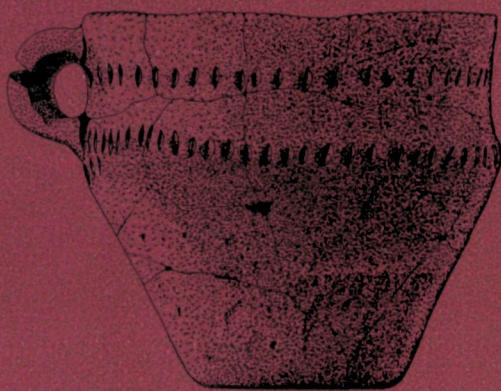


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PUBLICATIONS OF THE INSTITUTE FOR PREHISTORY
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LINIENBANDKERAMISCHE BAUTEN AUS HIENHEIM, LDKR. KELHEIM

P. J. R. MODDERMAN

Im Bereich der bandkeramischen Kultur sind, wie bekannt, bei Ausgrabungen an verschiedenen Stellen Bauten festgestellt worden. Die Streuung dieser untersuchten Bauwerke deckt sich aber nicht mit der Verbreitung der Bandkeramik. Hier und da legte man einzelne Gebäudegrundrisse frei, grössere Komplexe von vollständigen Hausgrundrissen sind bisher aber nur in Bylany, Köln-Lindenthal und niederländisch Limburg ausgegraben worden. Zu einer Gruppe mittl-grosser Fundorte mit zehn oder mehr Bauten gehören Mohelnice, Zwenkau, Gudensberg, Müddersheim und Rosmeer. In zahlenmässiger Hinsicht ist der Westen mit ungefähr 275 Bauten weitaus am besten vertreten. Sehr wenig ist hingegen aus der südlichen Hälfte des bandkeramischen Gebietes bekannt. Von hier sind Hausgrundrisse nur aus Herkheim, Ldkr. Nördlingen und Mannswörth bei Wien veröffentlicht worden.

Das 1962 gegründete Instituut voor Prehistorie der Reichsuniversität zu Leiden hat sich u.a. die Aufgabe gestellt, einen Beitrag zum Schliessen dieser Forschungslücke zu leisten. Die zuständigen Behörden im Lande Bayern waren erfreulicherweise schnell für unsere Pläne gewonnen. Recht gerne danke ich an dieser Stelle Dr. K. Schwarz, Landeskonservator des Bayerischen Landesamtes für Bodendenkmalpflege für die grosszügige Art und Weise, mit der er unserem Unternehmen in jeder Hinsicht entgegen gekommen ist.

Vorbereitend zeigte uns im September 1963 Ing. H. Neubauer eine ganze Reihe von bandkeramischen Fundstellen, wofür wir ihm zu Dank verpflichtet sind. Ohne seine Hilfe wäre es uns nicht möglich gewesen, in kurzer Zeit eine grössere Zahl bandkeramischer Wohnplätze im Gelände kennen zu lernen. Mit Hilfe von Bohrungen wurden die günstigsten getestet, wobei es sich zeigte, das manches Mal das Gelände beträchtlich abgeschwemmt war. Nur in wenigen

Fällen ist die Bodenerosion so gering gewesen, das mit der Erhaltung der Befunde in befriedigendem Ausmasse zu rechnen war. Sehr günstig schien in dieser Hinsicht ein Terrain im Dorfe Otzing, Ldkr. Deggendorf. Überdies ist die landschaftliche Lage Otzing's inmitten der grossen südbayerischen Lösslandschaft für eine bandkeramische Ansiedlung sehr günstig.

Eine dreiwöchige Probegrabung im September 1964 hat dann zwar bandkeramische Bebauungsspuren erbracht, doch stellten sich zugleich zahlreiche Bodenveränderungen im Zuge jüngerer Baumassnahmen am Platze ein. Die Gruben reichten sich dicht aneinander und überschnitten sich. Pfostenlöcher in Zusammenhang mit bandkeramischen Gruben liessen sich bei diesen ungünstigen Verhältnissen nicht erkennen. Durch diese ungünstigen Bedingungen schied Otzing für unsere Zwecke aus.

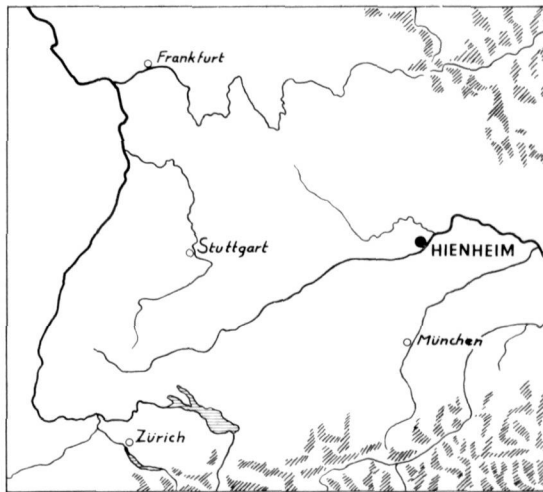


Fig. 1. Die Lage von Hienheim.

Ein neuer Versuch wurde ein Jahr später gemacht und zwar donauaufwärts in Hienheim, Ldkr. Kelheim (s. Fig. 1). Es handelt sich dort in landschaftlicher Hinsicht um ein relativ klei-

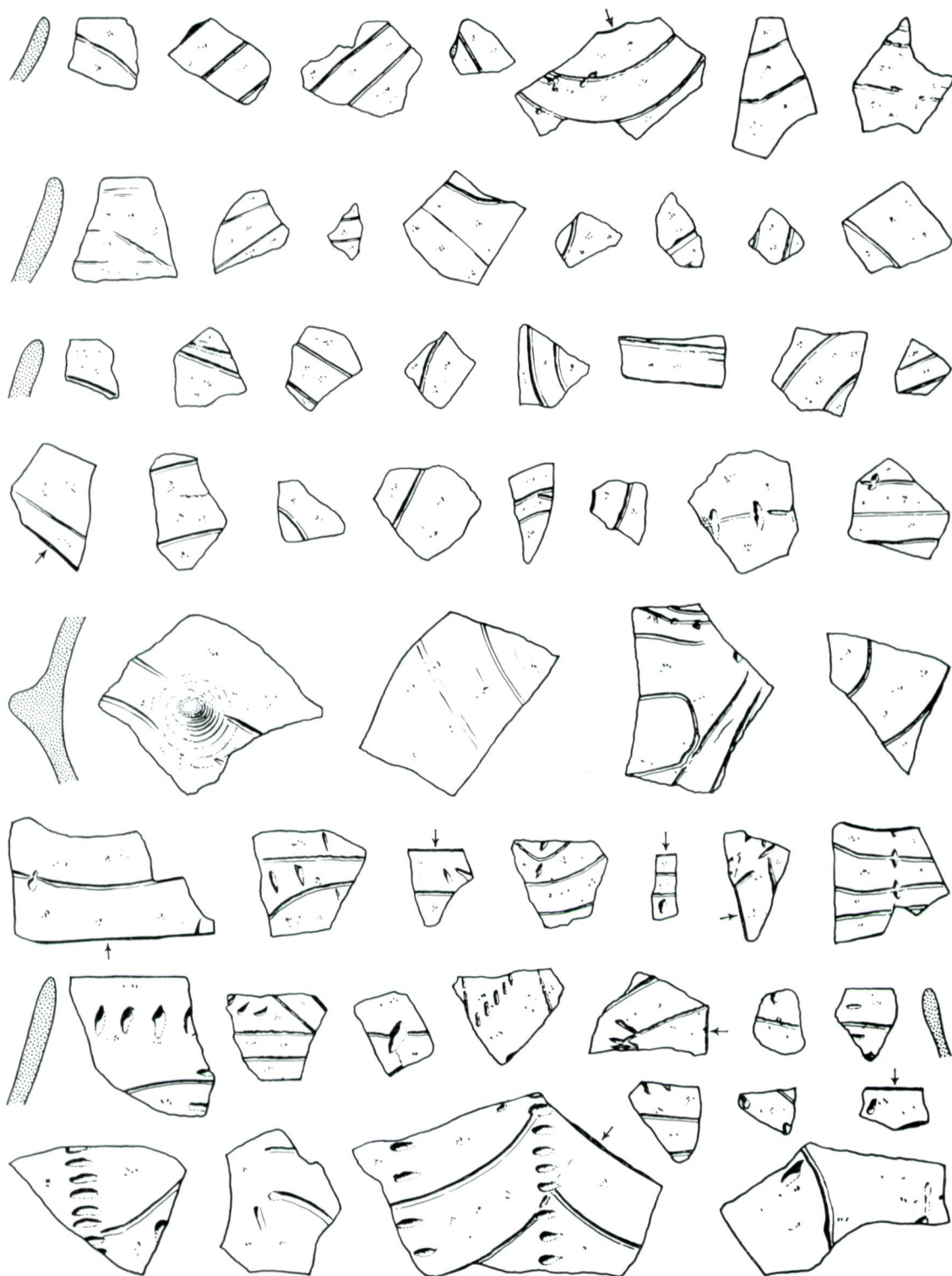


Fig. 3. Verzierte Keramik aus einer der Gruben des zweiten Hauses von Hienheim. Sch. 1 : 2.



Fig. 4. Verzierte Keramik aus einer der Gruben des zweiten Hauses von Hienheim. Sch. 1 : 2.

nes Lössgebiet, das südlich von der Donau begrenzt wird. Die Fundstelle liegt unmittelbar an einem Steilhang zur heutigen Donauterrasse. Als Ing. Neubauer im Frühjahr 1956 die römischen Tempelfundamente am Weinberg südlich der Donau besuchte, stellte er jenseits des Flusses in den Äckern östlich von Hienheim schwarze Verfärbungen fest. Schon beim ersten Besuch des Fundplatzes fand er Scherben und Feuersteinabschläge, womit Hienheim in die Reihe der bandkeramischen Siedlungen aufgenommen werden konnte.

Dank der Unterstützung durch die Herren Landrat Josef Bauer, Oberregierungsrat M. Albert und Bürgermeister J. Eichinger und mit der freundlichen Genehmigung des Grundstücksbesitzers Herrn M. Forster konnten wir am 20. September 1965 mit einer Probegrabung in Hienheim anfangen. Mit Hilfe von acht Hienheimer Bürgern wurde drei Wochen gegraben. Von niederländischer Seite waren der Autor, Herr B. Dekker und zwei Studenten des Leidener Instituts anwesend.

Schon nach zwei Tagen wurden Pfostenlöcher festgestellt, welche in Zusammenhang mit einer

Grube, die ausschliesslich bandkeramische Scherben enthielt, nur als bandkeramisch gedeutet werden konnten. Im Laufe der Grabung sind dann die Bodenverfärbungen eines vollständigen Wohnhauses freigelegt worden. Ausserdem kamen noch zwei weitere Hausgrundrisse zutage, doch war der erste am vollständigsten.

Das erste Hienheimer bandkeramische Haus (s. Fig. 2) ist mit seiner Längsachse von NNW nach SSO orientiert. Länge und Breite sind etwa 16 m und 6 m. Der Bau gliedert sich in zwei Teile: einen Nordwestteil mit Wandgräbchen und einen Südostteil, bei dem die Wandpfosten fehlen. Zwei grössere Gruben an den äusseren Längsseiten des Hauses weisen darauf hin, dass der Südostteil Flechtwände hatte. Solche Gruben in gleicher Lage sind inzwischen so mannigfach zu Tage gekommen, dass keine Bedenken mehr bestehen, die meisten dieser Gruben als beim Bau des Hauses entstandene Lehmgruben zu erklären. Die Spuren der Wandpfosten an den südöstlichen Längsseiten des Hauses sind leider durch die Abschwemmung des Geländes verloren gegangen.

Bei den beiden anderen Hausgrundrissen handelt es sich sehr wahrscheinlich um Bauten gleicher Grösse. Sie sind aber nicht so vollständig wie das erste Haus und sollen deshalb in diesem Vorbericht nur erwähnt sein.

An Hand des aus den Niederlanden vorliegenden Materials ist es möglich, den Hienheimer Hausgrundriss näher zu deuten. Es lässt sich ein Nordwestteil mit Wandgräbchen von einem Südostteil unterscheiden, wo nur Pfostengruben den Verlauf der Wände angeben. Der Südostteil ist als Wohnraum zu betrachten. Der Plan stimmt soweit mit den Befunden aus dem westlichen Gebiet der bandkeramischen Kultur überein, dass im Innenraum von Nordwesten her zunächst in ca. 1.20 m Abstand vom Übergang der beiden Hausteile eine Querreihe von Pfosten auftritt. Es folgt im Hienheimer Falle dann noch ein 'Dreier-Pfosten-Riegel', während in niederländisch Limburg stattdessen entweder eine Y-Konfiguration oder zwei Dreier-Pfosten-Riegel üblich sind. Wie sich diese Unterschiede deuten lassen, dürfte wohl erkennbar werden, wenn eine grössere Zahl von Hausgrundrissen zur Ver-

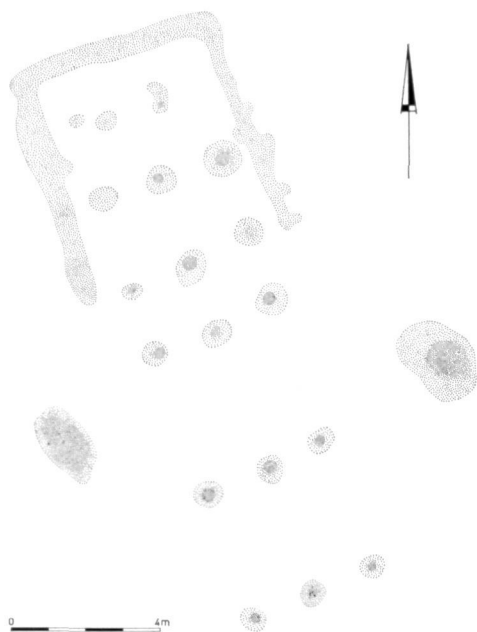


Fig. 2. Plan des ersten linienbandkeramischen Hauses aus Hienheim.

fügung stehen wird. Wenn man auf Grund der Pfostenstellung das Hienheimer Haus in die westliche chronologische Typologie einreihen möchte, so würde ich die Übergangsphase der alten zum jungen Linienbandkeramik vorschlagen.

