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I

INTRODUCTION

Every institution concerned with archaeological fieldwork has the desire to inform its colleagues and others interested in such work about its investigations. Almost every excavation yields new information which can only fulfil its complete scientific purpose after it has appeared in print and become generally available. The Institute for Prehistory of the University of Leiden also proposes to make its contribution to the published sources. In some cases this will consist of independent publications via the University Press, in others of reprints from periodicals.

The results of two excavations carried out under the auspices of this Institute are published in the first issue of the *Analecta Praehistorica Leidensia*. We wish to refer in this foreword to the fact that both investigations resulted directly from the activities of the undersigned as Conservator of the State Service for Archaeological Investigations in the Netherlands (R.O.B.) at Amersfoort. The discovery of the burial vault at Stein was made during the excavation of a Danubian settlement by the R.O.B., and the burial mound near Meerlo was first brought to the attention of that Service. It is hoped that the fruitful collaboration experienced during both excavations will be continued in the future.

To the *Analecta Praehistorica Leidensia* we extend our best wishes, with the hope that it will contribute to the improvement of archaeological research and to cooperation among all those concerned with pre-historical studies.

P. J. R. Modderman

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THE NEOLITHIC BURIAL VAULT AT STEIN¹

P. J. R. MODDERMAN

In June 1963 the Institute for Prehistory of the University of Leiden undertook the investigation of a Neolithic burial vault in Stein. A wooden structure was found to have at least temporarily formed part of the tomb. The dead had been cremated. The grave goods consisted of a collared flask, an earthenware pot, numerous transverse arrowheads, bone arrowheads, bone points, animal remains, and a flint-axe which in all probability should be included.

Introduction

During the excavation of a Danubian settlement located on the Keerenderkerkweg in Stein, a portion of a small stone floor was found on 3 April 1963: the dragline being used to remove earth to a depth of 50 to 60 cm. stuck a collection of stones which, in the local loess soils, could only be present as a result of human effort. About five stones, whose position had been disturbed by the dragline, were excluded from the investigation. Originally, therefore, there were more stones at the eastern end of the floor than are shown in the drawings and photographs.

For a proper understanding of the method employed for this investigation, it will be necessary to explain first the system used for the excavation of the Danubian settlement. It must be kept in mind that the study concerned a settlement, and that the possibility of finding a burial vault had not even entered our minds in planning the excavation.

The area put at our disposal in 1963 measured about half a hectare. The plot, which was 100 m. long, was divided into equal strips, 10 m. wide, the alternating strips to be excavated simultaneously. The top 50 cm. of soil on these strips was to be removed by a dragline and deposited on the adjacent strips which were to be excavated later. Halfway through the excavation, the entire terrain was to be levelled by a bulldozer, after which the dragline would remove the top layer from the remaining strips.

¹ Province of Limburg.

A group of stones was found on the edge of one of the 10 metre wide trenches. It was immediately clear that there must be more of these stones beyond the trench, and investigation was postponed until the ground adjacent to the excavated area could be examined. After all the Danubian material had been studied and recorded, we were able to turn our attention to the stone floor. This point was reached in the middle of June.

Because the floor extended only partially into the open trench, we were able to study the soil profile above the stones. The earth above and next to the stones was for the most part grey. The top soil was delineated by its somewhat darker colour and the soil above the stones was also blacker than that further away. No sharp borderline was visible, however; the transition between the shades of grey was very gradual. Nevertheless, it became clear that the stone floor had been laid down at the bottom of a pit, although traces of its walls had become indistinct as a result of the intensive organic life characteristic of these loess soils.

The stone floor

The shape of the floor may be roughly described as oblong. It is about 5.5 m. long and 1.75 m. wide, the orientation being W.S.W.—E.N.E. Most of the stones seem to have been put in place with some care, for the purpose of making a true floor, with the exception of the



Fig. 1. Vertical exposure showing the stone floor with the collared flask *in situ*. Scale 1 : 40.



Fig. 2. Floor plan and cross-section of the stone floor. Scale 1 : 40.

N.E. end. At that end some large and small stones were jumbled together and between them lay some sherds from one pot. The floor, if the term may be applied here, is also narrower at this point. In addition, it is at this end that a few stones are missing from the picture as we report it; it was here that the dragline first hit the collection of stones and moved a few of them, for which reason they were excluded from consideration.

Among the rather small stones forming the floor there are several larger ones. A group of five is located at the N.E. side of the true floor, the largest with a flat side up. To effect this, the stone had to be partially buried (see section in Fig. 2). The arrangement suggests that this is a threshold. The same may be said for a second large, flat stone located about 1 m. from the S.W. end of the floor.

After the stone floor had been entirely cleaned we could see that running lengthwise through the middle of it was a slightly lower strip about 35—55 cm. wide. It seemed as though only this narrow strip had formed the actual burial chamber. The concentration of the cremation remains agreed with this impression, which was also strengthened by the position of several larger stones (see Fig. 6).

It should be emphasized that the cremation remains and other finds did not rest directly

on the stones; the stones themselves were covered by a thin layer of greyish earth a few centimetres thick.

The post-holes

In discussing the stone floor, no mention has been made of the post-holes which are nonetheless a striking element in the entire construction and cannot be considered to be a separate element. The four post-holes form the corners of a square lying almost symmetrically in relation to the stone floor, with the exception of the narrower N.E. end. Within two of the post-holes, the posts could be distinguished. The post furthest to the N.E. was evidently shored up between several large stones. The same holds to a lesser extent for the S.E., and S.W. posts.

We may now ask what the relation could have been between the posts and the stone floor: were they constructed at the same time or did one precede the other? Let us examine the various possibilities.

It is certain that if the posts belonged to an initial phase of the monument, the wood was still in such a good condition at the time of any hypothetical reconstruction that it was not removed. This is borne out by the fact that there are no stones where the posts were in position.

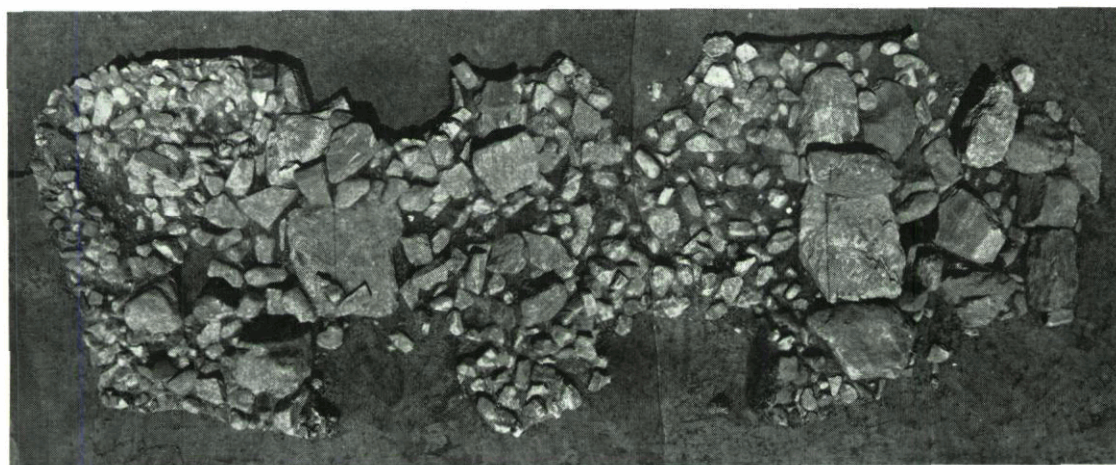


Fig. 3. Vertical exposure of the stone floor in the last phase of the excavation. Scale 1 : 40.



Fig. 4. View of the stone floor with the collared flask *in situ*, seen from the East.

