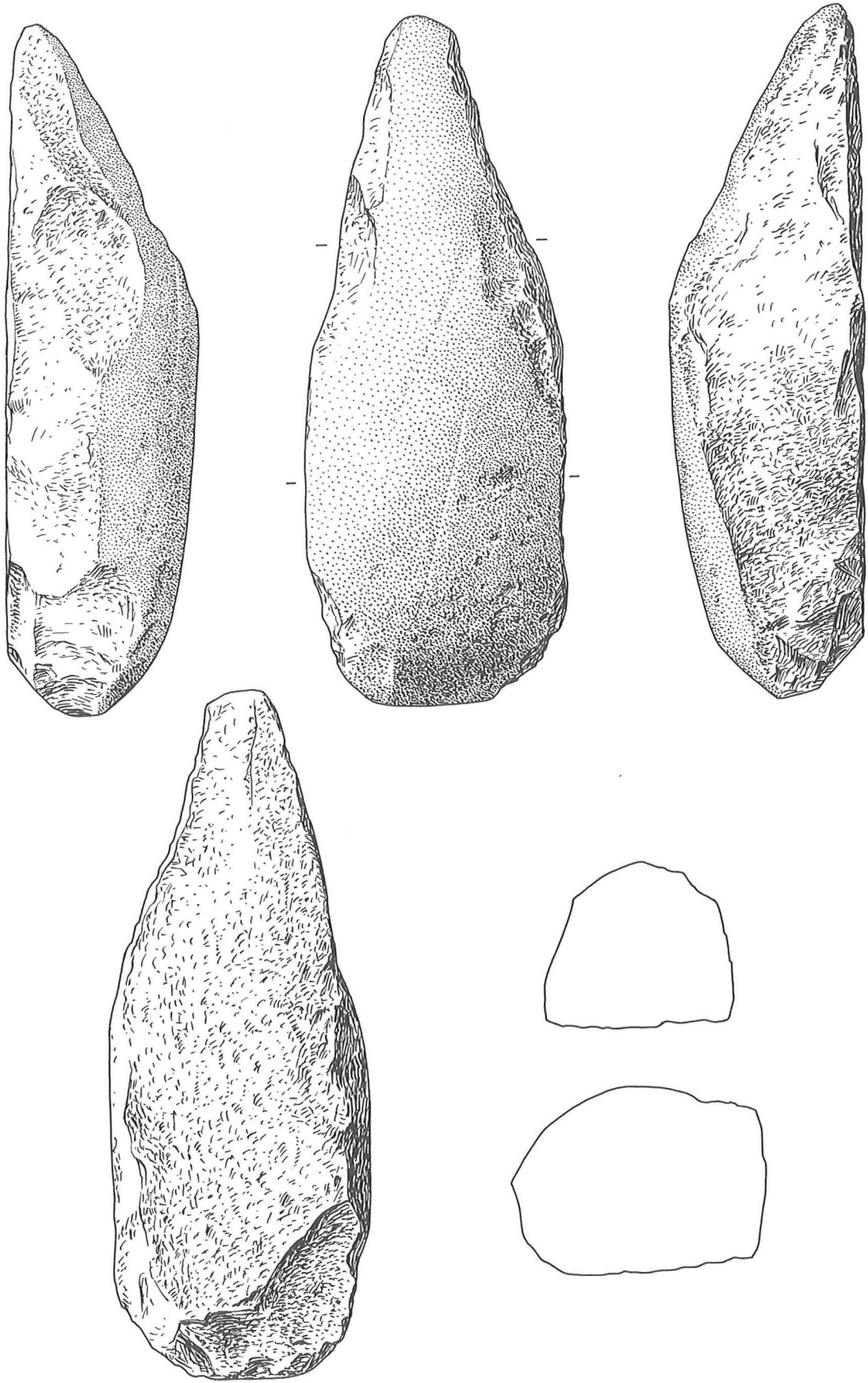
The find material from the previously mentioned Neolithic settlement of Niederwil in Switzerland gives a clear picture of the wide variation in working techniques employed in making the stone axes. The inhabitants of Niederwil could make a selection from a wide choice of suitable pebbles in the river-bed from which they took their raw material. Usually they selected pebbles between ca. 15 and 20 cm long, corresponding in length to the required length of the axe.