Aus den Gruben beim Haus 1 in Hienheim sind leider nur wenige Funde zum Vorschein gekommen. Die wenigen verzierten Scherben stimmen aber gut mit den Funden aus einer der Gruben des Hauses 2 überein. Diese Keramik wird in Fig. 3 und 4 abgebildet. Eingeritzte Linien sind offenbar ganz in der Mode, zusammen mit einer einfachen Betonung des Gefässrandes durch eine Reihe von Einstichen oder durch eine Linie. Aus rein typologischen Gründen möchte ich diese Fundgruppe vorläufig einer mittleren Phase der Linienbandkeramik zuweisen. Nicht ganz steht damit die C_{14} -Datierung an Hand von Holzkohle aus der gleichen Grube in Übereinstimmung. Herr Dr. J. C. Vogel vom

Groninger C_{14} -Labor hat uns mitgeteilt, dass er bei der Altersbestimmung auf $5910 \pm C_{14}$ -Jahre (GrN-4830) kommt, was ungefähr 3960 ± 50 v. Chr. Geb. heissen mag.

Bei der Grabung sind nicht nur linienbandkeramische Spuren, sondern auch Gruben der Stichbandkeramik und ein Graben gefunden worden, welcher wahrscheinlich jungneolithisch ist. Auch für diese stichbandkeramischen Gruben kann eine C_{14} -Datierung gegeben werden: Sie lautet $5780 \pm C_{14}$ -Jahre (Grn-4832), was gut mit dem alten Charakter dieser Befunde und mit den anderen C_{14} -Datierungen dieser Kultur übereinstimmt. Schliesslich sei noch erwähnt, dass in der Ackerfurche Feuersteinmaterial einer mittelpaläolithischen Kultur gesammelt worden ist.

Die Resultate der Probegrabung in der neolithischen Siedlung von Hienheim sind so vielversprechend, dass die Fortsetzung der Untersuchung sehr wünschenswert erscheint.

A TUMULUS AND AN URNFIELD AT MEERLO, PROV. LIMBURG

G. J. VERWERS

In 1964 a tumulus, containing a Beaker of Veluvian type that accompanied a cremated interment was excavated at Meerlo. To the south of this tumulus, a circle of postholes was discovered in 1965. It represents the last relic of a levelled barrow. To the north of the tumulus with cremation, part of an urnfield with interrupted circular ditches had been constructed. The few urns may be dated to the HaC/D period. In the flint material, collected in and below the first tumulus, epi-Palaeolithic and Mesolithic traditions are present.

After completion of the publication of Tumulus I along the Postbaan at Meerlo¹, small investigations were carried out both to the north and south of the tumulus in 1965. From the information provided by Mr. Kessels of Meerlo, that formerly a little hill was situated on his field, an excavation of a small area east of the Postbaan was begun (fig. 1)². During the previous investigations of three quadrants, both in and below Tumulus I, flint material was found. Due

to the method of excavation, whose primary aim was a study of the barrow, it was impossible to give the collecting of the flint material the attention it deserved. This imperfection plus the fact that the total collection comprises 705 pieces,

1. Verwers, G. J. (1964): 'A Veluvian Bell Beaker with Remains of a Cremation in a Tumulus near Meerlo', *Analecta Praehistorica Leidensia*, I, pp. 17-24.
2. The excavations of 1965 stood under the daily supervision of Mr. C. Hoogendoorn and Mr. J. E. A. van Ruitenbeek, assistants to the Institute for Prehistory.

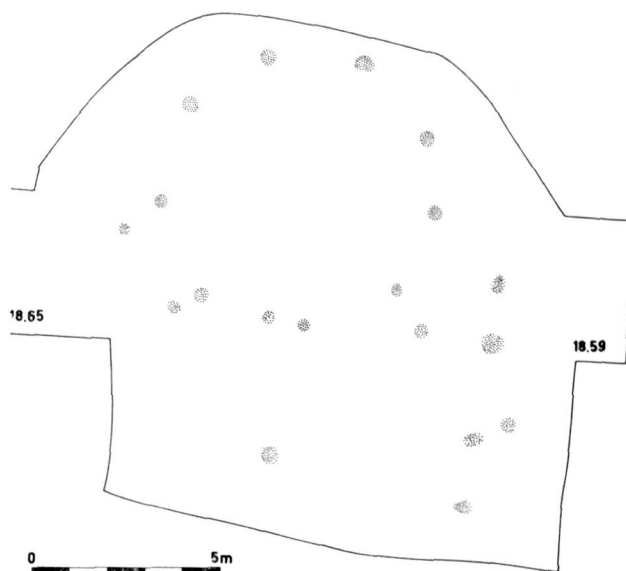
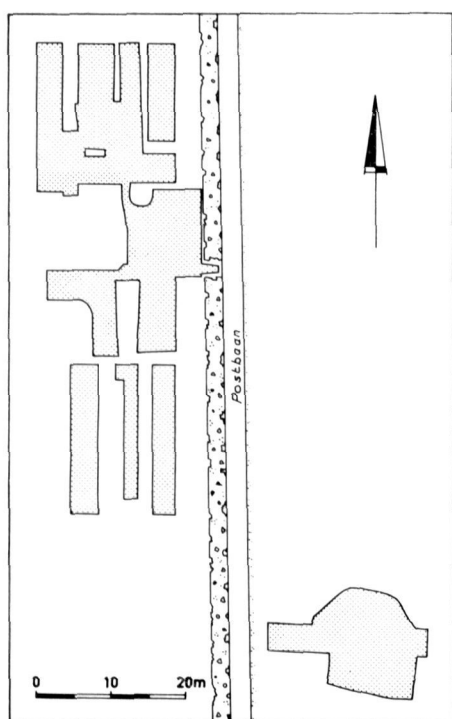


Fig. 1. Situation of the excavated areas, and plan of Tumulus II at Meerlo. Scale 1:1000 and 1:200.

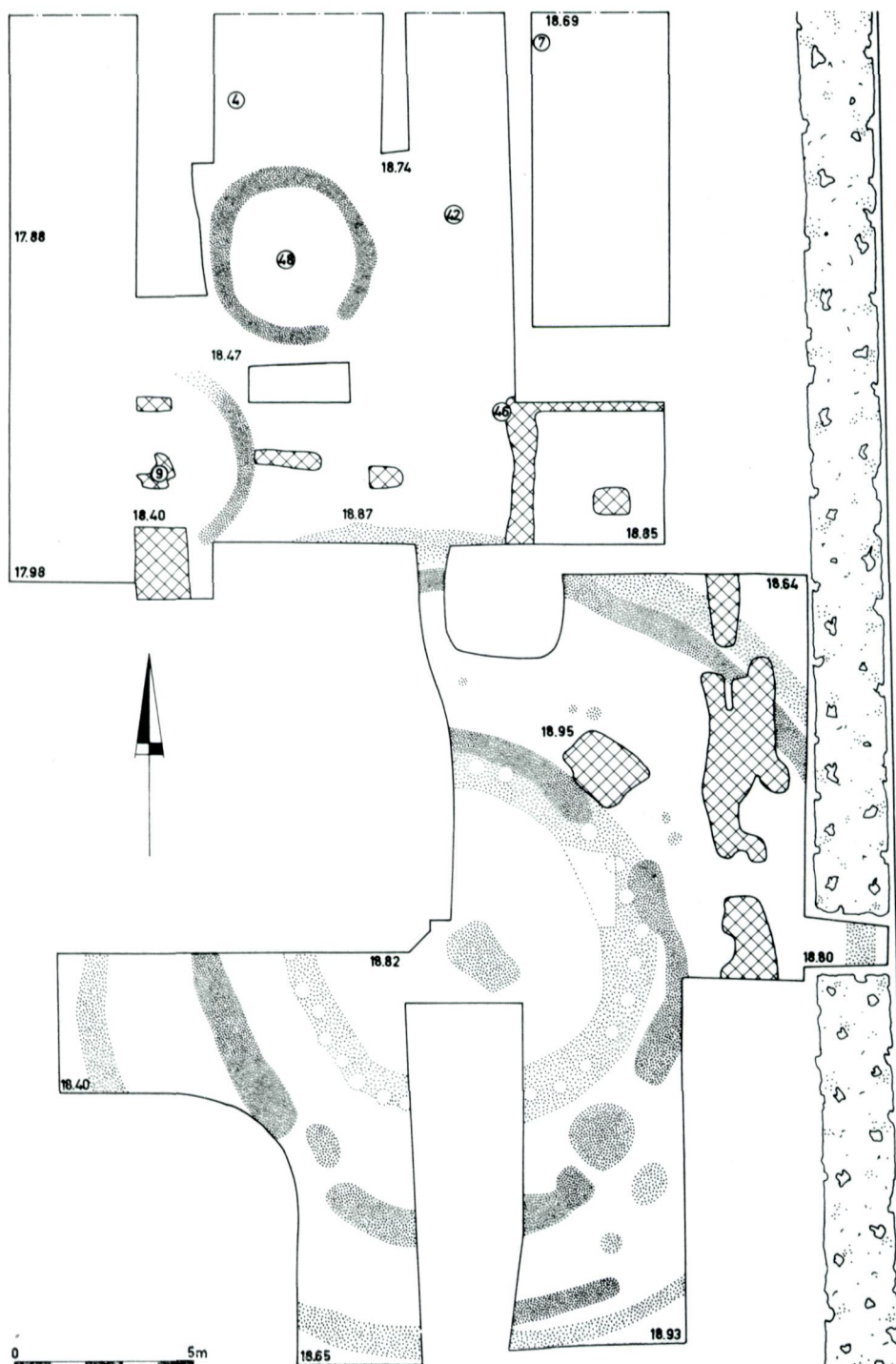


Fig. 2. Plan of Tumulus I and the Urnfield at Meerlo. Scale 1:200.

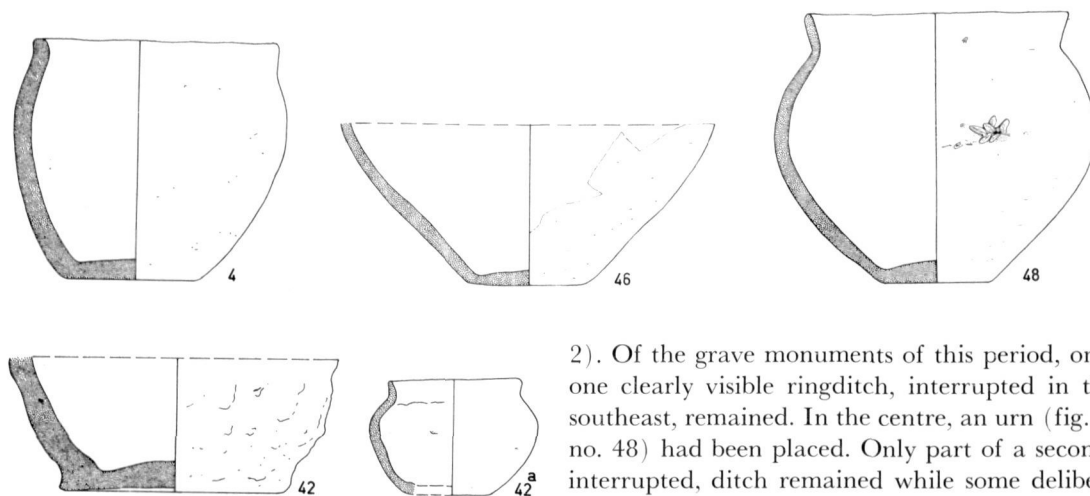


Fig. 3. Pottery from the Urnfield at Meerlo. Scale 1:4. of which only 73 are completed artifacts, makes definite statements rather perilous. Moreover this small number of artifacts very probably belongs to different periods. Being aware of these facts, Mr. J. P. Doets undertook the study of the material³. Besides clearly Mesolithic finds, he distinguishes an epi-Palaeolithic tradition in a number of objects. This last supposition might be supported by the presence of comparable material in the immediate neighbourhood.

About 50 meters to the southeast of Tumulus I, the remains of a levelled tumulus, Tumulus II, were investigated at a place indicated by Mr. Kessels. In the yellow sand below the dark topsoil, a few vague discolourations were interpreted as postholes. Ten of them stood in a regular circle with a diameter of 7.5 m. They are the last evidence for the existence of this barrow. In the southern part of the circle, two postholes close to one another might indicate a closed entrance. No trace of the interment was left.

Finally, small plots to the north and south of Tumulus I were investigated. Trial trenches in the southern area did not yield any information.

North of Tumulus I, the remains of an urnfield with circular ditches were discovered (fig.

3. We thank Mr. J. P. Doets at the Hague for his consent to publish a summary of his results.

4. For determination I am grateful to Dr. S. J. van Oostroom and Mr. J. H. Kern, State Herbarium at Leiden.

2). Of the grave monuments of this period, only one clearly visible ringditch, interrupted in the southeast, remained. In the centre, an urn (fig. 2, no. 48) had been placed. Only part of a second, interrupted, ditch remained while some deliberately roughened sherds (fig. 2, no. 9), together with fragments of cremated bone came from the disturbed center. From the same plot, parts of three more urns were collected, but these were not related to a monument (fig. 2, nos. 4, 42, 46). They can be dated to the Ha C/D-period.

During these investigations Mr. J. P. Boogerd prepared the drawings in the field; Mr. B. C. Dekker draughted the illustrations in this publication. The spontaneous and substantial support by the Municipality of Meerlo and its 'Burgemeester' Mr. M. J. A. R. Dittrich is gratefully acknowledged.