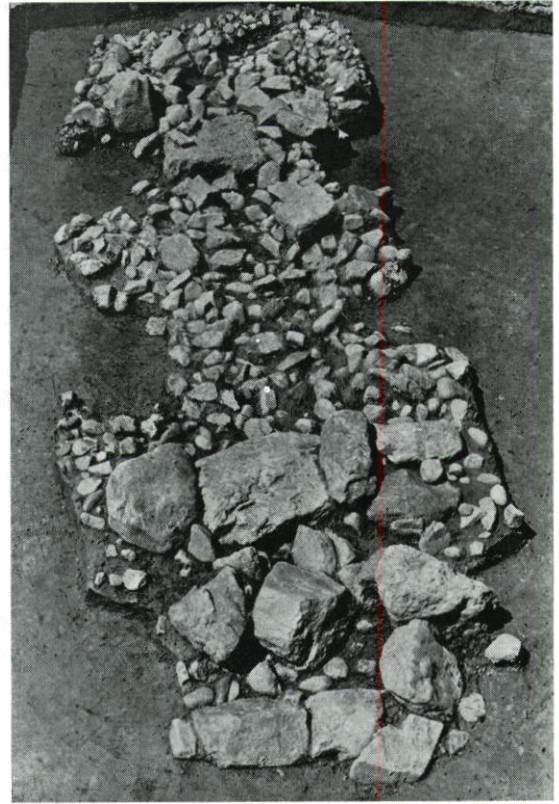


Fig. 5. View of the stone floor in the last phase of the excavation, seen from the East.

It is much more likely that the posts were put in position after the floor was laid down. The stones do not coincide, or barely coincide, with the material filling the post-hole. There also seems to be no reason to reduce the size of the 1.75 m. wide chamber by placing the post within this space at the initial construction.

A restoration of the burial vault may also be indicated by the jumbled heap of stones with the sherds of a single pot at the N.E. end. The impression is that the chamber was 'cleaned up', affecting a few stones and the pot. The cremation remains, as they were found, would then have to be assigned to a smaller chamber to which the wooden construction also belonged. In agreement with this is the position of the cremations in a narrow strip in the middle of the floor.

The foregoing would seem to give best support to a reconstruction according to which a primary burial vault without a determinable wooden structure was renewed by the placement of four heavy posts. It might even be suggested that the walls of the original chamber had little or no reinforcement. Loess permits the digging of good trenches with straight walls which only cave in if large amounts of water occur. Under such circumstances the oblong pit could first have been provided with only a wooden roof. This solution may in the end have proved unsatisfactory, and have required reinforcement by a wooden siding supported by the four heavy poles. The post-holes leave no doubt whatsoever that the vault with the stone floor was roofed over, justifying the use of the term burial vault.

The floor plan of the burial vault

On the basis of the few data available to us it is almost impossible to identify the entrance to the burial vault. Location in the N.E. side is perhaps the most likely. The narrower part may represent a kind of entrance. The actual chamber would then be divided by the two 'thresholds' into two parts. Such an arrangement is reminiscent of the examples of several *allées couvertes*. This comparison will be discussed in more detail in a wider context below.

The cremations

The human remains found in the tomb consist entirely of cremations. Theoretically, it is not excluded that bodies were also inhumed. These bodies would then have disintegrated completely, which is quite conceivable for the totally decalcified loess soils in question. As has already been mentioned, the cremations were separated from the stone floor by a thin layer of earth. The remains consisted of two large piles of calcinized bone (see Fig. 2). One lay on and just to the S.W. of the N.E. threshold stone, the second in the same position with respect to the S.W. 'threshold'. In both piles we found transverse flint arrowheads and bone arrowheads. In the S.W. pile was a collared flask lying on its side. In the immediate vicinity was a remarkable concentration of skull fragments. The state of preservation of the cremation remains is extremely good; in addition, the cremation was done at a temperature which left the skeleton intact down to the smallest details. The skeletal material is under study at present; the initial impression is that a large percentage of it derives from children.

The finds

The *pot* found in pieces in the N.E. part of the collection of stones was formed of clay containing coarse-grained quartz (Fig. 7). The surface was smoothed with horizontal strokes. The light brown to light reddish-brown colour (7.5 YR 6/4 — 5 YR 6/4) indicates that it was fired in an oxidizing environment. It is charac-

terized by the distinctly protruding foot, rather round walls, and outward-curving lip. The pot was about 22.8 cm. high.

The *collared flask* was intact when found except for a few signs of damage during use (Figs. 7 and 8). It is made of clay containing fine-grained quartz. The surface is uneven for technical reasons, but otherwise rather smooth. The bottle was fired in an oxidizing environment. With the exception of one black spot, the colour is comparable to that of the pot. The six-pointed collar, short neck, pronounced shoulders, and round bottom characterize the object. Its height is 11.1 cm.

A total of 96 *transverse arrowheads* made of flint were found, all among the cremations (Fig. 9). The white colour and crackled surfaces suggest that many of them have been exposed to fire, the cremation coming most readily to mind in this connection.

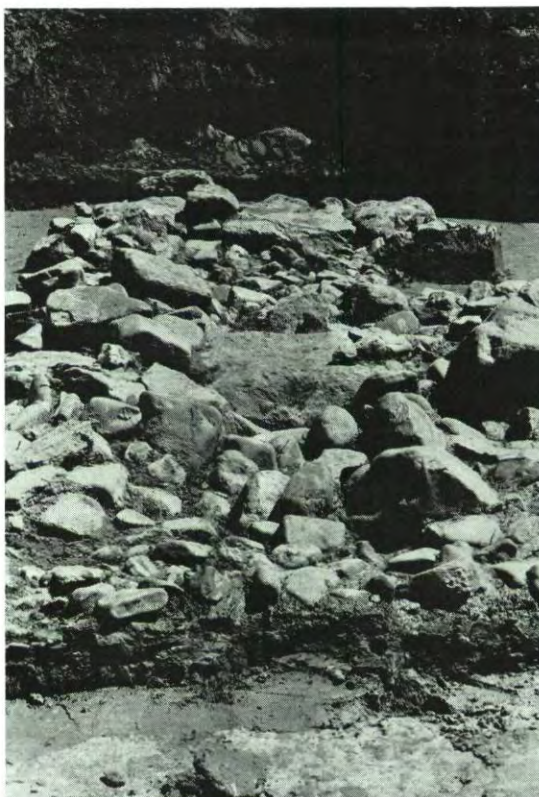


Fig. 6. View of the stone floor, seen from the West.

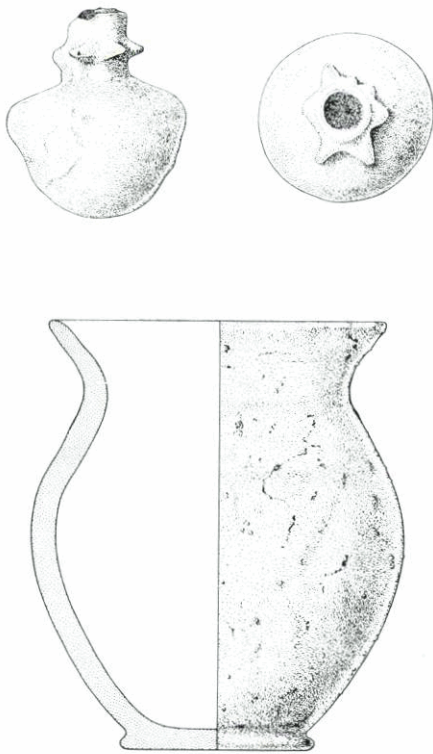


Fig. 7. Collared flask and pot from the burial vault at Stein. Scale 1 : 4.

Between the remains of the cremations a very small bead made of an indeterminable material (diam. 3—4 mm., width 2.5 mm.) was found.

Fragments of 11 *bone arrowheads* were also found among the cremations (Fig. 10), all of them made from ribs. The tops are pointed, and two barbed hooks complete the tip. A distinct termination of the shaft cannot be demonstrated, and therefore the length of the objects is impossible to estimate.

Some of the ribs are only pointed at one end and may therefore be *pins*.

Among the cremations were a few fragments of animal origin, including a vertebra of a large fish.

A polished flint *axe* (length 13.8 cm.) is probably to be included in the contents of the burial vault (Fig. 11). The find circumstances were such that absolute certainty could not be obtained, however. During the operation of the

dragline which first exposed the stone floor on 3 April 1963, the axe was thrown on the dump pile. On 9 May a bulldozer shoved this earth back into the excavation. When the dragline was then used to start a new excavation trench and a shovel was being used in the loose earth to straighten the sides, the axe was found beside the stone floor. The unusually good condition of the axe indicates that it is not to be considered as a surface find; weathering would have removed all traces of grinding and polishing and these are still clearly visible. The axe was therefore buried deliberately.

The geographical situation

The contour map shown in Fig. 12 gives an impression of the geographical situation. The stone floor was constructed about 350 m. from



Fig. 8. Collared flask *in situ*, seen from the South.