A frequently used working process, divided into a number of phases, was as follows: First a rough shaping of the stone by flaking, the main aim of which often was to make the stone narrower; subsequently further shaping by means of pecking,

Fig. 2. Roughout from Emmen. Drawing: B.A.I. (H. R. Roelink); 1:2. →

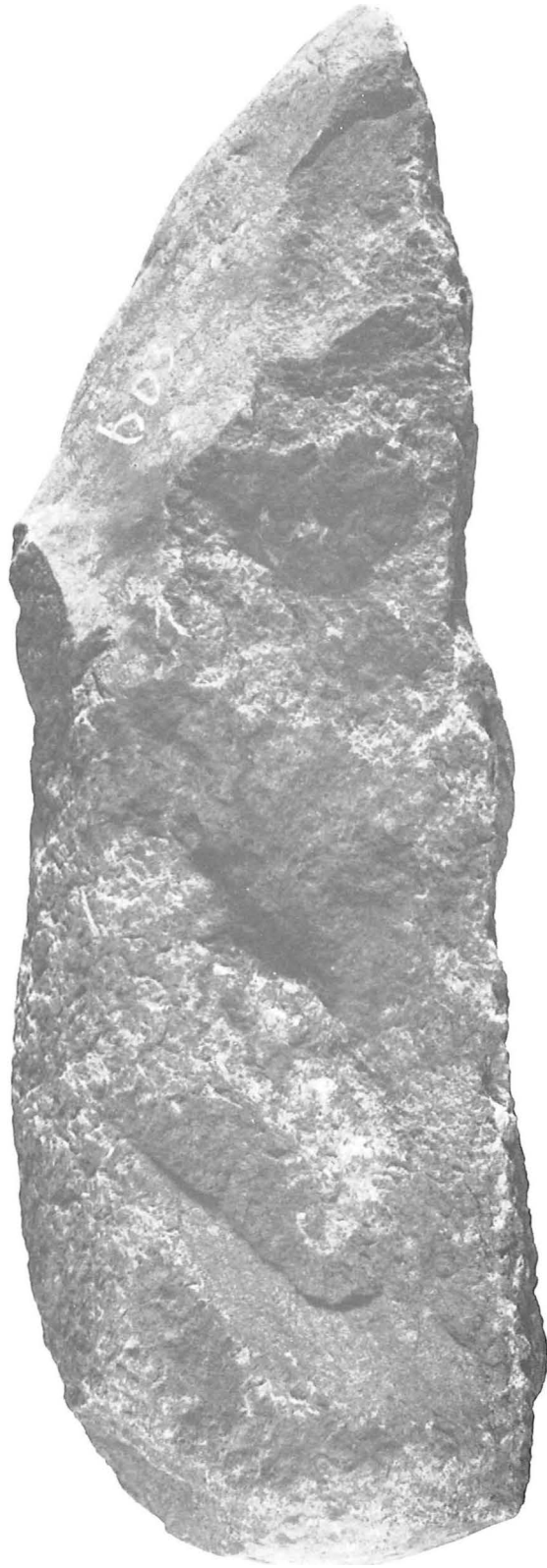
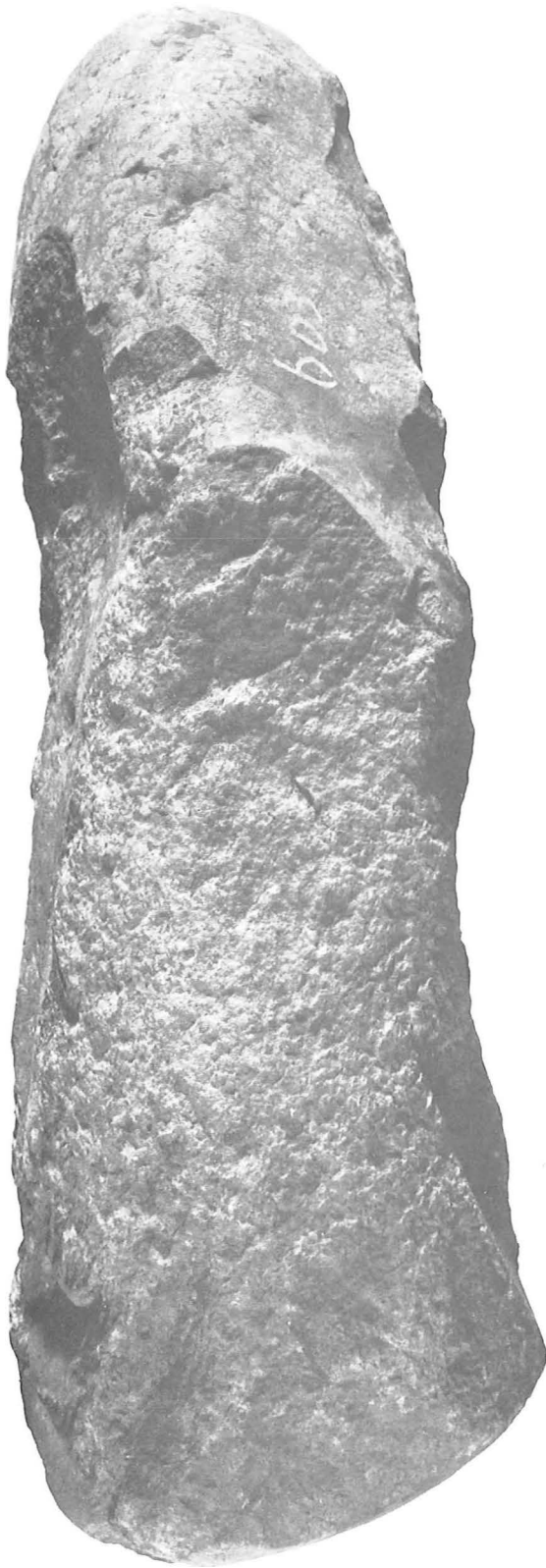
Fig. 3. Roughout from Balloo. Drawing: B.A.I. (H. R. Roelink); 1:2. → →