The finds from both excavations will be kept in the National Museum of Antiquities at Leiden.

Finds

Flint: Because of the limited size of the epi-Palaeolithic/Mesolithic flint-collection and the absence of a reasonable number of typical artifacts, no description will be given. Mention is made of a blade of Wommersom-quartzite ($138 \times 34 \times 8$ mm), discovered north of Tumulus I.

Pottery: The pottery of Tumulus I has previously been published. North of this tumulus some urns came to light;

(fig. 3, no. 4); handmade, clay tempered with pottery-grit, smooth surface, colour reddish brown, containing cremated bones.

(no. 42); handmade, pottery-grit, surface roughened, colour reddish brown, containing cremated bones.

(no. 42a); inside 42, handmade, smooth surface, colour reddish yellow/grayish brown.

(no. 46); handmade, pottery-grit, surface polished, colour dark brown, containing cremation.

(no. 48); handmade, little pottery-grit, surface very well polished, and then covered with a slip, colour black; when part of the surface came off, an extremely distinctive print of a fern-leaf was shown, which turned out to belong to *Pteridium aquilinum* (L) Kuhn⁴.

THE HEIBLOEM, A CEMETERY FROM THE LATE BRONZE AGE AND EARLY IRON AGE BETWEEN VELDHOVEN AND STEENSEL, PROV. NOORD-BRABANT

P. J. R. MODDERMAN AND L. P. LOUWE KOOIJMANS

This cemetery has drawn the attention of archaeologists since 1844. Except for one Early Bronze Age postcircle all traces can be dated between 1000 and approximately 500 B.C. Long, rectangular, and circular ditches were found, which together with the pottery proves that the cemetery was in continual use for several centuries.

Introduction

Since 1844 archaeological finds have been made on an area situated to the south-east of the main road from Veldhoven to Steensel on both sides of the border between the municipalities of Veldhoven and Eersel (fig. 1). The material from this field shows the presence of an extensive cemetery of the Late Bronze Age and the beginning of the Iron Age. The site is called the Heibloem after a brick factory on the oppo-

site side of the road. The Steenselsche Hut, an old farmhouse in the vicinity, also served to indicate the location of the site (fig. 2).

The most recent research was made in 1957 by the first author as a member of the staff of the R.O.B. (State Service for Archaeological Investigations in the Netherlands) in close collaboration with Mr. G. Beex, a member of the Archaeological Commission of the Provincial Society for Art and Sciences. Before publishing the results, it seemed worthwhile to collect older data. This the second author undertook. This publication then makes available for the study of prehistory all the data from this cemetery.

The landscape

At the time of the first excavations, by P. N. Panken in 1844, the terrain was mainly under heather and was part of the Heersche Heide (Heers' Heath). Panken, who was already acquainted with archaeology in the field, could easily recognize a number of barrows in this open landscape. He gave an exact description of these investigations in his article (Panken, 1844).

Since modern times, the region has been almost completely under forest. The cemetery is situated on a circa 1 km wide ridge consisting of loamy, fine sand deposited by wind. The relief is slightly undulating as is typical for these

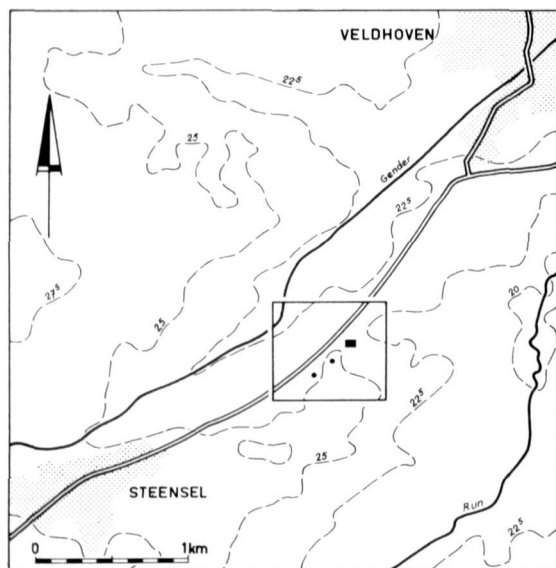


Fig. 1. Location of the cemetery the Heibloem. Scale 1 : 50 000.

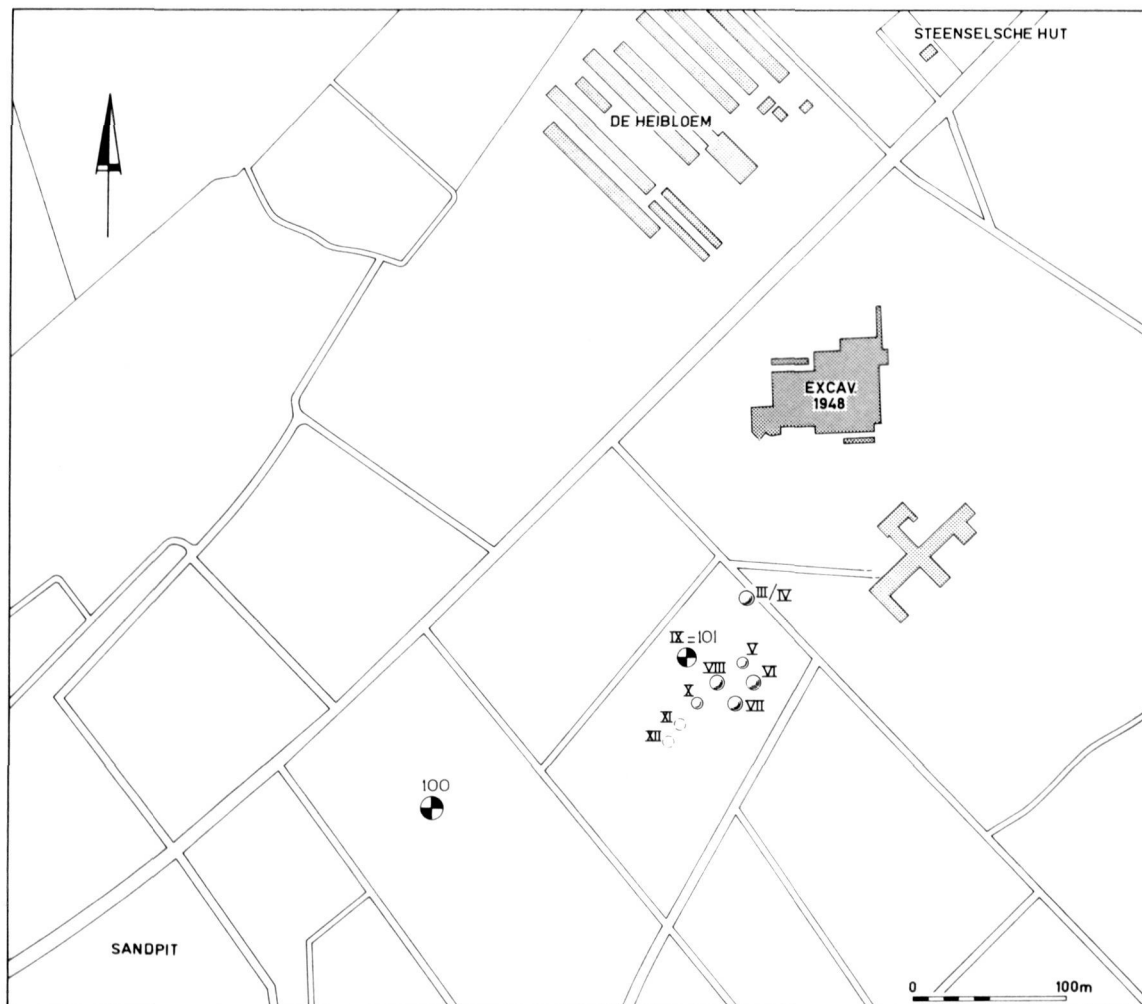


Fig. 2. Situation of barrows and excavations of the cemetery the Heibloem. Scale 1 : 5000.

so-called coversands. The ridge is orientated N.E.-S.W. between the rivulets Gender and Run (fig. 1). The cemetery is found on the northern half of the sandridge, which slopes down to the Gender comparatively steeply. To the south there are minor dunes, which were described by P.N. Panken as 'hills formed by nature'.

Investigations of the cemetery

We are acquainted with the following activities undertaken in the cemetery. As in so many of these cases there will have been more activities but being of a private nature, they have been lost.

1844: P. N. Panken recognizes the barrows

and investigates quite a number. See below.

1909: J. H. Holwerda and M. A. Evelein from the Rijksmuseum van Oudheden (National Museum of Antiquities) at Leiden pay a visit to the cemetery. They decide not to excavate as most of the barrows have been greatly damaged.

Circa 1910: C. Rijken, headmaster from Veldhoven, re-examines the barrows as well as the 'plateau' area to the south. For further information, see below.

1910-1911: During the digging of sand, finds are made which are approximately located. See below.

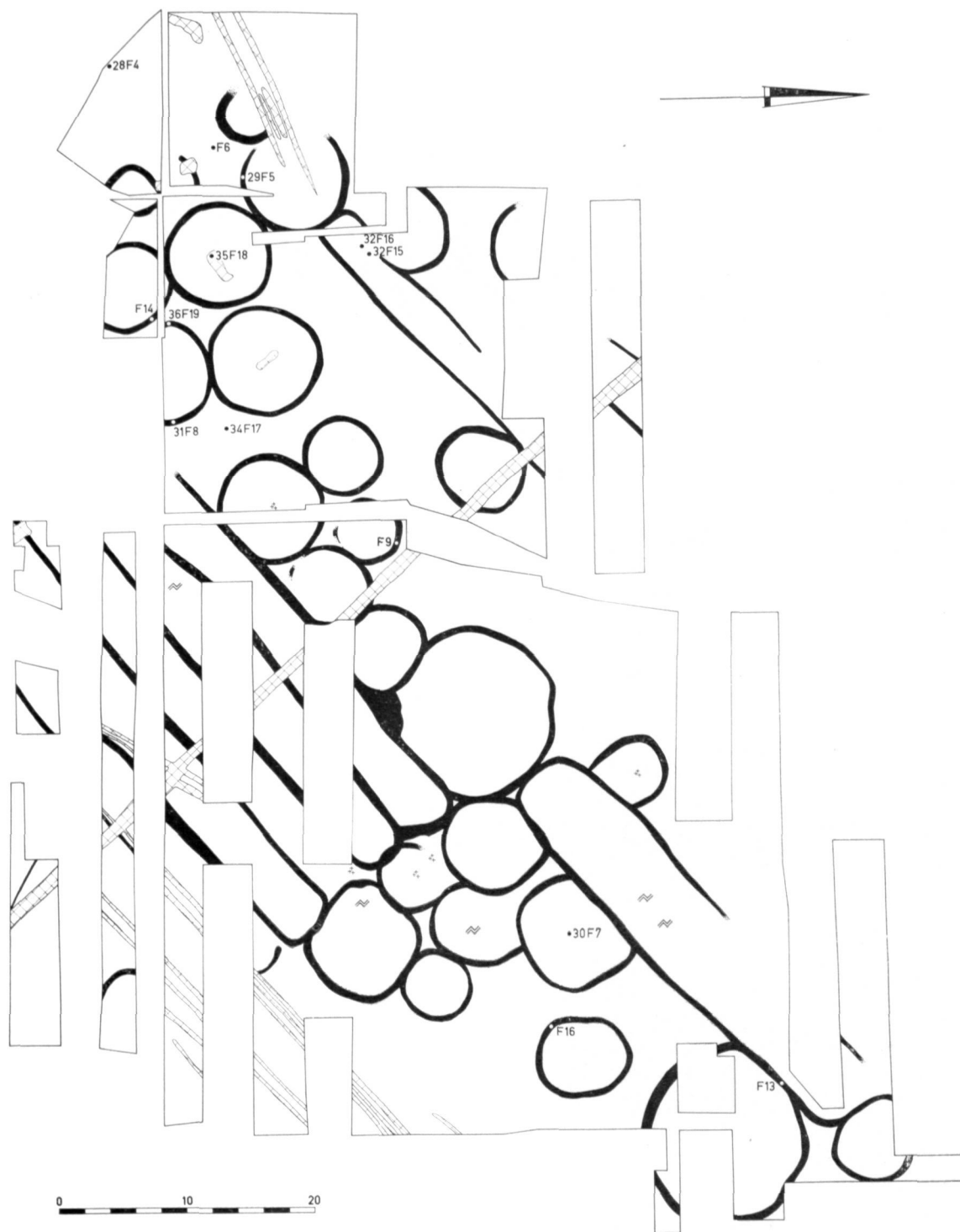


Fig. 3. Plan of the in 1948 excavated part of the cemetery the Heibloem. Scale 1 : 500.