Fig. 9. Transverse arrowheads from the burial vault at Stein. Scale 1 : 2.

the sharp drop between the middle terrace of the Maas and the lower terrace. In relation to the immediate surroundings of Stein, the watershed of the middle terrace, which is characterized by a cover of loess, runs via a clearly-eroded small valley to the lower terrace, whose surface consists of Holocene fluvial deposits from the Maas. The place at which the small valley cuts the edge of the terrace is also only a short distance away from the tomb.

Schoppa (see Wurm c.s. 1963, p. 51 and Abb. 1), in discussing the situation of the chamber tomb near Niedertiefenbach, points to

the corresponding situation found in Calden, Altendorf, and Lohra. Stein is, in my opinion, to be included in this series. The agreement consists of a brook in the immediate vicinity, even though the vaults do not actually lie in a valley. Similar features also occur in the case of the *allées couvertes* in the Paris basin (Daniel 1955, p. 8). The choice of terrain is reminiscent of that of the Danubian settlements, and it is therefore not surprising that *Bandkeramik* has been found in some of the excavations of *Steinkisten* (Ostönnen, Calden, Altendorf, and Stein).

Subsidiary finds at Stein

During the excavations at Stein in 1963, a round pit was found only 1 m. away from the burial vault to the N.E. The material filling the pit was composed of a layer of greyish earth topped by a layer of cobble-stones. Long experience with soil traces from various periods in the surrounding loess soils has led me to conclude that this pit belongs to the same group of phenomena as the tomb.

In 1963 we also found sherds from the rim

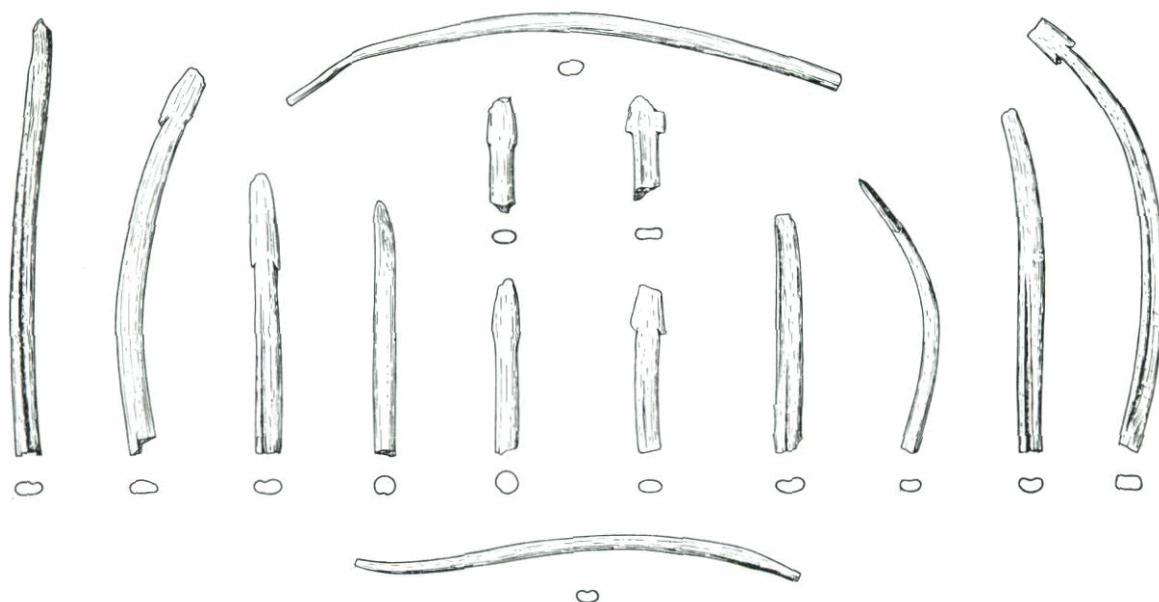


Fig. 10. Bone arrowheads from burial vault at Stein. Scale 1 : 2.

of an extremely large pot at a depth of about 50 cm., 20 m. to the N.W. of the burial vault. The earthenware of the thick rim (Fig. 13) (nr. 145) is completely comparable to the earthenware from the burial chamber and as such is important to the study of the prehistoric milieu to which all these phenomena belong.

In this connection we must not neglect to mention a find made in the Thirties, the so-called Robenhausien grave published by Beckers and Beckers (1940, p. 149). This find was made about 90 m. N.E. of the burial vault and concerned two closely adjacent piles of cremation remains. Lying only 30 cm. away was 'a prize collection of flint artifacts given as grave goods to the dead'. Doubt may be entertained as to whether the cremations and the flint material belong together, even more so when we consider that in 1962, to the N.W. of this so-called Robenhausien grave, several cremation burials were found which had to be dated in the early Iron Age. But even if the cremations and the flint depot are not contemporaneous, the latter is still worthy of mention. It consists of a number of large scrapers and retouched blades. Unfortunately, during the war a number of 'larger and smaller fragments of knives' were lost. Mr. T. Janssen, who worked closely with the senior Dr. Beckers, has told me that it is quite possible that among these 'knife fragments' were transverse arrowheads. On inquiry, Mr. G. A. J. Beckers also informed that he was not acquainted with these objects and would therefore in all probability not have recognized them.

Interpretation

We are now ready, on the basis of the data supplied by the burial vault in Stein, to attempt to determine the cultural milieu to which the find belongs. The first to come to mind is the SOM Culture, as defined by Childe and Sandars (1950, pp. 3—6). However, these authors distinctly state that the SOM Culture, if considered as limited to the Paris basin, is very closely related to phenomena distributed over large parts of Europe. We think of the Horgener

Culture, the Westphalian and Hessian *Steinkisten*, the Maas-Neolithic in Belgium, the megaliths of the Skogsbo type in Sweden, the *allées couvertes* in Brittany. The extent to which the burial vault in Stein fits into this milieu is best illustrated by considering the typical elements separately in relation to finds made in other places.

The chamber tomb itself must unquestionably be assigned to the *west-europäische Steinkisten* in Germany (Knöll 1961, Tode 1961, Wurm c.s. 1963) and the *allées couvertes* in the Paris basin (Childe and Sandars 1950). The absence of the large stones with which the walls and roof were usually built is due entirely to the lack of this material even at considerable distance from Stein. A good counterpart in this respect is the *allée sépulcrale* excavated near Bonnières-sur-Seine (Basse de Menorval 1953, 1954). In this connection it is very interesting to refer to the relation between the various types of burial chambers in the Paris basin and the geological distribution of the building materials discussed by Basse de Menorval (1954, p. 235). The *allées couvertes* were as a rule built of megaliths,

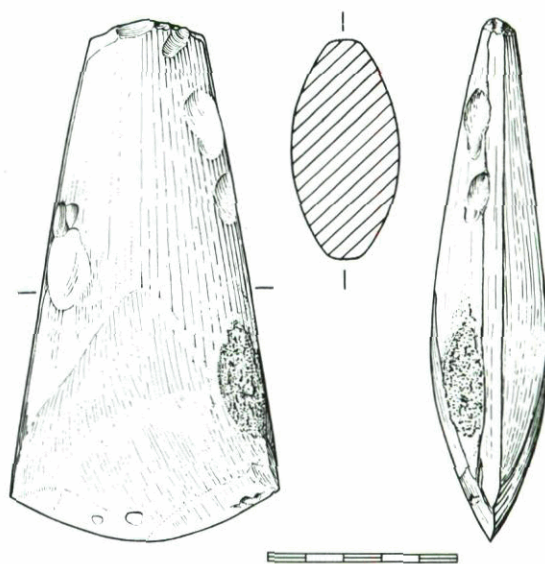


Fig. 11. Flint axe, very probably from burial vault at Stein. Scale 1 : 2.

but some were artificial or natural caves (Coutier and Brisson 1959) or vaults built of wood, depending upon local circumstances.

If we are correct in our interpretation of the two large stones in Stein as thresholds, the floor plan of the burial chamber would have the classical three partitions of the *allées couvertes*. Comparison with the smaller of the two dolmens of Wéris (Mariën 1952a, afb. 139) seems most interesting, but I have been reminded by Prof. Dr. S. J. de Laet and Dr. M. E. Mariën that great care must be taken in drawing conclusions in this respect because there is no certainty that the restoration of the structures in Wéris represents the original situation.