again often first on the sides, as a result of which the final width of the eventual axe was established; then lowering of the wide faces, thus making the stone thinner, until the required thickness of the axe was achieved. After all this working, in which pecking and rubbing in phase 2 and 3 would have been applied alternately, the shape of the axe and its eventual dimensions were practically established (Harsema, 1976, fig. 3). The shape of the artefact at this stage is almost identical in appearance to that of a polished axe. There is one conspicuous difference however: at the cutting edge the axe is still far too thick. It is evident that during the working process part of the original outer surface (cortex) was preserved, that would disappear only at the stage of grinding and polishing. Obviously great care was taken to prevent damage or weakening of this most important part during the process of flaking and pecking.

Apart from whole pebbles of medium size also fragments, often "caps", of large pebbles were used as raw material for making axes. Also in the case of these stones, which measured up to ca. 25 cm long, the original surface at the spot that was selected for the cutting edge was preserved during the initial stages of working. A fine example of this is the illustrated artefact no. 603 from Niederwil (fig. 5). It is this artefact which forms an almost exact parallel for the find from Balloo described above (2.2.). It differs in one respect: the Niederwil example shows already traces of the application of the subsequent working technique, in this case the lowering of the faces by pecking.

Evidently this much more time-consuming but also much more controllable working technique was started at an early stage. As it is so time-consuming, this work would have been done mainly in the settlement. Compared with the Niederwil artefact it can be said that both finds from Drenthe had reached a stage at which the initial working in flaking technique had been completed and the following phase, working by means of pecking, could

be started. As there are no traces of this, it cannot be said that the artefacts presumably come from settlements. This is not impossible however. There are two possibilities. The artefacts may have been left behind at the spot where the erratics were found and roughly worked, to be taken away later (which in fact did not happen, for some unexplainable reason, although probably not because the roughouts were useless). Alternatively, the artefacts may have been taken to the settlement and kept there until a new axe was needed or until an opportunity arose for further working.