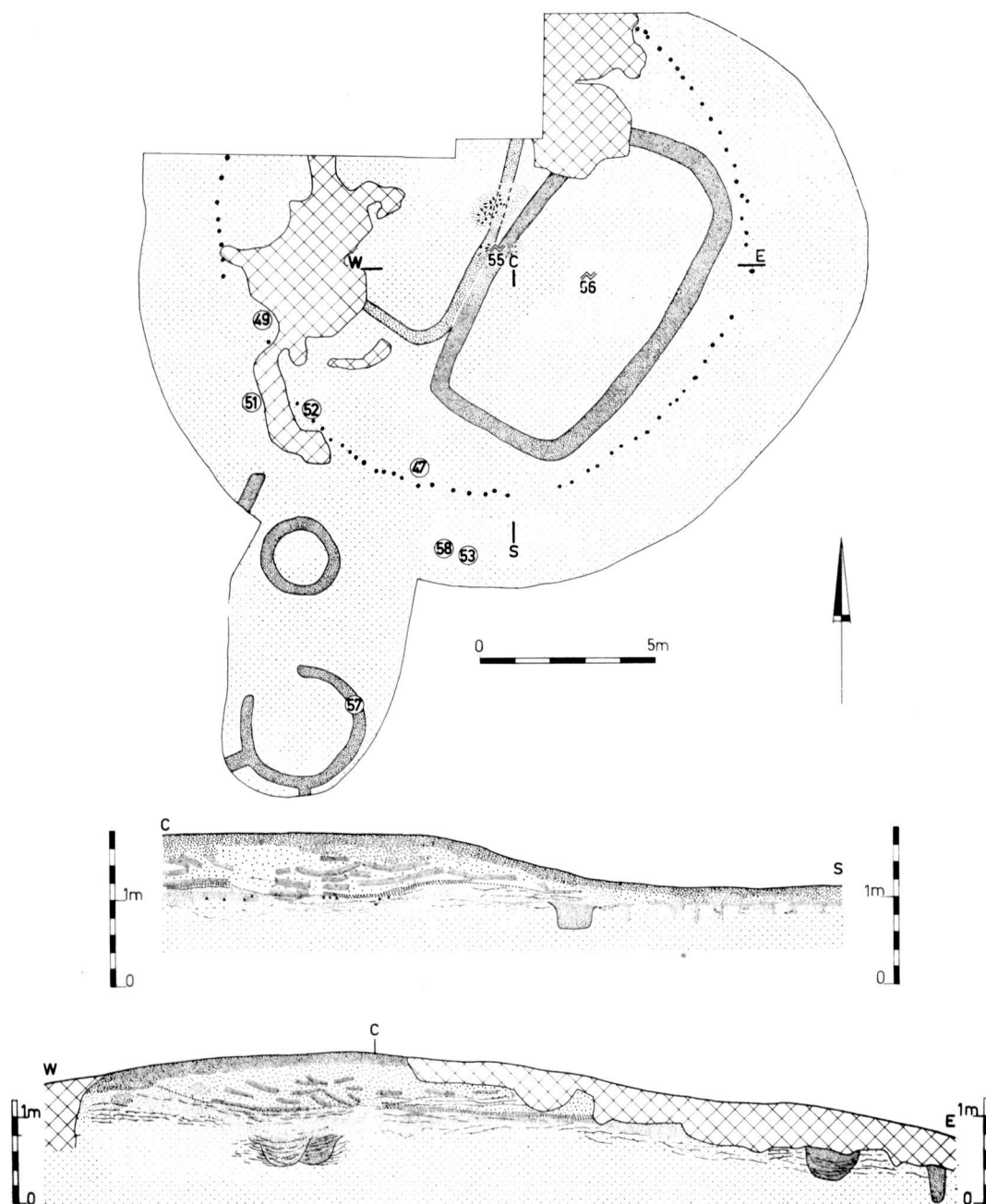


Fig. 4. Plan and sections of the 100th barrow at the cemetery the Heibloem. Scale 1 : 200 and 1 : 80.

1907-1913: The Rijksmuseum van Oudheden at Leiden receives from C. Rijken and J. N. A. Panken many urns, including some from Veldhoven and Steensel. Some of them are from our cemetery, but which ones could not be detected with sufficient certainty for publication.

1948: Prof. Dr. A. E. van Giffen, Director of the R.O.B., decides to make a trial-excavation to rescue the cemetery. (figs. 2 and 3). This will be dealt with in more detail.

1953: Mr. J. P. Veerman from Eindhoven makes some finds in a barrow, which later was baptised the Hundredth because it is number 100 in the list of excavated barrows in the province of Noord-Brabant.

1957: The above mentioned excavation by Mr. G. Beex and the first author takes place. Two barrows (nos. 100 and 101) are investigated (figs. 2, 4 and 5).

We have omitted discussing all finds about which we could not obtain sufficient certainty as to their findspot; such as the cup with *Kerbschnitt* decoration mentioned by G. Beex (Brabants Heem 16, 1964, p. 88), and the acquisitions to the Leiden Museum between 1907 and 1913.

The excavations

Panken 1844:

In 1844 Mr. P. N. Panken, walking from Steensel to Veldhoven, was struck by a group of very regular hillocks a thousand normal paces to the right of the dike (i.e. road) and 5 minutes westerly of the so-called Steenselsche Hut (fig. 2). One can find this hut on the Topografische en Militaire Kaart van het Koninkrijk der Nederlanden, 1:50.000, sheet 51 III issued in 1853, which makes the location pretty well certain.

According to Panken (1844), the group of barrows consisted of 10 big and 3 small ones within a surface area of 150 by 70 strides running east-west. Some open space is described between the four most easterly barrows and the eleven (it must be nine) westerly barrows. In this open spot was a small waterwell. To the north and west more barrows could be distinguished but Panken did not investigate these.

Panken gives detailed data as to the situation of the barrows in relation to each other and about the hillocks themselves. At the present time a number of barrows is still in existence. After they had been mapped, we were able to compare their situation with Panken's description. Although some of the measurements are not exactly the same, we were able to correlate many of Panken's numbers with our own. The whole distribution pattern is so similar that any doubt can be excluded. On the map (fig. 2) the barrows are shown in their recent situation. In our opinion there is no doubt whatsoever that Panken's no. 9 is our no. 101. The barrows to the north, mentioned by Panken, are close to the field excavated in 1948. In a westerly direction, Panken also saw more barrows; one of which must be our number 100. Panken's nos. 1, 2, 3 or 4, 11, 12 and 13 and the well are lost.

As to the finds from 1844, several sources are at our disposal. The Provincial Museum at den Bosch contains a number of urns on which are three labels all of the same type, in the same handwriting and with the same discolouration. One gives: 'Steensel 1844 no. ' ; a second: 'Pl. V (or IV) no. ', refers to the publication by Hermans (1865), who summarizes the history of Panken's work on our site and who gives drawings of most of the objects. The third label says: '1865 no. ' which refers to an inventory of that year or thereabouts. All these data exclude any doubt as to the barrow where a certain urn was found.

In our findlist, added to this publication, under the numbers 1 through 10, the urns unearthed by Panken are described. In his publication he mentions that in the barrows 9 (our no. 101) and 12 nothing was found, whereas the urn from barrow 10 was lost when Hermans gave his summary in 1865.

Rijken 1910:

Most of the barrows excavated by Panken were re-examined by C. Rijken in 1910. Furthermore he made some finds on 'a vast elevation of the ground to the south; where an old track separates both areas'. The finds from these

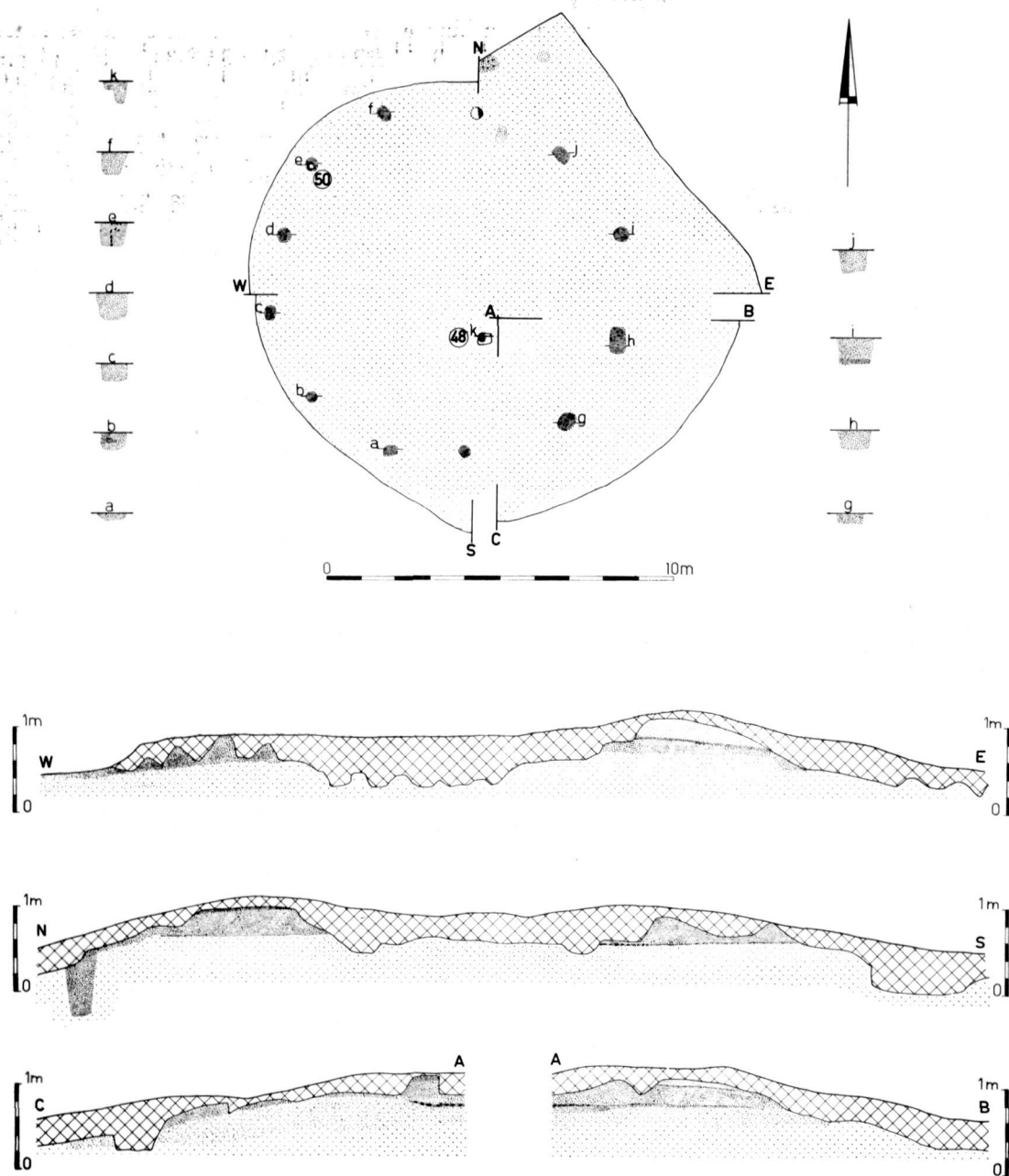


Fig. 5. Plan and sections of the 101st barrow at the cemetery the Heibloem. Scale 1 : 200 and 1 : 80.

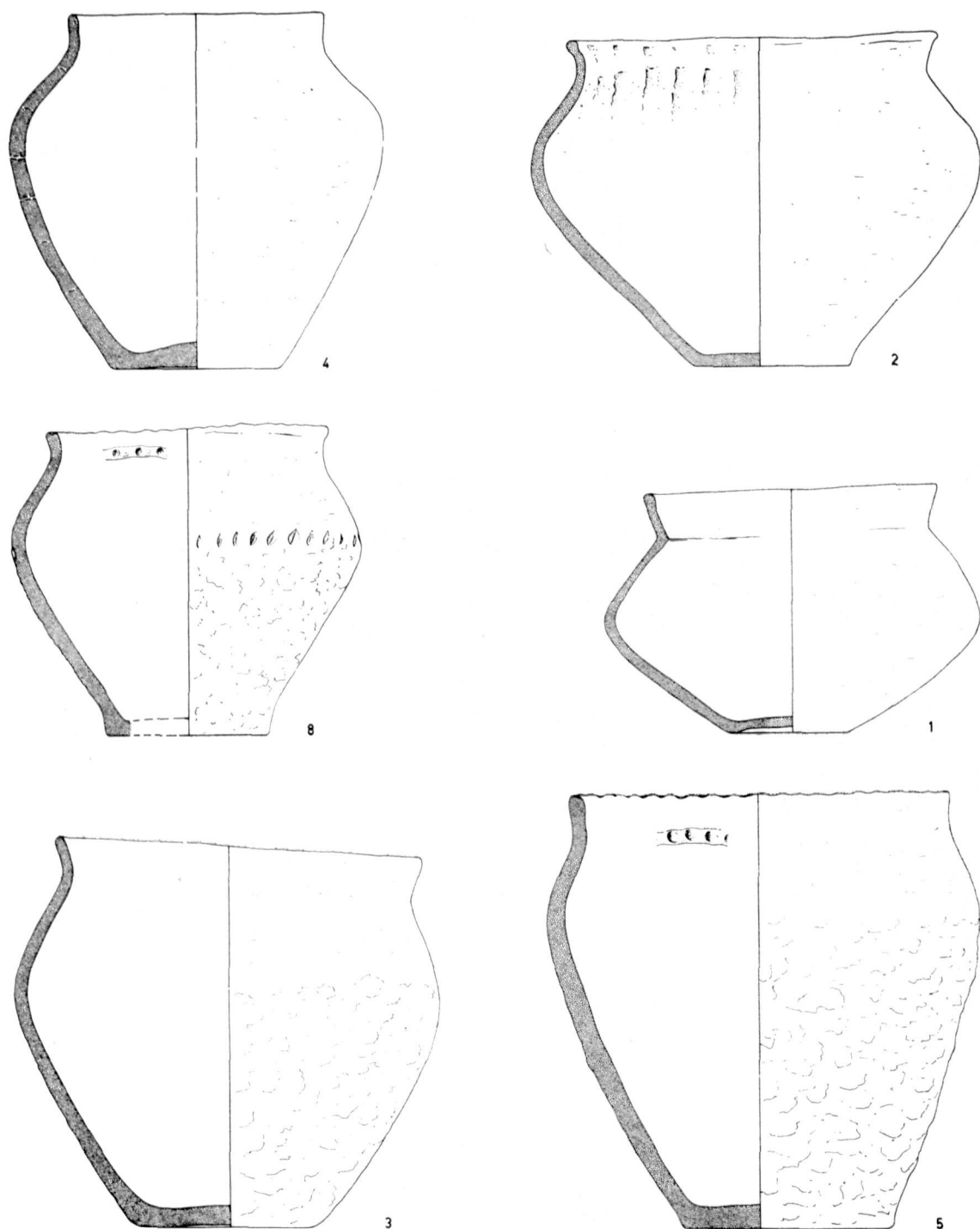


Fig. 6. Pottery from the cemetery the Heibloem. Scale 1 : 4.