With respect to the *westfälisch-hessische Steinkisten*, the small *Kisten* are to be considered for comparative purposes because of their dimensions. These comprise the 14 examples (Knöll 1961, p. 33) described by Knöll (1961, p. 26,

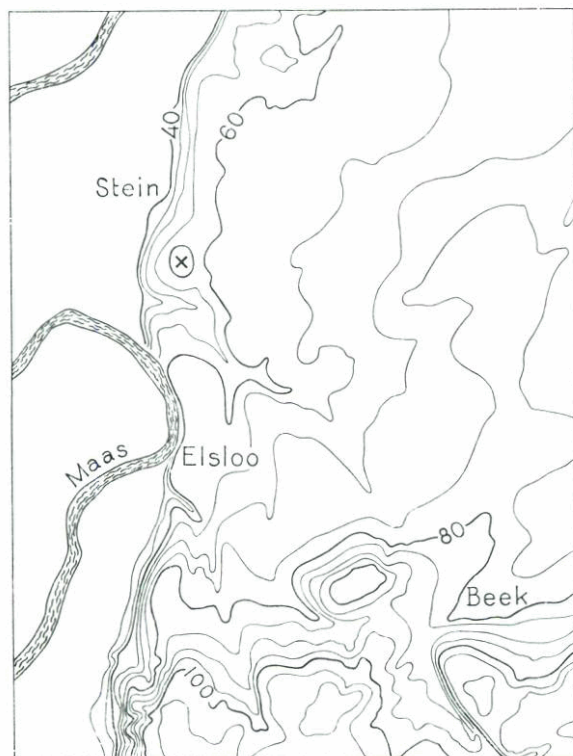


Fig. 12. Contour map of Stein and vicinity.

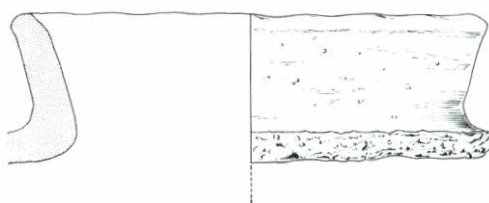


Fig. 13. Pot rim (find no. 145) found near burial vault at Stein. Scale 1 : 4.

note 35) as *Pendants*, and are found not only in Hessen but also in Rhineland, Lower Saxony, Saxony, and Thüringia. The large *Steinkisten* should certainly not be excluded, particularly when their contents are given due weight.

One characteristic of the chamber tomb in Stein is exceptional, namely that the dead were cremated. As a rule, earlier finds concern burials without cremation. The only case of exclusive cremation is that of the *Steinkist* of Lohra in Hessen (Uenze 1954). Both inhumations and cremations are reported for several other chamber tombs such as Gudensberg in Hessen, Bennungen in Saxony, and a number of *allées couvertes*.

Although they are perhaps less closely related to these examples, the time and place of several cremations known for Germany make them worth mention here. Fischer (1956, p. 220) reports cremations in the Walternienburg-Bernburger Culture, although the practice only became more general in the Schönfelder Culture. There are also the two *kammerlose Hünenbetten* in Sachsenwald (Sprockhoff 1952 & 1954) in which traces of calcinated bones were found. Close to one of these cremations a sherd from the rim of a corded beaker was found, and relations are also present in the form of a certain type of decorated earthenware with a grave in Rötved, Schonen, indicating that the Sachsenwald cremations are of the same date as the Swedish Bootaxt Culture. Sprockhoff (1952, p. 25, note 22) also points to still other examples of cremations, but all of these are located still further to the East, extending across the Oder River.

This list — which does not claim to be

complete — should also include a recent find in Angelslo (v. d. Waals 1964) where a cremation was found together with late *hunched* earthenware. This find could be provided with C_{14} dating, 4145 ± 100 (GRN 2370), corresponding to the 23rd and 22nd century B.C. As far as we can judge, these three cultural and absolute datings do not conflict with each other.

On the other hand, mention should not be omitted in this connection of the fact that Neolithic cremations are reported for Great Britain and Ireland. Here we have in mind in the first place the Clyde-Carlingford Culture which, with its court cairns, fits completely into the Megalithic pattern (Piggott 1954, p. 165, de Valera 1960, p. 60). But the Windmill Hill Culture also knew cremations in its long barrows (Piggott 1954, pp. 57, 109—112), as did the Boyne Culture (Piggott 1954, p. 202) and the Dorchester Culture (Piggott 1954, pp. 281 & 353). All in all, the cremations on the other side of the Channel are so widely spread in Neolithic contexts that they must be given just as much consideration in the discussion of Stein as the few German examples. The wish to cremate the dead in Stein may therefore derive from a very wide-spread change in ideas concerning the disposal of the dead. We see, on the one hand, a persisting strong tendency towards collective burial, but on the other hand there are signs of a reaction expressed not only in cremation but also in the individual grave.

The pot found in pieces at the N.E. end of the stone floor can in the first place be compared to the earthenware of the SOM Culture. This comparison is not easily made on the basis of the literature because although coarse earthenware is reported, illustrations are seldom given. Mariën (1950 & 1952a) summarizes the available material on the basis of the Neolithic finds in the Belgian Maas region, from which we obtain the impression of being concerned with a single pottery tradition, but the comparison is weakened by such features as the shape, the Stein pot having a more rounded form. The base of the pot is characteristic of the SOM earthen-

ware. The two separate base sherds from Vaucelles (Mariën 1950, Fig. 7) have a similar protrusion.

Dr. R. Gensen of Marburg was so kind as to draw my attention to a very interesting find complex. A trial trench was made at the end of 1963 in a settlement on the Güntersberg, in the municipality of Gudensberg, Kr. Fritzlar-Homburg, in Hessen. Initial study of the finds from this excavation showed that about 90 per cent consist of thick-walled earthenware containing quartz grains. The thick bottoms often have a protruding foot. The rims are bent slightly outwards and are therefore well separated from the body. Among the finds was a collared flask with a neck decorated with small notches, to which we will return shortly. The entire complex is extremely important for the understanding of the culture that produced the *Steinkisten*.

It is perhaps of importance to mention that after viewing the Wartberg finds in the museum at Fritzlar we had the impression that the pot in Stein has no counterparts in this material. The protruding foot is lacking, and the profile of the neck of the coarse-walled earthenware also differs.

Of the finds from the German *Steinkisten*, the earthenware from Altendorf (Jordan 1954) shows a strong relationship to the material found on the Güntersberg, so that in this respect a relationship with Stein must also be considered probable.

A third group of finds of comparative interest is that of the so-called Vlaardingen Culture. Among the numerous, as yet unpublished, finds from Vlaardingen are sherds from the base of a pot that Prof. Glasbergen and his co-workers assure me are entirely comparable with those from Stein. Other relationships with the so-called Vlaardingen Culture will be found in the discussion of the collared flask and the transverse arrowheads to follow.

The collared flask with the star-shaped collar must certainly be considered one of the most interesting finds from the burial vault in Stein. With respect to this unusual collar, three parallels may be mentioned.

- a. A find from a peat excavation at Mellem-balle near Odense on Fünen (Glob 1952, no. 33) which, Prof. Dr. C. J. Becker has been so kind as to inform me orally, offers no information for dating.
- b. The neck of the bottle dredged up near Oldenburg together with sherds, etc. of the Funnel Beaker Culture (Pätzold 1955, Abb. 4b). This star is seven-pointed, like that of Stein. An undamaged collared flask from the same find complex is considered by Pätzold to be typologically young. The neck fragment is supposed to be older because it is a broken specimen. Within the period that the spot was inhabited, Pätzold may be correct, but whether this is of value for the archaeological dating remains doubtful in my opinion.
- c. A 135 mm. high collared flask from the *allée couverte* of Mélus, Ploubazlanec (C.-du-N.) in Brittany (Giot 1960, Fig. 19d & Pl. 24). The star has nine points. The *allée couverte* is one of a group in Brittany recently compared with the *hunebeds* of The Netherlands and N. W. Germany by J. L. Helgouach*. These *allées* have in common that the entrance is in the longitudinal side of the chamber. It is indeed remarkable that four of the six collared flasks found in Brittany (they are on the average larger than those of the Funnel Beaker Culture) all derive from *allées couvertes* of this special type.