As both stones are surface finds it is impossible to ascertain whether they originated from settlements, although in the fields surrounding both findspots other finds have been made which do indicate occupation, both in the Mesolithic and in the Neolithic (TRB culture). This is not surprising in view of the situation of the areas, which were favourable for occupation. On the other hand on such slopes the weathered part of the boulder clay, with the boulders and pebbles it contains, is mostly close to the surface, so that such areas were also attractive just for collecting raw material. The fact that there is a *hunebed* a couple of hundred metres away from each find-spot, in a comparable topographical situation, says a great deal.

#### 4. CULTURAL CONTEXT AND DATING

As for the cultural context, the typological or rather morphological aspect of the artefacts is not very revealing. What is even worse, the impression suggested by the artefact from Emmen, that it was intended to become an axe rectangular in cross-section, is most probably very misleading. Despite the fact that in the vicinity of the find-spot of this artefact the most conspicuous archaeological object is a *hunebed*, the idea of an axe rectangular in cross-section, so characteristic of the TRB culture, must be rejected. The reason for this is that in the TRB culture, although for making axes use was made not only of flint but also of other locally collected rock such as gabbro, never sandstone or quartzitic sandstone were used. It is not improbable that this is connected with the specific way in which sandstone appears to have been worked, as shown by at

← ←

Fig. 4. Roughout from Balloo. Photo: B.A.I.; 1:1.

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Fig. 5. Roughout from Niederwil, Switzerland. Photo: C.F.D.; ca. 4:5.

least some twenty finds of completed axes in Drenthe made of this material.

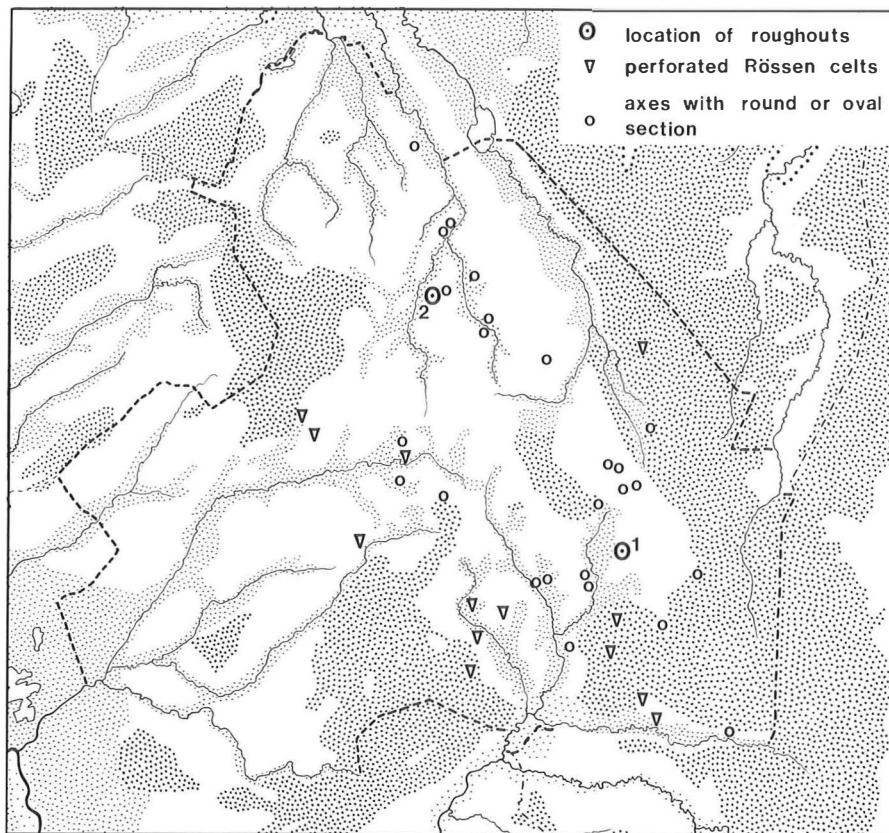
Almost all completed axes of quartzitic sandstone still show after grinding and polishing some clear traces of initial working using pecking technique. There are no indications of the use of this technique on axes of the TRB culture. This applies not only of course to flint axes, but equally to axes made of other rocks, such as lydite, for which the TRB culture showed a clear preference, presumably because like flint it lent itself to working by flaking.