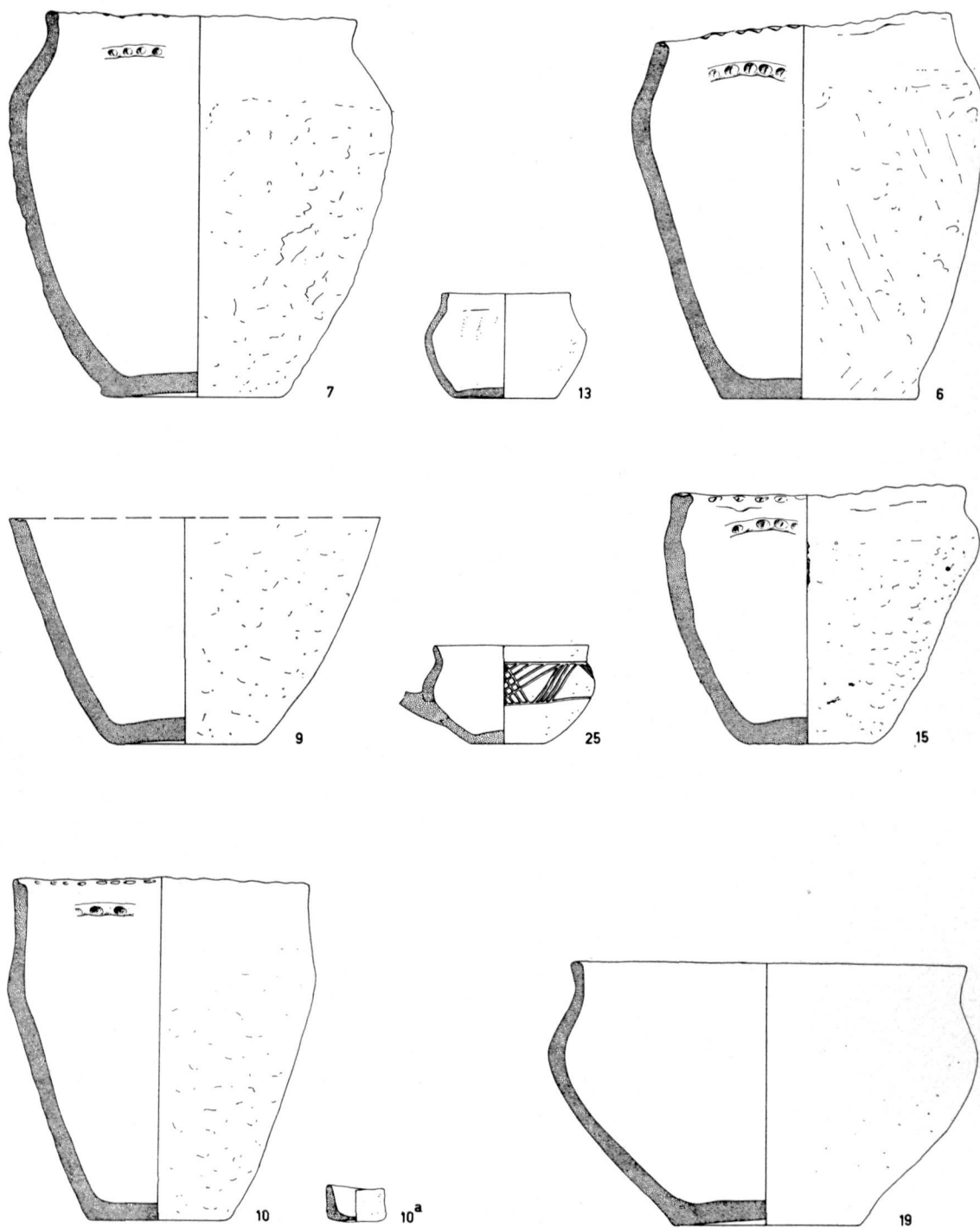


Fig. 7. Pottery from the cemetery the Heibloem. Scale 1 : 4.

investigations are for the most part in the Provincial Museum at den Bosch. In the catalogue of 1917 by J. H. Holwerda and J. P. W. A. Smit, the find circumstances are given but they are not very exact, as is shown in our findlist.

Tramway sandpit 1910-1911:

To the south of the road from Steensel to Veldhoven, sand was dug on an elevated parcel with some low hillocks for the construction of a tramway (fig. 2). Three finds came to the Provincial Museum in den Bosch (Holwerda, 1917). Only one could be traced by us *i.c.* no. 27 in the findlist. The findspot lies west of tumulus no. 100.

Excavation 1948:

In 1947 Prof. Dr. A. E. van Giffen, Director of the R.O.B., decided to make a cultural diagram in the region of the Eight Beatitudes, S.W. of Eindhoven. In 1947 a start was made with the excavation of the barrows between Toterfout and Halve Mijl. Prof. Dr. W. Glasbergen in those days assistant to the Biological-Archaeological Institute of Groningen University was charged with daily management. During this investigation, Prof. van Giffen was informed by Dr. J. Renders from Eindhoven that an urn with cremated bones was found during building activities on a field opposite the brick factory de Heibloem near Veldhoven. Trial-trenches were dug in March-April 1948, and in October-November of that year the job was finished (fig. 2). W. Glasbergen visited the excavation a few times. H. Praamstra and C. van Duijn respectively from the B.A.I. and the R.O.B. gave technical assistance. The result of the dig was not as anticipated so no further investigations were made.

The data from this excavation were placed at our disposition by the kindness of Prof. Dr. H. T. Waterbolk, Director of the B.A.I. and Prof. Dr. W. Glasbergen.

The field-maps show a number of elongated and circular ditches which seem to intersect. In some instances these sections are very doubtful because a relatively old ditch in one instance is cutting a relatively recent one at another point.

This is quite well understandable if one knows how difficult it is to see in these sandy soils intersections of this type. We have therefore made no distinction between the different ditches.

Unfortunately the finds from this excavation came into disorder, which is the reason why only half of them can be located exactly on the map. However all are described in our findlist under nos. 28-44.

The plan of the excavation (fig. 3) shows two types of prehistoric configurations; both are ditches. In one instance, the ditch circumscribes an oblong piece of ground. The ditches vary in width from 2.7-6.0 m. The length is known in one case to be 35 m. A small one might be under 30 m, whereas the longest is over 39 m. Four are in pairs whereas three more are single. In the long axis of three long ditches some cremated bones were found. There is no proof that they were intentionally buried in the long enclosures. For further details about this type of ditch we wish to refer to a publication by G. J. Verwers (1966), who proposes the name of 'Long Ditches of the Goirle type' for these phenomena.

The second type of ditch is the well known circular one. A number of them are later than the long ditches, as part of the more or less circular ditch is formed by a linear ditch of a long ditch. It is quite remarkable that in only one instance the centre of a circular ditch contained traces of a cremation. In five other instances, traces of charcoal or some potsherds were found while one centre was recently disturbed, which might point to some sort of burial.

Two soil samples were taken by H. T. Waterbolk, who published the result of his pollen-analysis in his thesis, 1954, pp. 109-110. One sample is from the old surface in the centre of one of the so-called 'long beds', the other is from a ditch of a 'long bed'. Relatively low amounts for *Calluna* go with high amounts for *Gramineae*, *Rumex* and *Pteridium*. In the ditch an exceptionally great number of *Papilionaceae* were found. The rather high percentage for *Fagus* (3.6% in the old surface) and the low amount for *Corylus* show that in comparison with the near-by group of tumuli of Halve Mijl, a dating later than the Middle Bronze Age is pretty well

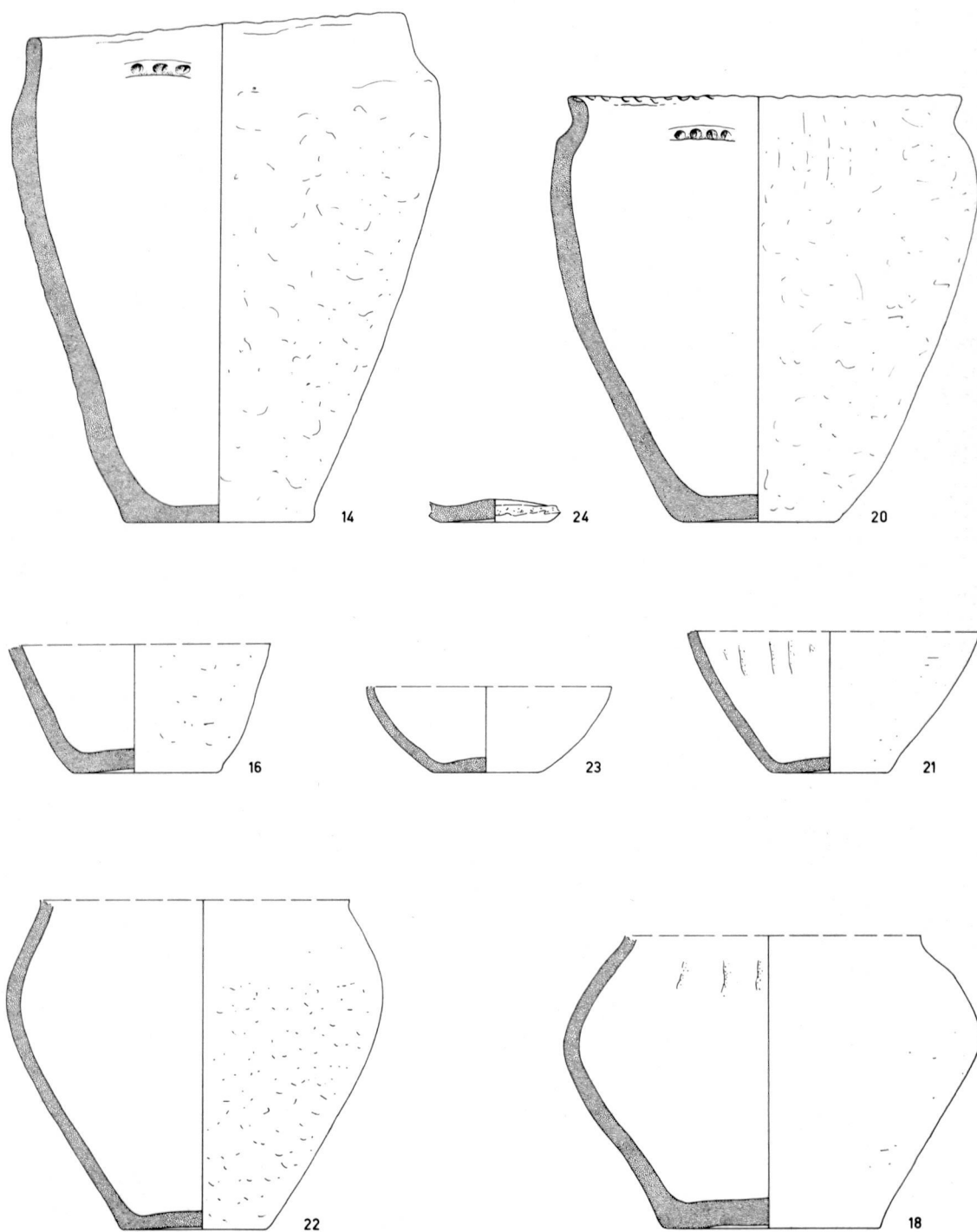


Fig. 8. Pottery from the cemetery the Heibloem. Scale 1 : 4.

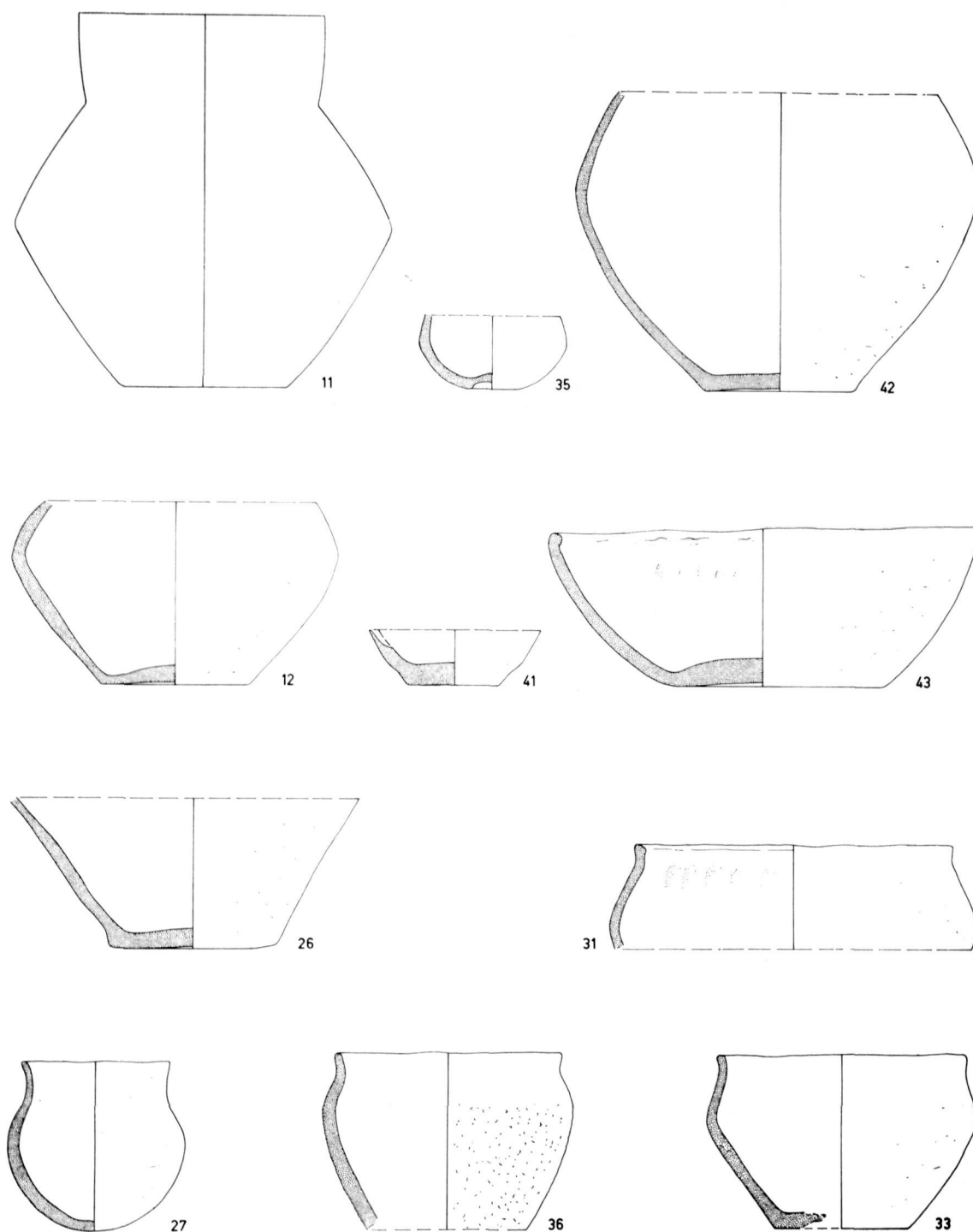


Fig. 9. Pottery from the cemetery the Heibloem. Scale 1 : 4.