Apart from the star-shaped collar, the collared flask from Stein may be compared on typological grounds with examples from Haselünne and Meppen (Knöll 1959, Taf. 34 : 17 & 15 respectively), Kleinenknethen (Sprockhoff 1938, Taf. 50 : 5), and others characterized by a pronounced shoulder and a short neck. Both Knöll and Sprockhoff argue for a relatively late dating of these specimens. Knöll places them in *Stufe* 2, which corresponds with the Walternienburg-Bernburger *Stufe*. Knöll also notes (1959, p. 23) that undecorated short-necked collared flasks occur particularly to the West of the Wezer.

* During the Second Atlantic Colloquium held on 6–11 April at Groningen.

According to U. Fischer, collared flasks are known from Central Germany in closed finds from the late Bernburger Culture (Driehaus 1960, p. 191, 1), an additional indication that these bottles were only in use for a few centuries. Typologically, the collared flask from Stein is closely related to the *hunebed* ware from north-western Germany and The Netherlands.

The same may be said concerning the two collared flasks with spherical bodies and long necks from the *Steinkisten* of Lohne and Altendorf (Sprockhoff 1938, Taf. 17 : 11). In addition, the graves yielded two collared flasks of an entirely different type. They are directly comparable with a find from Wychen (Lüüdik 1955, Abb. 17 : 9). The latter brings us back to the fragments of collared flasks from Vlaardingen (Altena c.s. 1962) which in all probability represent the same type.

Collared flasks are also known from Neuwied* (Buttler 1938, Taf. 23 : 19) and Lohra. The latter indeed lacks the neck, but a complete collared flask from the Güntersberg makes it very probable that the Lohra specimen concerns a similar small, round example. Lastly, I may mention the group of finds from the 'Eyersheimer Mühle' near Neustadt, Pfalz, in which sherds of collared flasks are also included (Sprater 1928, Abb. 70; Buttler 1938, S. 102).

The collared flask from Stein indicates that the dead had had relations with more northerly regions. This is in itself not surprising. Funnel Beaker Ware and axes of northern type are known from Stein and other sites in Limburg (Wouters and Glasbergen 1956). Indeed, many more relations between the Funnel Beaker Culture and the *westfälisch-hessische Steinkisten* can be demonstrated (Knöll 1961; Wurm c.s. 1963). In addition, via the latter group, connections with the Vlaardingen Culture can be made more acceptable.

To find comparative material for the large number of transverse arrowheads we may seek first in the SOM Culture. Favret has calculated

* J. F. van Regteren Altena has been kind enough to inform me as a result of his recent visit to Neuwied that the surviving parts of this collared flask are apparently fragments of two different specimens.

that in chamber tombs carved in rock, 2000 transverse arrowheads have been found as against only 58 leaf-shaped points (Daniel 1960, p. 47). The hypogeum II in Mournouards has given us a completely comparable collection of transverse arrowheads (Leroi-Gourhan 1963, Fig. 10). The Vlaardingen Culture and the Funnel Beaker Culture show the same picture. In the German *Steinkisten* however, the transverse arrowheads are not very numerous; they are as a rule triangular in shape. Only Calden (Uenze 1951), Altendorf (Jordan 1954), and Hiddingsen (Lange 1934) have yielded transverse arrowheads. It is clear that the relations of the users of the burial vault in Stein must be sought, with respect to this element, in a south-western and/or northerly direction.

With respect to the axe we wish to refer to only a few comparable examples. Here, too, the French material must be mentioned first, even though it is not considered typical of a particular culture (Leroi-Gourhan 1963, p. 31). A few examples will suffice. Among the rich material from Montigny Esbly (Arnette 1961, Fig. 12) are several entirely comparable axes. *L'Hypogée* II in Mournouards also includes a similar axe (Leroi-Gourhan 1963, Fig. 9). On the other hand, an axe of the same type was found in the well-known *Steinkiste* of Lohne-Züschen (Mus. Kassel nr. 1263). For the rest, the few axes in the German *Steinkisten* are much smaller and of a different shape.

It proved difficult to find parallels for the bone arrowheads. Bone objects are repeatedly mentioned in the literature, but unfortunately no report is made of what they are. Thanks to the kind cooperation of Dr. W. Schrickel, who has just made a complete study of the inventories of the German *Steinkisten*, the following comparable finds can be mentioned. The already-mentioned *Steinkiste* of Lohne-Züschen contained two complete examples. Their shape, however, is somewhat heavier and far less elegant than that of the arrowheads found in Stein. The actual point is shorter and the stem somewhat thicker. Dr. Schrickel also told me of a single specimen from Rimbeck Kr. Warburg, and this type of bone arrowhead is supposed to

have been found at Sorsum Kr. Hildesheim as well.

From the *allée couverte* I am acquainted only with a so-called *pointe de sagaie* from Montigny-Esbly (Arnette 1961, Fig. 15:6) which, although somewhat less delicate than our bone points, is nevertheless comparable.

The foregoing examples indicate that points of arrows or assagais made of bone belonged to the cultural possessions of the community under discussion.

The single small bead is most suggestive of the numerous beads found in the *allées couvertes*. In this respect the connections of the makers of the burial chamber seem to have been orientated towards France.

Summarizing the foregoing, we are strongly impressed by the enormously wide distribution evidenced by the cultural elements in the Stein burial chamber. This is not in itself a new idea: the marked agreement between the SOM Culture, westfälisch-hessische *Steinkisten*, Horgener Culture, etc. has already been pointed out by various authors. But the objects found at Stein confirm this unity in a most fortunate way. Regional differences do indeed appear, but if they are not overemphasized it is clear that our find as a whole forms an integral part of the cultural pattern of the peoples who inhabited Northern France, Belgium, South-Netherlands, and Western Germany before the rise of the beaker cultures. We are best informed with respect to their mortuary cult, but it is not excluded that the so-called Vlaardingen culture will provide us with an exceptionally good idea of their manner of living, albeit under somewhat exceptional environmental conditions.

To take up the question of the dating of the Stein tomb, it must in the first place be noted that the C_{14} method cannot be applied to the charcoal because part of the material filling the chamber consisted of waste from the Danubian settlement that through the activities of animals had become mixed with the remains of the cremations. A sample of guaranteed purity could therefore not be collected and absolute dating can only be derived indirectly.

One possibility for this derivation is provided

by the C_{14} dating of the hypogeum II in Mournouards (Leroi-Gourhan 1963, p. 133) which is given as 3812 ± 116 and 3683 ± 115 . On the basis of the multiple burials and the lithic material it is tempting to consider this burial chamber as culturally synchronous with that of Stein. However, arguments can be advanced in strong contradiction to this, in my opinion, very late C_{14} dating. These arguments are based, for one thing, on the collared flask with the star-shaped collar. To the best of our knowledge, in any case, these flasks were in use in EN C and MN I (Altena c.s. 1962, p. 217 ff.). We hesitate to ascribe the Stein flask with any certainty to either of these periods, although on purely typological grounds we would have a slight preference for MN I. On the basis of the C_{14} dating for Odoorn (GRN 2226) and Anlo (GRN 1824) which represent an early phase of the Drouwen period and an early Havelte period respectively, an absolute dating in the 26th century B.C. would have to be accepted. If the Vlaardingen Culture is included in these considerations, it could be put on typological grounds that the collared flasks of this culture give the impression of being younger than the Stein flask which is directly comparable with the TRB Culture. As *terminus post quem* for Vlaardingen or as starting date for the neolithic habitation of that place, we have available the C_{14} value of 2450

± 100 B.C. (GRN 2306) (Altena c.s. 1962, p. 216), which is valid evidence for a dating of Stein in the 26th century B.C. For this determination use is made of an argument based on a typological development of the collared flask. We do not consider this basis to be unshakable as yet, but at this moment it is the most acceptable one we have.

Acknowledgements

In concluding, we wish to express our gratitude to all those who have been intimately involved in the investigation. The first discovery occurred in the phase of the excavations carried out by the State Service for Archaeological Investigations at Amersfoort. The actual excavation of the stone floor was assigned to the Institute for Prehistory of the University of Leiden. The author was assisted by C. van Duijn of the State Service and J. P. Boogerd and G. J. Verwers of the University of Leiden.

A special word of thanks is appropriately extended here to D. Eckhart and H. C. Zorn of the International Training Centre for Aerial Survey at Delft who assisted in the building of a photography tower from which the vertical pictures in Figs. 1 and 3 were made. The drawings in this publication were prepared by J. P. Boogerd and the photographs taken by G. J. Verwers. The translation into English was done by Mrs. I. Seeger-Wolf at Leiden.