With regard to the shape of the completed axes of quartzitic sandstone, a conspicuous feature is that they are without exception round to oval in cross-section, at least in the upper part. Often they are round in cross-section in this part, and oval in the lower part. In exceptional cases the cross-section varies from oval in the top half to rectangular, with rounded corners, in the cutting part. It is clear that these axes were produced by a culture with a completely different axe tradition compared to the TRB culture. The culture that produced these axes

cannot be identified either with the other Neolithic culture which is well represented in Drenthe, the so-called SVB culture (*Standvoetbeker* culture = Protruding-foot Beaker culture). As mentioned previously, characteristic features of this culture are axes made not only of flint but also of diabase, but in both cases rectangular in cross-section.

Irrespective of the type of rock used, there is another argument against attributing the roughout from Balloo to either the TRB or the SVB culture. The top of this artefact is convergent, narrow and thin, which is characteristic neither of the TRB culture – where the top is certainly thin but fairly broad – nor of the SVB culture, where the top is narrower but rather thick. One would expect that if the roughout from Balloo had been made into the intended finished product, then the top of the axe would be rounded and convergent on all sides, a

Fig. 6. Location of roughouts and distribution of perforated Rössen celts and polished axes round to oval in cross-section in Drenthe. Drawing: B.A.I. (G. Delger).



feature that is precisely characteristic of axes round to oval in cross-section.

It thus seems justified to establish a relation between the two roughouts discussed here and the culture which made use of quartzitic axes round to oval in cross-section. It is difficult to ascertain which culture this was in Drenthe. Only on one occasion was one of these axes found in association with other objects (Harsema, 1975, fig. 1), but even then not in a datable context. In the Netherlands such axes have never been found in graves, as is often the case with axes of various types. Limiting the investigation to the province of Drenthe probably only the distribution of this type can give some indication of the culture to which it belongs (fig. 6). In addition to a concentration on the southern part of the Hondsrug, there is evidently a preference for two other regions, on the one hand the bordering parts of river-valleys in Southeast Drenthe, on the other those in Central and Northern Drenthe. A preference for the proximity of a wet environment seems to be a general characteristic. As for this, a correspondence is evident here with regard to e.g. the distribution of the Mesolithic core- and flake-axes in Drenthe (Harsema, 1978, fig. 1).

From a broader viewpoint there is of course a conspicuous overall similarity as regards shape between these sandstone axes from Drenthe and the group of Limhamn axes of the Ertebølle culture in Scandinavia and the *Walzenbeile*, which occur in the earlier Neolithic in various parts of Western Europe. In view of these considerations, a dating at the beginning of the Neolithic in the Northern Netherlands would seem to be most likely for these sandstone axes.

Seeing that there is little known, especially from a chronological viewpoint, about the Neolithic in Drenthe before the TRB culture, any further statements can only be hypothetical. The dating of two stone axes round in cross-section (in a grave) from Melby, Denmark,  $3880 \pm 110$  B.C. (K. 1776, calculated in the conventional way; Albrethsen & Petersen, 1976) seems to be almost certainly too early for the occurrence of this axe type in Drenthe. Evidently the earliest datable Neolithic finds in Drenthe are two types of celts, the *bove durchlochte Schubleistenkeile* and the *durchlochte Breitkeile* (Van der Waals, 1972), which have been attributed to the Rössen culture and which must be regarded in our

region, outside the distribution area of this culture, as imports. The distribution of these artefacts, including those which have come to light since the publication of Van der Waals, in the low-lying parts of Southeast and Central Drenthe, partly corresponds to and is partly adjacent to the distribution area of the axes (fig. 6).