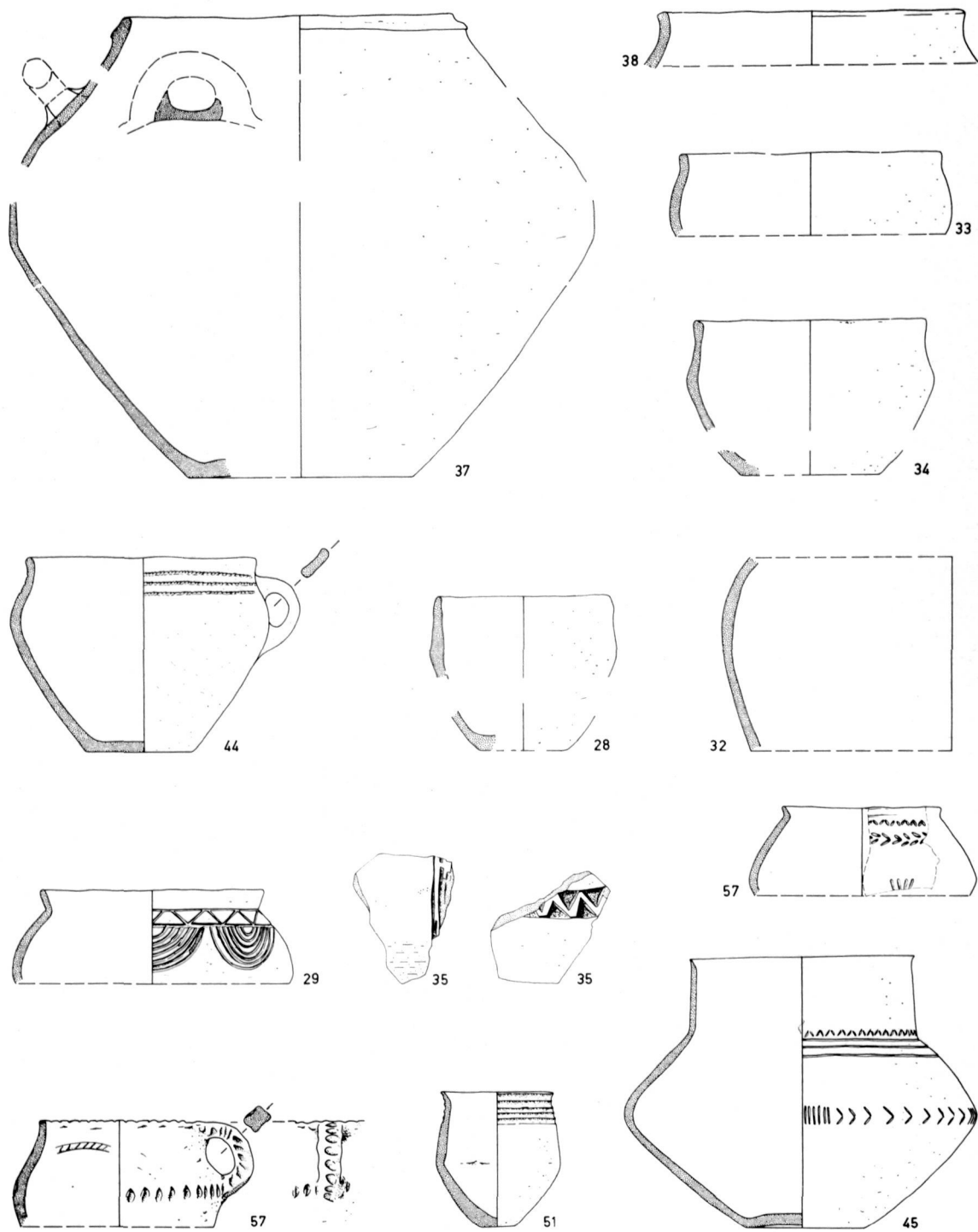


Fig. 10. Pottery from the cemetery the Heibloem. Scale 1 : 4. No. 35: scale 1 : 2.

certain. On the other hand, a dating earlier than the beginning of the formation of the young moss-peat in the Peel is most likely.

Excavation 1957: the 100th barrow:

The barrow had been badly damaged by animal and human activities: the western half appeared to be full of passages dug by rabbits or badgers; all traces of prehistoric occupation had completely vanished, to the north and northeast a sandpit had attacked the barrow (fig. 4). During this work two urns and one cremation were found. Drs. J. P. Veerman from Eindhoven reported in 1953 that some children had unearthed an urn. Prof. Dr. W. Glasbergen who saw this specimen gave a description of the now lost pot as being of the deliberately roughened type generally known as Harpstedter ware. The second urn is still owned by Drs. Veerman and is described in our findlist (fig. 10, no. 45).

The first burial on the site of the 100th barrow seems to be a cremation (fig. 4, no. 56) surrounded by a more or less rectangular ditch. Length and width are respectively 9.75 and 5.60 m. In cross section the ditch has a flat bottom; the width varies from 40-60 cm and the depths averages 50 cm.

A second rectangular ditch was made when the first was for the most part silted up, although it must still have been visible, as the second ditch is situated and orientated according to the first one. Unfortunately no trace of a cremation or anything else was found but the area where it might be expected was thoroughly disturbed. With the soil from the ditches a very low barrow will have been constructed. Some time elapsed before the next activities occurred. There was sufficient time for the vegetation in the filling of the ditch to form an observable podzol.

To the next development we assign patches of charcoal in the centre of the barrow just over the point where both ditches intersect. A cremation (fig. 4, no. 55) in the W-C baulk is in all probability the central burial of a big barrow, built up of well discernable sods and surrounded by a circle of closely set small posts. The diameter of the wood construction is 15 m.

In the S.W. quadrant, on the edge of and just outside of the post-circle, five cremations were found (fig. 4, nos. 49, 51, 52, 53 and 58). To date them relative to the barrow is impossible. From the filling of some kind of nearby circular ditch came a few sherds (figs. 4 and 10, no. 57).

The find circumstances of no. 51 should be specially mentioned. The calcined bones formed a compact mass, with the bronze pin (fig. 12) on top of them. The drinking cup (fig. 10, no. 51) was also in contact with the cremation. It is highly probable that the calcined bones were collected in a cloth, which was fastened with the bronze pin. After this had been laid down in a small pit, the cup was placed there as well.

Excavation 1957: the 101st barrow:

We have already stated that this barrow must be Panken's no. 9. He writes that the barrow was built of mixed earth but as a rule yellow. No pottery, bones or charcoal was found.

At our excavation the centre appeared to be completely disturbed, whereas the whole barrow had been destroyed (for afforestation) by ploughing down to 30 cm (fig. 5).

At one time the barrow was surrounded by a circle of twelve posts whose diameter was 10 m. Not a single trace of any burial was found. At the point of intersection of the lines drawn between opposite posts, the barrow was deeply destroyed.

Somewhat eccentrically, in the S.E. of the post-circle, an urn was found (fig. 11, no. 48). This pot had been placed in a small hole whose bottom was 1 m below the present surface of the barrow. However one would expect this hole to have been dug from a level lower than the top of the barrow. At 50 cm below this surface, another surface was clearly distinguishable by a thin layer of charcoal. The hole for the urn became visible below the charcoal. Calcined bones were thrown into the urn when it had already been sunk into the hole, which is proven by the particles of bone and an iron pin (fig. 12) found outside the urn in the hole. Moreover bones were spilled outside the hole as some pieces were found 35 cm to the east of the urn in the layer of charcoal. At the same spot a

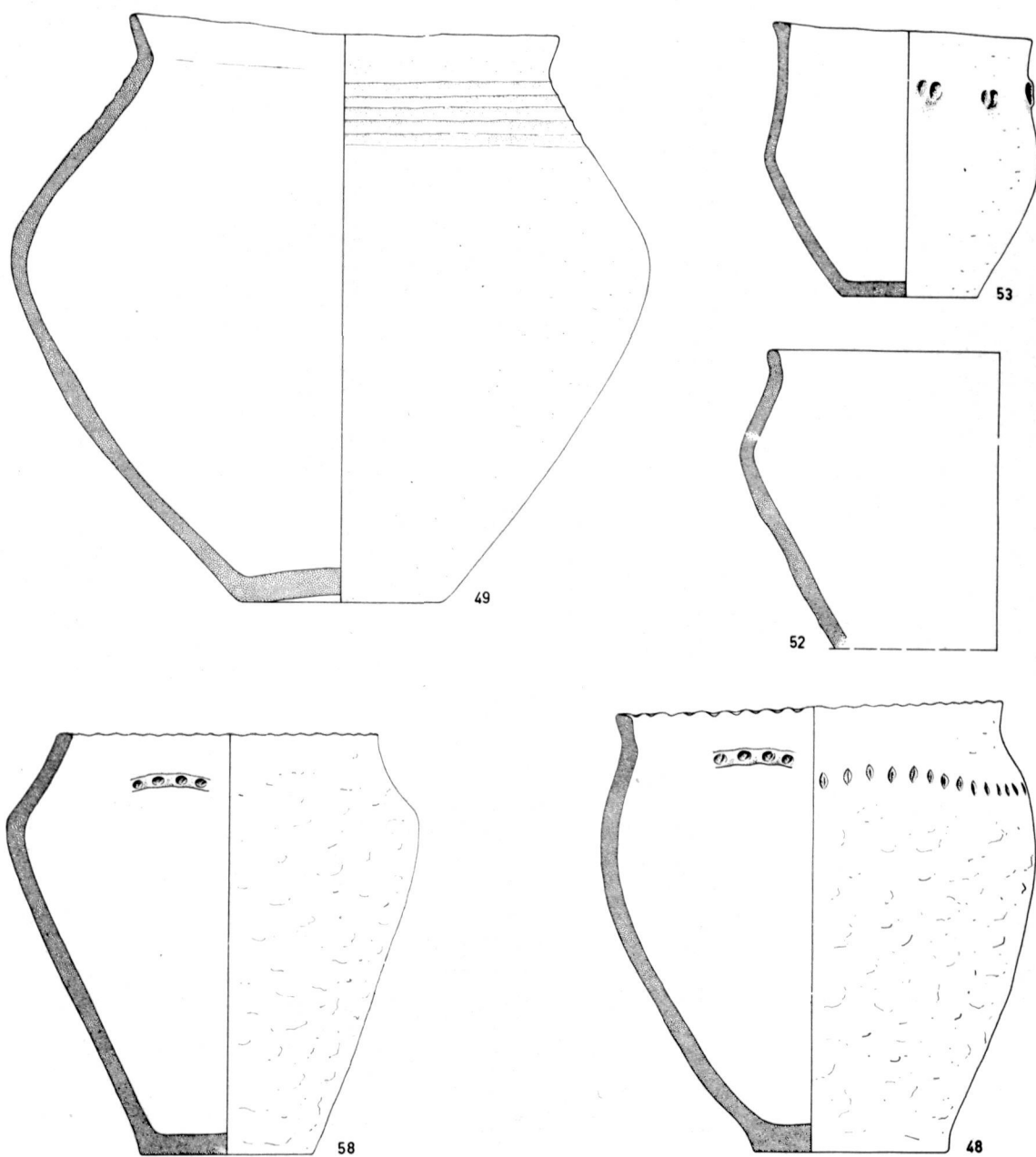


Fig. 11. Pottery from the cemetery the Heibloem. Scale 1 : 4.

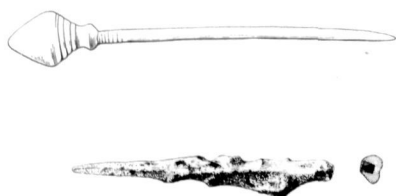


Fig. 12. Bronze pin (no. 51) and iron point (no. 48) from the cemetery the Heibloem. Scale 1 : 2.

posthole was traced which was also covered with charcoal. The barrow was therefore thrown up over the charcoal.

The archaeological evidence derived from the excavation is that the urn and the barrow with its postcircle form one entity. In absolute disagreement with this is the result of two radiocarbon measurements (J. C. Vogel and H. T. Waterbolk, 1963, p. 190): GrN-1532, from a charred post out of the post-circle, gives 3440 ± 50 or 1490 ± 50 B.C. which is only slightly earlier than the dating of this type of postcircle in general. Charcoal collected around the urn gives 2515 ± 50 radiocarbon years (GrN-1531), which might be transferred into 565 ± 50 B.C., which means a HaC-D dating. This Harpstedt urn does not contradict the result. To bring the archaeological evidence in agreement with the radiocarbon dating would mean to accept that the urn was buried and the barrow was built up nine centuries after the erection of the postcircle.