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A VELUVIAN BELL BEAKER WITH REMAINS OF A CREMATION IN A TUMULUS NEAR MEERLO¹

G. J. VERWERS

A tumulus at Meerlo (Prov. Limburg) has been investigated by the Institute for Prehistory of the University of Leiden. Indications of four or five historical periods were found. Fragments of a Veluvian bell beaker with remains of a cremation date the third period, and a ring ditch with several sherds of an urn found in the top of the barrow represent the last phase.

Introduction

In a gentle rolling landscape, a marked elevation with its decorative birch trees attracted the attention of Mr. J. Hoeymakers and Mr. B. Kryssen in 1960. The State Service for Archaeological Investigations at Amersfoort was informed that it seemed likely that a tumulus had been found, and a visit by Dr. P. J. R. Modderman and Mr. C. van Duijn confirmed this assumption.

After consultation with the municipal authorities of Meerlo, it was decided to investigate a portion of the tumulus between September 2nd and 13th 1963, during a field-work period for students of the Institute for Prehistory of the University of Leiden. This first study included the SE and SW quadrants. A second field period, devoted to the NE quadrant, was held on April 13th-24th 1964, during which time part of the surrounding terrain was also investigated. The success of both excavations was for a large part due to the cooperation received from the municipal authorities of Meerlo headed by *Burgemeester* Drs. M. J. A. R. Dittrich. Both field trips were led by Prof. Dr. P. J. R. Modderman. The drawings made in the field and the illustrations to this article were prepared by Mr. J. P. Boogerd.

To insure the preservation of the tumulus in its original state, the ground has been acquired by the municipality.

The situation in the landscape

The tumulus, the coordinates of which are 52 E 392.90/202.75, lies N. of the village close to the Meerlose Postbaan, on the rolling Middle Terrace of the Maas River on which a layer of rather loamy cover-sand was deposited. A beautiful spot was chosen for the construction of the barrow: the highest part of a ridge formed by aeolian deposits close to a depression in the terrain. This situation makes the tumulus appear larger than its actual maximum elevation of 150 cm above the original ground surface.

A little more than 200 metres to the E of the barrow there is a low escarpment with a drop of about 3 metres; this is the western margin of the valley through which the Molenbeek flows at present, the valley having originally been formed by the Maas (Fig. 1).

As a result of the quarrying of sand, part of the eastern flank of the tumulus has been removed, so that the E section of the EW profile is no longer intact. The investigation of the three quadrants encountered many difficulties caused by recent disturbances that had affected the centre of the hill in particular. Tree roots and tunnels made by animals were also numerous.

The tumulus

Pieces of flint, including a few tools and flakes, were found under the level on which the first tumulus had been built. Although they have

¹) Province of Limburg.

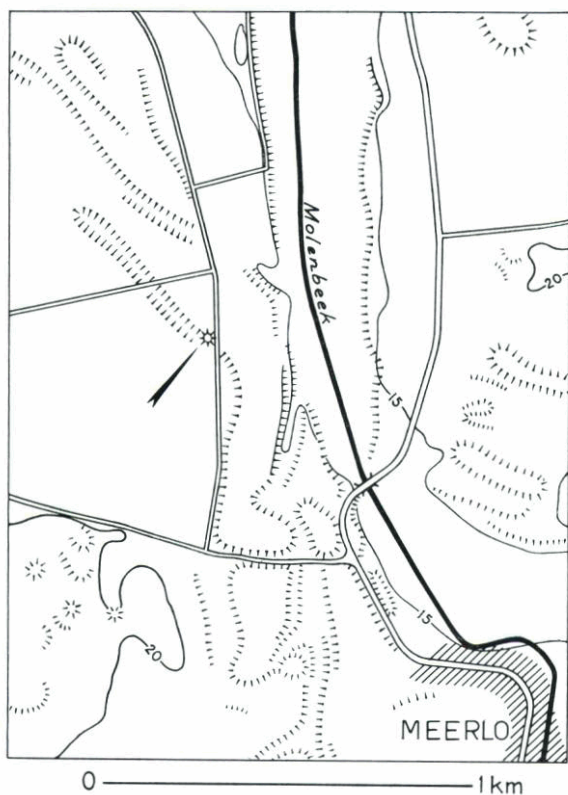


Fig. 1. Geographic location of the tumulus near Meerlo.

not yet been systematically studied, the majority of the artifacts appears to be Mesolithic; a few may belong to the Upper Palaeolithic.

0. The original ground surface

The ground surface contemporary with the construction of the oldest barrow is difficult to locate exactly in the sections. It is possible to distinguish, particularly in the NS profile, a zone showing a somewhat pale yellow colour overlying an orange to reddish brown subsoil. In the centre, in the original surface, a spot containing charcoal was found (Fig. 2).

1. Small tumulus with ringditch

The oldest barrow, which was about 50 cm. high, was circumscribed by a ringditch. This

ditch can be distinguished in both the horizontal plane and the sections by reason of its pale brownish-grey colour; its width is 1.00 to 1.50 m, the diameter of the circle about 9 m on the average. The mound itself consists at present of yellowish-grey sand containing brown fibres; its upper side is set off by a layer of pale yellowish-grey sand interpreted as (a remnant of) the old surface of the mound. In some of the sections this layer extends into the material, filling the ringditch: after the ditch was dug, a portion of it filled rather rapidly; the surface then became covered with vegetation and a soil profile developed. In the excavated quadrants the search for the burial belonging to the first barrow was unsuccessful. The spot with charcoal mentioned above is possibly related to the burial.

The postcircle

The horizontal planes cut through the oldest mound in the southern quadrants exposed a ring of greyish-white post-holes. As can be seen from Fig. 2, this circle coincides with the oldest ditch. Since the bottom of the post-holes lies higher than the bottom of the ditch, the posts must have been placed in the material filling the ditch. It was impossible to determine whether the soil profile in the partially-filled ditch had already been present. The coincidence of the circle and the ditch may imply that they were constructed within a short time of each other, the more so because of the fact that the mid-point of the ditch belonging to the next period shows a distinct shift with respect to that of the oldest tumulus. In the NE quadrant the posts were barely recognizable.

2. The barrow within the discontinuous ditch

A ditch measuring 12 m. in diameter and showing several interruptions is the most distinct phenomenon of the second period in the construction of the Meerlo tumulus. This ditch, with its greenish-grey filling, is clearly visible in the SE and SW quadrants; in the NE quadrant it coincides with the ditch around the oldest

mound; its location there explains the almost complete absence of post-holes in this part of the oldest ditch. In the SW and NE quadrants the material filling this ditch was found to contain concentrations of charcoal.

The discontinuous ditch surrounds a burial mound built by increasing the height and extension of the first tumulus. The old surface of the barrow could be determined from the presence in several places of a bleached yellowish-grey layer continuing in the NS section of the SW quadrant into the filling of the ditch belonging to this mound. The same light-coloured layer in the NS section of the NE quadrant has also been ascribed to the second period on the basis of its height above the original ground surface. The material of this barrow is composed centrally of greyish-white sand, containing a large amount of fibres and showing a transition towards the edges to yellow and brownish-yellow.

After this enlargement the total height of the barrow reached about 80 cm. above the original ground surface under the centre of the mound; it must be kept in mind that locally this original ground surface exhibited a natural elevation. The excavation of the central part of the NS baulk between the SW and SE quadrants exposed a greyish-white discoloration rectangular in shape, measuring 110×220 cm., just below the surface of the first mound. The angular stain was separated from the surrounding yellowish-grey sand by some heavy, brown fibres. The orientation of the longest axis is NW-SE. The absence of objects and of charcoal makes it impossible to identify this discoloration as the grave belonging to the second period.

The only relevant fact with respect to the time relationship between the first and second mound is that a soil profile had developed on the surface of the older monument before the second barrow was constructed.

3. *The third tumulus*

Although no conclusive evidence is available, it seems clear that the old surfaces with dark-grey over light-grey remnants of a soil profile

are the upper part of the third barrow. This addition, also composed of yellow to yellowish-grey sand, brought the total height of the burial mound to 110–120 cm.

During the investigation of the baulk between the SE and the SW quadrants, in the centre of the tumulus about 40 to 50 cm. under the surface of the third period, the fragments of a Veluvian bell beaker with the cremated bones, a pair of arrowshaft-smoothers, three arrowheads, and splinters of flint were found. This find complex, to be discussed in detail below, lay on or just in the mound of the second tumulus. It therefore seems acceptable to date the third barrow as belonging to the period of the Veluvian bell beakers.