The oldest datings of early Neolithic occupation in the Northern Netherlands in the broadest sense, with fragments of the above mentioned celts in the culture layer, come from Swifterbant in the polder of Eastern Flevoland (Lanting & Mook, 1977). These datings indicate that shortly before 5300 BP there were population groups in the Northern Netherlands who took up products of the Rössen culture. The earliest indication so far of Neolithic occupation in Drenthe is given by the dating of peat, with the first appearance of *Cerealia* and *Plantago* in the pollen spectra, from the peat bog to the east of Emmen,  $4960 \pm 135$  B.P. (Van Zeist, 1967). If this did not result from the presence of an early, pre-megalithic phase of the TRB culture, then it may have been the first Neolithic farmers on the plateau of Drenthe, who used quartzitic sandstone axes round to oval in cross-section, who were responsible.

To summarize, it can be stated, as a hypothetical conclusion, that it is reasonable to assume the presence of a Neolithic or neolithized population in the lower parts of Drenthe between ca. 5300 and 4900 B.P., who used quartzitic sandstone axes round to oval in cross-section, which they made on the spot out of locally present erratics and which is most probably identical to the population group which imported other stone tools as celts from the region of the Rössen culture. In terms of conventional dates this means that the first Neolithic occupation of Drenthe took place in the last centuries of the 4th millennium B.C.

##### 5. ACKNOWLEDGEMENTS

I am much obliged to Mr. H. Roelink, Biologisch-Archaeologisch Instituut (B.A.I.), for making the fine drawings of the ugly stones. His contribution to this article has been most important.

Both Mr. G. R. Hollema and Mr. R. Zoer are to

be thanked for their willingness in letting me publish their finds and, together with Mr. G. Middelveld, for furnishing the information about the find circumstances. Both are to be congratulated on their quite unusual possessions. It must be more than coincidence that I was informed of the existence of these two artefacts – to my knowledge the first of their kind in the north of the Netherlands – within a period of about ten weeks.

Mr. J. R. Beuker of the Provinciaal Museum at Assen mediated in the contacts, Miss Rosa Kats of

the same museum typed the manuscript. The photographs were taken by the Central Photographical Laboratory (C.F.D.) of Groningen University and by Mr. F. W. E. Colly, B.A.I. The translation of the manuscript was done by Mrs. Sheila van Gelder-Ottway. I am grateful to all these people.

I regret that it has not been possible to await further finds, especially from the region of Havelte, as I am well aware that this would have increased the value of this article considerably and honoured more properly the one to whom it is dedicated.

## 6. NOTES

- 1 The rock identifications were made by Dr. G. J. Boekschooten, Geologisch Instituut, Rijksuniversiteit, Groningen.
- 2 The stone was rejected by the finder G. Middelveld but taken home by his companion R. Zoer. Both state that the artefact was found among other stones in a ditch next to a depression on the western part of the Schimmeres, ca. 1 km north of the village of Westenesch and almost 2 km northwest of the church of Emmen. It is clear this was not the original place of origin, but it can safely be presumed that the stone came from one of the fields in the immediate vicinity. The surrounding area lies on the 22.5 m + N.A.P. contour, on the western slope of the Hondsrug which slopes down here towards the valley of the Sleenerstroom, from its highest point at ca. 28 m + N.A.P., about 600 m

to the east, to the 17.5 m + N.A.P. contour, which forms the boundary of this valley, ca. 1 km to the west of the find-spot.

- 3 In the description the two (wide) faces forming a cutting edge are indicated as A and B (= split face), the sides as left and right side (with face A turned towards the observer). In the cross-section face A is the upper one.
- 4 Also this site, at ca. 11.5 m + N.A.P., is on a slope. The area slopes down from ca. 15 m + N.A.P., about 600 m southwest of the site to the 7.5 m + N.A.P. contour, which borders the valley of the Looner Diep, at about 200 m northwest of the site.
- 5 The axe material from the Niederwil excavations has been studied by the present author. The results of the research on this settlement are to appear in the form of a monograph, consisting of several volumes, the first of which has just appeared (Waterbolk and Van Zeist, 1978).

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