Conclusions

The collected data about the cemetery the Heibloem give rise to some general remarks including the dating of the phenomena.

The oldest trace of a cemetery is a postcircle of Glasbergen type 3, dated by radiocarbon GrN-1532 : 1490 ± 50 B.C. which means an Early Bronze Age date (fig. 5). This is slightly earlier than the hitherto accepted date for this type of burial enclosure (H. T. Waterbolk, 1964, p. 114). However mention must be made of the fact that the barrow with a directly comparable post-circle, tumulus 3 of the Halve Mijl (W. Glasbergen, 1954 I, p. 42) has one C_{14} dating which is slightly later: GrN-1030 : 1450 ± 50 B.C. (Hl. de Vries and G. W. Barendsen, 1958,

p. 1554). Another radio-carbon dating for the same charcoal gave 1335 ± 50 B.C. It also may not be excluded that the widely spaced post-circles were already in use in the last part of the Early Bronze Age.

From the Heibloem no traces of Middle Bronze Age interments are known to the writers. To the Late Bronze Age several finds can be dated. The in 1948 excavated complex of long ditches belongs to this period. Typical for this part of the cemetery are the *Kerbschnitt* decorated sherd (fig. 10, no. 35), the rimsherd with semi-circular decoration (fig. 10, no. 29), the one-handled bowl (fig. 10, no. 44) and the fact that no deliberately roughened ware was found. These phenomena can be dated to HaB. For more detailed discussion about the long ditches and their dating we refer to the special study made by G. J. Verwers (1966).

Of Late Bronze Age date are some data from the 100th barrow. The urn (fig. 10, no. 45), the drinking cup (fig. 10, no. 51) with the bronze pin (fig. 12) and both the sherds (fig. 10, no. 57) can be dated to HaB. It is not clear whether these finds have any connection with the barrow itself. This is of importance in the discussion of the dating of the interments from the barrow.

The rectangular ditches from the 100th barrow can be placed in a series of comparable monuments. G. J. Verwers (1966) describes the non-circular ditches from which we learn that a precise dating for our ditches is hardly possible. They may be late HaB, HaC, or even HaD.

Some of the finds on the site of the 100th barrow are to be dated in HaC or perhaps even later. Urn no. 49 (fig. 11) reminds us very much of the Laufelder ware.

Most of the urns found by P. N. Panken (nos. 1-10) and C. Rijken (nos. 11-26) are of the deliberately roughened Harpstedt type, which points to a dating in HaC-D or even later. The bi-conical pot (or 'Schrägrand Urne') with a clearly defined rim (fig. 6, no. 1) is supposed to be contemporary with the advent of the Harpstedt urns, i.e. HaC.

The spread of the finds from Panken, Rijken and the 101st barrow compared to the long

ditches excavated in 1948 points to a horizontal stratigraphy. Unfortunately the 100th barrow does not fit into this system.

Waterbolk (1954, p. 109-110) discusses the results of his pollen analysis of the long ditch of Goirle type. Although it is difficult to obtain exact datings for them, he thinks it unlikely that they are older than a few centuries B.C. Dr. W. van Zeist from the Biological-Archaeological Institute of Groningen University kindly reconsidered these results. He also investigated three samples from the 100th barrow. According to modern standards, a dating between 1000 and 500 B.C. may be accepted for both monuments. They do not differ very much in age, that is to say by not more than two centuries.

Acknowledgements are to be made to those who were of help to us in collecting the data about the Heibloem cemetery. We want to express our gratitude to all of them and to the institutions they represent. Especially mentioned should be G. Beex, C. van Duijn, Prof. Dr. W. Glasbergen, H. Praamstra, Drs. J. P. Veerman and Th. van de Ven. Draughtsmen in the field were H. Praamstra and C. van Duijn. The latter prepared fig. 4 and 5 for this publication, whereas the other drawings are by B. C. Dekker. We are indebted to Mr. R. R. Newell for correcting the English text.

The finds from the 1948 and 1957 excavations are now in the Centraal Noord-Brabant's Museum at Den Bosch.

Findlist

Only the finds still available to the authors are incorporated in this list while older finds have been lost.

The shapes of the pots and sherds are not described as all are shown in the illustrations. All the pottery is hand-modeled. Colour descriptions are made with the help of Munsell's Color Chart.

Finds from P. N. Panken 1844:

1. CNM¹ 77. Old marks: Steensel 1844 no. 1; Pl. V no. 13; 1865-17. Found in centre of barrow 1 con-

1. CNM = Centraal Noordbrabants Museum at 's-Hertogenbosch.

taining cremation. Fig. 6, no. 1. Pottery grit, polished, patches of dark gray to yellowish red.

2. CNM 78. Old marks: Steensel 1844 no. 9; Pl. VI no. 3;-16. Found in barrow 8 to the west, containing cremation and an iron pin (now lost). (L. 6 cm). Fig. 6, no. 2. Polished, dark gray with pale brown stains.

3. CNM 79. Old marks: Steensel 1844 no. 4; Pl. VI no. 1; 1865-95 (?). Found in barrow 4 to the west, containing cremation. Fig. 6, no. 3. Pottery-grit, rim and shoulder polished, body thinly deliberately roughened, reddish brown and pale brown.

4. CNM 80. Old marks: Steensel 1844 no. 7; 1865-80 (or 86). Found: deep down in barrow 7, containing cremation. Fig. 6, no. 4. Not tempered, coiled, polished, very dark brown with yellowish brown patches.

5. CNM 81. Old marks: Steensel 1844 no. 10; Pl. VI no. 5; 1865-30. Found in barrow 11 with charcoal and blackish earth. Fig. 6, no. 5. Coarse pottery-grit, finger imprints on smooth rim, body thickly deliberately roughened, light brownish gray.

6. CNM 82. Old marks: Steensel no. 3; Pl. V no. 12; 1865-34. Found in centre of barrow 3 with some charcoal, containing cremation. Fig. 7, no. 6. Pottery-grit, finger imprints on smooth rim, body thinly deliberately roughened, light yellowish brown.

7. CNM 83. Old marks: unreadable; Pl. V no. 14; 1865-35 (?). Found in barrow 2 to the west with much charcoal, containing cremation. Fig. 7, no. 7. Pottery-grit, finger imprints on smooth rim, body thickly deliberately roughened, light yellowish brown.

8. CNM 84. Old marks: Steensel 1844 no. 11; Pl. VI no. 4; 1865-75. Found in barrow 13, containing cremation. Fig. 6, no. 8. Pottery-grit, finger imprints on smooth rim and shoulder, body deliberately roughened, reddish gray to reddish brown.

9. CNM 85. Found in barrow 8, Fig. 7, no. 9. Pottery-grit, deliberately roughened, reddish brown.

10. CNM 86. Old marks: Steensel 1844 no. 15; Pl. VI no. 6; 1865-77. Found in barrow 5 just below the top with charcoal, containing cremation and cup (see below). Fig. 7, no. 10. Pottery-grit, finger imprints on smooth rim, body deliberately roughened, reddish brown.

10a. CNM 87. Old marks: Steensel 1844 no. 6; Pl. VI no. 2; 1865-65. Found in urn no. 10. Fig. 7, no. 10a. Not tempered, rather smooth, old surface missing.

Finds from C. Rijken:

11. CNM 613. Found in between two barrows. Fig. 9, no. 11 (reconstructed from Catalogue 1917; now lost). Polished.

12. CNM 614. Found at foot of barrow. Fig. 9, no. 12. Pottery-grit, smooth, black with reddish yellow stains.

13. CNM 615. Found at centre of barrow. Fig. 7, no. 13. Pottery-grit, smooth, light olive brown.

14. CNM 617. Found at foot of barrow with charcoal. Fig. 8, no. 14. Pottery-grit, finger imprints on smooth rim, body deliberately roughened, light yellowish brown.

15. CNM 618. Found at foot of small barrow. Fig. 7, no. 15. Pottery-grit, rim with finger imprints, body heavily deliberately roughened, dirty pale brown.

16. CNM 626. No find circumstances. With three fragments of iron object(s). Fig. 8, no. 16. Pottery-grit, deliberately roughened, grayish brown.

17. CNM 623. Found in barrow. Now lost. According to Catalogue 1917, in shape comparable to CNM 613 (our fig. 9, no. 11) but with at least one lug, decorated, on the shoulder with two bands of horizontal grooves, which are connected by vertical grooves below the lugs.

18. CNM 619. Found at 'plateau' area, fig. 8, no. 18. Pottery-grit and organic material, polished, dark gray with yellowish red patches.

19. CNM 620. Found at 'plateau'. Fig. 7, no. 19. Pottery-grit, coarse sand and some organic material, polished, black to dark reddish brown with reddish yellow stains.

20. CNM 621. Found at 'plateau'. Fig. 8, no. 20. Pottery-grit and organic material, finger imprints on rim, body deliberately roughened, brown to reddish yellow.

21. CNM 622. Found at 'plateau'. Fig. 8, no. 21. Pottery-grit, smooth, grayish-black.

22. CNM 624. Found at 'plateau'. Fig. 8, no. 22. Pottery-grit, smooth rim and deliberately roughened body, light yellowish brown.

23. CNM 627. Found at 'plateau'. Fig. 8, no. 23. Pottery-grit and organic material, smooth, pale brown.

24. CNM 628. Found at 'plateau'. Fig. 8, no. 24. Coarse quartz-grit, polished, dark gray.

25. CNM 675. Found at 'plateau'. Fig. 7, no. 25. Coarse sand, smooth with incised lines, yellowish red and gray; transformed by secondary firing.

26. CNM 688. Found at 'plateau' near CNM 619 (our fig. 8, no. 18). Fig. 9, no. 26. Pottery-grit and organic material, polished, reddish brown.

Find from sand-pit:

27. CNM 612. Found at centre of small barrow with some 'ashes'. Fig. 9, no. 27. Pottery-grit and organic material, smooth, light reddish brown.

Finds from excavation 1948:

Unfortunately not every find from the 1948 excavation still had its find number. It has been impossible to reconstruct the numbering with the help of the short description made at the excavation. So we will give this description and also at the end, give a description of the finds without number.

Find numbers 1, 2, and 3 were found during sand digging before the excavation. They are respectively a potsherd, a big urn, and a small pot (found with the urn?).

28. Findno. 4. Fig. 10, no. 28. Rimsherd and bottomsherd, pottery-grit, not very smooth, reddish brown.

29. Findno. 5. Fig. 10, no. 29. Rimsherd, probably not tempered, polished with grooved decoration, dark reddish brown.

Findno. 6. Big part urn.

30. Findno. 7. Very small rimsherd, not tempered, rather smooth, reddish brown.

31. Findno. 8. Fig. 9, no. 31. Rimsherd, pottery-grit, polished, black with light brown patches.

Findnos. 9 and 10. Potsherds.

Findnos. 11 and 12. Cremation.

Findno. 13. Part of urn.

Findno. 14. Two potsherds.

32. Findno. 15. Fig. 10, no. 32. Sherd, pottery-grit, polished, very dark gray to dark reddish brown.

33. Findno. 16. Fig. 9, no. 33. Sherds of pot, pottery-grit, some quartz grit, polished stained black to reddish brown. Rimsherd, pottery-grit, polished, light brown.

34. Findno. 17. Fig. 10, no. 34. Sherds of pot, pottery-grit, polished, black.

35. Findno. 18. Fig. 9 and 10, no. 35. Sherds of three pots: a) Sherd with true *Kerbschnitt*, coarse sand, polished, black. b) Sherd with grooved lines, coarse sand, polished, dark gray. c) Cup with omphalos base, coarse sand, smooth, brown.

36. Findno. 19. Fig. 9, no. 36. Sherd, quartz grit, rim polished, body rather rough, brown.

37. Fig. 10, no. 37. Sherds of pot, quartz grit, smooth, reddish brown to brown.

38.² Fig. 10, no. 38. Sherds of pot, fine quartz grit, smooth, reddish brown.

39.² Polished sherd, sand, dark gray.

40.² Rather rough sherd, sand, reddish brown.

41. Fig. 9, no. 41. Bottom, pottery-grit and sand, coiled, rather smooth, reddish gray to reddish brown.

42. Fig. 9, no. 42. Half of pot, sand, polished, mainly dark gray, but stained to yellowish red.

43.³ Fig. 9, no. 43. Incomplete bowl, pottery-grit, polished, stained dark reddish brown and reddish brown.

44.³ Fig. 10, no. 44. Incomplete pot, pottery-grit, smoothed, stained, reddish brown to reddish yellow.

Find from 1953:

45. Found in northern part of 100th barrow. Fig. 10, no. 45. Pottery-grit, polished, grooved decoration, stained.

Finds from excavation 1957:

46. Findno. 1. Found in 100th barrow in disturbed soil. Flint blade (L. 6.8 cm).

47. Findno. 2. Found in S.W. quadrant of 100th barrow just inside postcircle. Bottomsherd, pottery-grit, smooth, dark brown.

48. Findno. 3. Found in 101st barrow containing cremation. Fig. 11, no. 48. Pottery-grit and quartz grit, finger imprints on smooth rim and shoulder, body deliberately roughened, reddish yellow. Together with an iron pin: fig. 12.

49. Findno. 4. Found in 100th barrow to the west containing cremation. Fig. 11, no. 49. Pottery-grit, polished, very dark gray with yellowish brown patches.

50. Findno. 5. Found in 101st barrow. Charcoal from post in N.W. quadrant.

51. Findno. 6. Found in 100th barrow in S.W. quadrant with bronze pin (fig. 12) and with cremation. Fig. 10, no. 51. Tempering undetermined, polished, patches of brown.