The final tumulus

The mound finally reached its present dimensions, about 150 cm. high and over 22 m. in diameter. The presence of remnants of sods found on the surface of the third barrow in the NS section suggests that this last addition was also man-made. Directly under the ground surface on the edge of the present burial mound, the dark-brown discoloration of a ringditch was found in all three quadrants. The V-shaped cross-section of this ditch is visible in the sections. Its width at present is about 60 cm., the diameter 21 m. It seems likely that this ditch belongs to the just described final mound.

The barrow was also used in the urnfield period: the dark discoloration of a ringditch about 9 m. in diameter and 90 cm. wide was found in the NE and SW quadrants at the top of the mound just under the present surface. This ditch can also be discerned in the sections; it was dug to a depth of about 80 cm. from the present surface.¹) In the sand shovelled back into a recent hole dug into the top of the mound were found a few sherds of black earthenware and a small amount of cremated bone, both of which may have derived from the interment within the ringditch. In this

¹ Comp. the ringditch on the Bronze Age tumulus, the Zwartenberg, near Hoogeloon (Glasbergen, 1954, pp. 10–11).

connection, reference may be made to the remains of a ringditch urnfield found to the North of the tumulus during the investigations described here.

Supplementary notes

The excavations yielded a number of observations that are not included in the above report.

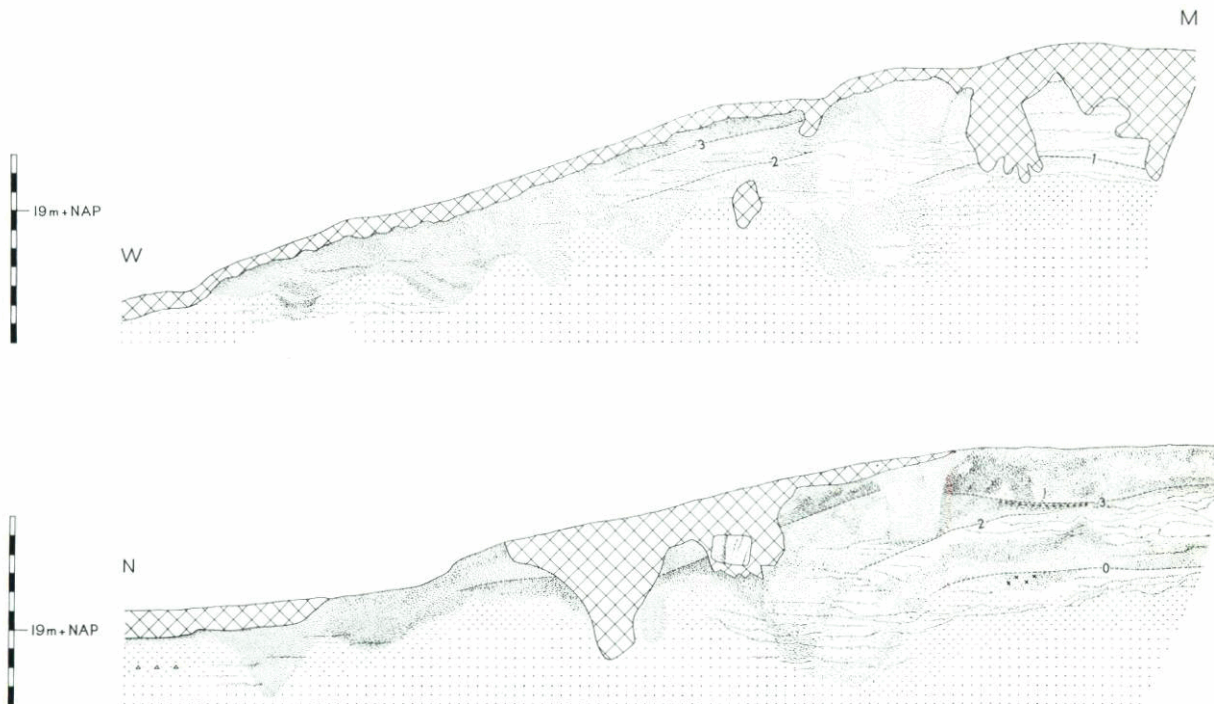
In a pit in the SE quadrant under the mound which was filled with light-grey soil, sherds of at least two Maritime bell beakers were found (nrs 14 and 16, Fig. 3). Their relation to the tumulus cannot be determined.

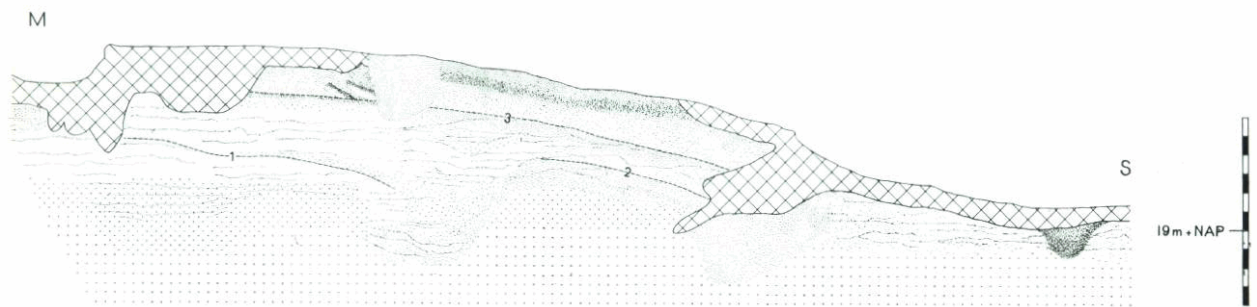
The interpretation of an oblong discoloration in the EW section of the SW quadrant as a post-hole is very uncertain. This light-coloured stain runs through the elevation of the second mound into the first barrow. If it was indeed formed by a post, which would then belong to the ring above the oldest ditch, this would mean either that

this postcircle was still present when the second tumulus was constructed (this mound would then have been built shortly after the completion of the oldest structure) or that the posts belong to an intermediate circle that was set up after the completion of the second barrow; in the latter case the postcircle would only by chance have the same mid-point as the oldest mound, lie eccentrically with respect to the second tumulus, and could be related to the burial of the Veluvian bell beaker. It must be kept in mind, however, that both theories are based exclusively on a single, and moreover vague, discoloration.

Two groups of paired posts have left rather indistinct, grey stains in the NE quadrant. One of a third pair of these post-holes occurs in the section of the NS profile, the second being visible in the horizontal plane. No exact place in the period arrangement in the mound can be assigned to these phenomena either, although it seems evident that they must date from a time

Fig. 1. Plan and sections of the tumulus at Meerlo. Scale of plan 1 : 160, scale of sections 1 : 80.





subsequent to the construction of the second barrow.

The drawing of the NS section indicates that in the third tumulus just to the N of the centre, in the contemporary surface, a shallow hole was dug in which a large amount of charcoal collected. This would seem to suggest a burial from a period after the third mound, but no supportive evidence has been found.

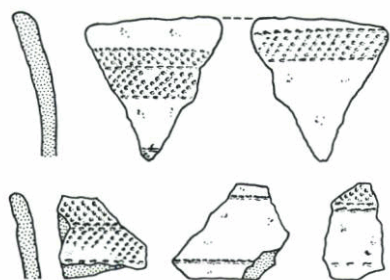


Fig. 3. Sherds of Bell Beakers of the Maritime type (nrs 14 and 16). Scale 1 : 2.

Although recent digging complicates interpretation, in the upper surface of the NS section in the NE quadrant there may be an indication of the existence of a stage in the construction of the barrow between the third period and the last mound. This stage (3—4) would then include the large, brown ringditch observed only indistinctly in the SE quadrant but very clearly in the NE quadrant, this ditch lying just within the one belonging to the final period. Because this surface was not observed in the other sections however, we can do no more than mention this possibility.

The finds

Flint: The collection of flints deriving primarily from the sand under the tumulus is being studied at present. The results will be published in due course.

Maritime bell beaker: The sherds of at least two Maritime bell beakers, shown in Fig. 3, were found in the SE quadrant (nrs. 14 and 16). One of the sherds belonging to a rim is decorated on the inside as well as the outside.

On all the sherds the diagonal lines were made with a toothed spatula; the horizontal lines are probably cord impressions. The earthenware is made of sandy clay containing a very low percentage of coarse grains and was thoroughly fired. The inner and outer surfaces are red to orange, the core is black; the undecorated zones were polished.

Veluvian bell beaker, etc.: A few notations should be made here concerning the position of the Veluvian bell beaker and the remnants of a cremation as well as the related finds. The cremation remains, arrowheads, arrowshaft smoothers, and splinters of flint were found together. Evidently, after the cremation the calcinated bones and stone objects were collected from the funeral pyre (at some distance from the mound) in a cloth or basket and buried in the mound. Against it, to the north, the beaker was placed. The beaker therefore did not contain the cremation. A tunnel-shaped disturbance suggests that animal activity is responsible for the fact that only part of the beaker has been found: its bottom was even displaced so far that it was found in the contents of the recent disturbed area in the centre of the mound.

The Veluvian bell beaker was formed by hand from sandy clay with a small amount of fine gravel. The decoration was applied by the pressure of a dentated spatula. The decorated zones are separated by slightly elevated bands between shallow grooves. The earthenware is reddish-brown on the surface, the core is black. In the reconstruction shown in Fig. 4 the position of the bottom with respect to the rest of the beaker is doubtful by a couple of centimeters.

The three arrowheads were made from grey flint. They are triangular in shape, the base being perfectly straight, and are 3 to 4 mm. thick. Their crackled surface suggests that they were heated in fire, during which process small bits split off at various places.

The two arrowshaft smoothers are made of sandstone; the flat sides and the grooves are ground, the other sides rough.

The splinters of grey flint in this collection give the impression of all having belonged to one piece of stone which split as a result of

heating. Whether the original piece was an utensil cannot be determined; the splinters show no traces of polishing or retouching.

Other finds: A flat piece of grey-coloured flint was, by grinding and chipping, remodeled into a small axe of very irregular shape. This object was found in recently disturbed soil, during the excavation of the SE-quadrant. It has already been mentioned that the sherds of black, polished earthenware found in disturbed sand in the centre of the mound may possibly belong to the ringditch on top of the barrow. They agree well with the earthenware originating from urnfields in The Netherlands.

Remarks

The absence of objects prevents the exact dating of three of the four periods distinguished in the structure of the Meerlo burial mound, nor can such information be found from parallels with most of the various parts of the monument. The construction of burial mounds with ring-ditches and postcircles was common in north-western Europe over a period of many centuries.

However, the discontinuous trench surround-

ing the second barrow is less usual. Besides the English causewayed camps, which according to recent investigations were probably still in use up to about 2000 B.C. (Smith 1964), discontinuous ditches have been found in Haarendermolen, Uddel, and Vaassen, among other places. In Haarendermolen this ditch belonged to the second period of a burial mound containing a wrist-guard as grave-goods in the primary grave. A rectangular grave pit containing a cremation belonging to the second period of the mound was ascribed by Van Giffen to the Middle Bronze Age, which would thus date the discontinuous ditch (comp. Van Giffen 1930, Tafel 32 and 36). A vague resemblance to the Meerlo ditch is found in the description by Holwerda of the find called *Rundbau* from Uddel, which probably does not belong to a tumulus. Within this ditch (diameter 24 m.) sherds of Bell Beaker pottery were found (Holwerda 1909, pp. 39–41). In the Hertenkamp near Vaassen, Holwerda's barrow III also has a ditch with interruptions, but unfortunately no objects were found in this tumulus (Holwerda 1910, pp. 4–6). These cases supply practically

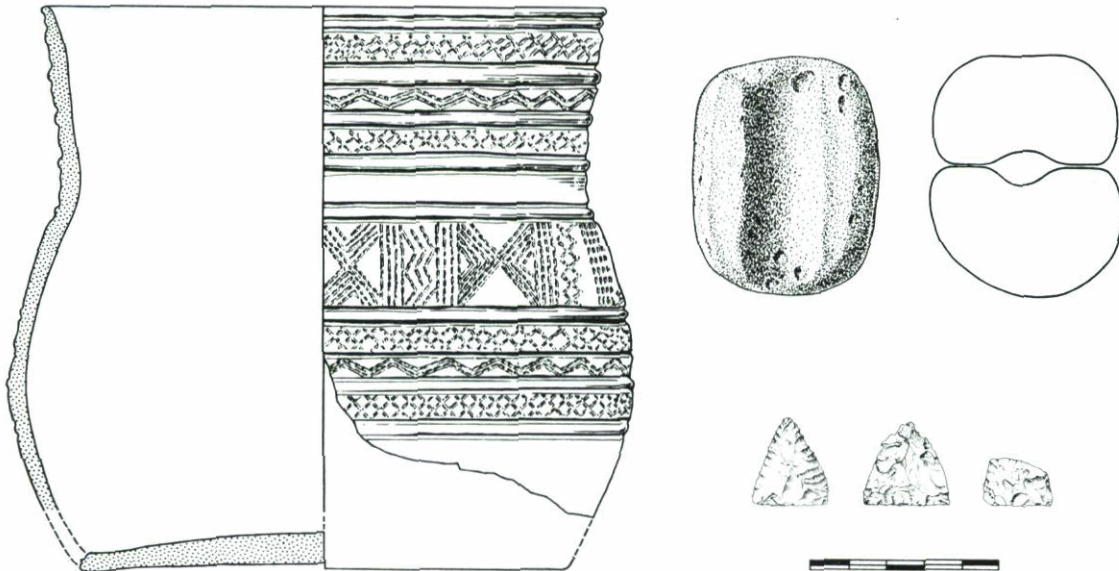


Fig. 4. Bell Beaker of Veluvian type together with a pair of arrowshaft smoothers and three arrowheads. Scale 1 : 2.

no information for dating. More useful for this purpose is the round barrow on Stockbridge Down (Hamps.) (Stone 1940). This mound, constructed of flint nodules, covers a grave in which a so-called B 1 beaker was deposited. The tumulus is surrounded by a ditch with five interruptions. In the material filling the grave, two separate cremations were later placed. Among the contents of one were a few Egyptian segmented beads of faience dating from the 14th century B.C. Recently our attention was drawn to the results of a barrow excavation at Bennekom (Province of Gelderland). Here the tumulus belonging to the second period of this monument was surrounded by a discontinuous ditch, 16 m. in diameter. This second barrow was by pollenanalyses dated to the end of the Neolithic Period. It covered a tumulus with two Veluvian bell beakers. Lastly, there remains the dating information supplied by the third mound at Meerlo with the Veluvian bell beaker as *terminus ante quem*.

Until recently, lack of evidence raised opposition to the supposition put forward by Bursch in 1937 that the makers of the Veluvian bell beakers practiced cremation as well as inhumation. Bursch based his supposition on the investigation of barrow 1 at Oss, in which he found fragments of a Veluvian bell beaker and charred bone (Bursch 1937, pp. 1—3). The signs of recent disturbance found deep in the barrow have caused justifiable doubt that the cremation and the beaker belong together, the more so since a cremation was found in the upper part of the tumulus as a later burial.

In the Table published in his thesis on the Beaker Culture in The Netherlands, Bursch included a number of other cases in which cremations were thought to occur in burial mounds from the Beaker Period (Bursch 1933, pp. 114—124). A study of the publications mentioned in this Table suggests that a number of these cases are improbable, but that others (e.g. that of the Doorwerthse Heide) lack only complete certainty.

It is known that outside The Netherlands, cremation was practiced as well as simple inhumation burial by a number of Neolithic peoples. It therefore seems strange to us that the cases cited above, which however uncertain actually exist, have been rejected as indications that cremation was practiced during the Bell Beaker Period in The Netherlands (e.g. de Laet and Glasbergen 1959, p. 105).

In addition to the Meerlo find, two other recent investigations have confirmed Bursch's theory. A similar combination of objects was found by J. D. van der Waals near Apeldoorn, and another by Dr. H. Hinz, who also found a Veluvian bell beaker and cremated bone in the same grave near Xanten (Veen, Kreis Moers).³

Thus, it may now be stated without reservation that the custom of cremation before burial was known in The Netherlands during the period of the Veluvian bell beakers.

³ We are indebted to Dr. H. Hinz and Mr. J. D. van der Waals for permission to mention their finds, both of which are being prepared for publication, the former in *Bonner Jahrbücher* and the latter in *Jaarboek Gelre*.

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