52. Findno. 7.. Found in 100th barrow in S.W. quadrant with cremation. Fig. 11, no. 52. Sherds of pot, coarse pottery-grit, smooth, light brown.

53. Findno. 8. Found in 100th barrow in S.W. quadrant containing cremation. Fig. 11, no. 53. Pottery-grit, smooth, paired finger impressions, light yellowish brown.

2. Nos. 37-40 were together in one find-bag.

3. Some sherds of nos. 43 and 44 have the no. 1 others have the no. 13 and again others have no number.

54. Findno. 9. Found in 100th barrow in S.E. corner of N.W. quadrant. Charcoal.
 55. Findno. 10. Found in 100th barrow. Cremation.
 56. Findno. 11. Found in C-E baulk of 100th barrow. Cremation.
 57. Findno. 12. Found in ring ditch south of 100th barrow. Fig. 10, no. 57. Two rimsherds: a) with lug, pottery-grit, rather smooth, imprints and finger imprints on rim, lug and shoulder, brown and light brown. b) pottery-grit, polished, imprints for decoration, black and brown.
 58. Findno. 13. Found in 100th barrow in S.W. quadrant containing cremation. Fig. 11, no. 58. Pottery-grit, finger imprints on smooth rim, body deliberately roughened, reddish brown.

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TUMULI AT THE ZEVENBERGEN NEAR OSS GEM. BERGHEM PROV. NOORD-BRABANT

G. J. VERWERS

In the hamlet of "Zevenbergen" (Seven Hills) two out of the seven tumuli were investigated. The first one was built over an extended inhumation without grave goods. Later an urn of the Hilversum/Drakenstein group and a deliberately roughened urn were buried in this monument. The second tumulus lay on top of an oval enclosure, bordered by a ditch and rows of postholes.

The 'Maaskant' knows how to honour its antiquities: along Paalgravenlaan and Keltenweg one reaches Bursch's tumuli, whilst the Vorstengraflaan will bring you to the 'beautiful barrow of Oss'. One is tempted to place the name Zevenbergen also in this series. In the hamlet of Zevenbergen, on the boundaries between the municipalities of Berghem, Oss, Schayk, and Nistelrode, on a small plot of forest north of the road from 's-Hertogenbosch to Nijmegen, a group of seven little hills is situated. Driftsand or tumulus?, was a question which stood for a

long time, but was never answered. The proposals for enlarging the road at the expense of this forest made excavation necessary. Therefore two of the seven hills were investigated. By the fact that it will be recommended to place the 'Zeven Bergen' on the register of ancient monuments, one may guess the result of these investigations.

Tumulus I

The phenomena shown by sections and plans in three quadrants of this tumulus (the NW. quadrant was left untouched) indicate that it was built of sods (fig. 2). The height and diameter are 60 cm and about 12 m respectively. The tumulus covers a rectangular grave which was dug through the podzolised sub-soil into yellow sand. Part of the thrown-out sand has been preserved as a thin layer on the old surface, visible in the C-W. section. On the bottom of the 40 cm deep grave, a body had been buried. The outline showed the following details: the body was placed extended on the back, head oriented ENE., the arms beside the body, and the hands probably on the pelvis (fig. 2). Calculations of the total height on the basis of the lengths of femur and tibia resulted in an average of 185 cm while those based on humerus and ulna/radius gave 186 cm. The length of

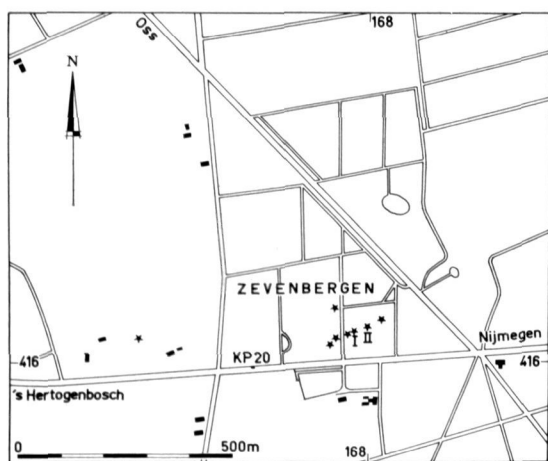


Fig. 1. Geographic location of the Tumuli at the Zevenbergen.

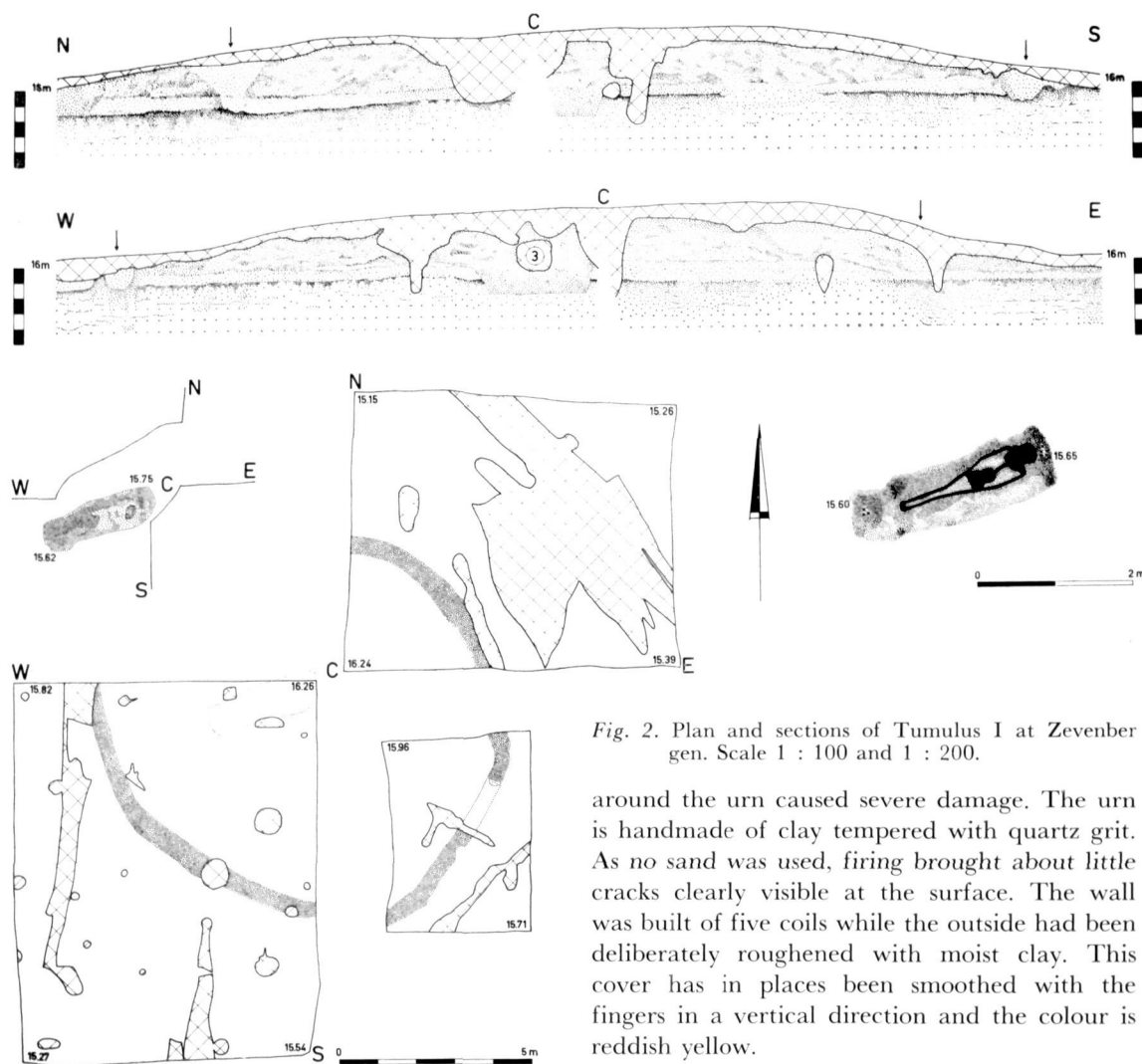


Fig. 2. Plan and sections of Tumulus I at Zevenbergen. Scale 1 : 100 and 1 : 200.

the complete outline was 188-190 cm. For this reason 187 ± 2 cm might be considered as the most probable height of the deceased¹.

The grave was filled with sods. The custom of burying the dead in a rectangular grave, supine, in an extended position, suggests a dating in the Early or Middle Bronze Age.

An *ante quem* date was provided by an urn, (figs. 3 and 4, no. 3), which was found in the barrow above the grave. Several mole-tracks

around the urn caused severe damage. The urn is handmade of clay tempered with quartz grit. As no sand was used, firing brought about little cracks clearly visible at the surface. The wall was built of five coils while the outside had been deliberately roughened with moist clay. This cover has in places been smoothed with the fingers in a vertical direction and the colour is reddish yellow.

The urn contained a large quantity of cremated bones. Among them were pieces with incised decorations; the circle and point motif occurred a few times (fig. 5). This motif has been used in many regions for many centuries, therefore it does not offer any date.

The shape and material of the urn point toward the Hilversum/Drakenstein-ceramics but atypical to that group is the roughened surface of the Berghem pot. This however cannot persuade us to depart from the current dating in the Middle or Late Bronze Age.

Clearly visible in all sections is a circular ditch, dug not into the foot but into the sides of the

1. We are indebted to Mr. E. Zondag for his calculations and his consent to publish the results.

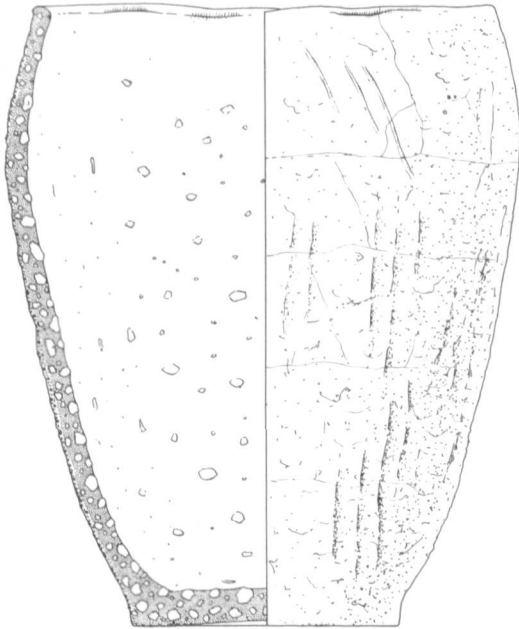


Fig. 3. Urn no. 3 found in Tumulus I at the Zevenbergen. Scale 1 : 4.



Fig. 4. Urn no. 3 found in Tumulus I at the Zevenbergen.

tumulus (see e.g. N-C.section). The plans (fig. 2) of the three quadrants also showed this ditch. It might be interrupted in the southeast. Being secondary, relative to the barrow, its relation with the urn described above seems possible. From the fill of a recent disturbance in the centre of the tumulus came some fragments of cremated bone and two sherds of thick pottery with a deliberately roughened surface (unlike urn 3, fig. 3). They perhaps indicate a third interment which offers another possible dating for the circular ditch.

By way of summary, it may be stated that Tumulus I was constructed in the Early or Middle Bronze Age over an extended burial. It was reused in the Middle or Late Bronze Age, according to the deposition of an urn of the Hilversum/Drakenstein group. A final interment was accompanied by a vessel of thick pottery with deliberately roughened surface, probably belonging to the HaC/D period.

Tumulus II

During the investigations of this asymmetrical tumulus it was especially the plan that offered interesting information (fig. 6). Below the barrow, which was built from sods on a podzolised sub-soil, an oval brown ditch was outlined against the yellow sand. The C-S. section shows this ditch to be older than the tumulus, this fact being supported by the difference in shape of tumulus and ditch.

In the NW. and SW. quadrants, two rows of post-holes ran parallel to the oval ditch (fig. 7). Elsewhere only one row is visible and the posts have been spaced more closely. The chronologi-



Fig. 5. Fragments of decorated bone from the contents of urn no. 3. Tumulus I at the Zevenbergen. Scale 1 : 1.

interments or a gravepit observed. Therefore a dating of the tumulus and the oval construction is difficult.²

An exactly comparable combination of a round and an oval monument is unknown to us. Distant resemblances are present at the urnfield at Knegsel. In several urnfields oval monuments of similar shape have been recorded, surrounded either by posts or by a ditch. They were constructed during the whole of the southern Dutch 'urnenvelden' period, i.e. HaB to HaC/D. This group is described in one of the following articles.

At the foot of both tumuli, sub-recent disturbances in narrow parallel strips were noticed. They have been interpreted as cart tracks. A

2. Dr. J. C. Vogel at Groningen informed us that a charcoal sample from the fill of the oval ditch had been analysed. As a preliminary dating we are allowed to publish 580 ± 50 B.C. This date agrees very well with that of the unpublished oval monument of Haps, which on archaeological grounds belongs to the HaC/D period (see p. 55).

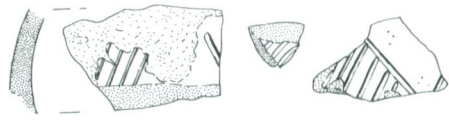


Fig. 8. Decorated sherds (no. 2) from Tumulus II at the Zevenbergen. Scale 1 : 2.

coin found at the bottom of one of these tracks bore the year 1827. The tracks are parallel to the Zevenbergseweg and possibly form a fore-runner of the modern asphalt road.

The investigations proved, that at least two of the seven hills were tumuli. It therefore seems acceptable to regard this area as a Bronze Age/Iron Age cemetery. Whether any relations to the nearby HaC 'Vorstengraf' are present, might be indicated by further investigations. These have been scheduled for the near future.

The excavations at the Zevenbergen took place in two periods: in October of 1964, the SW. quadrants of both tumuli were investigated.



Fig. 7. Part of the oval ditch and the two rows of postholes below Tumulus II at the Zevenbergen, viewing west.

Miss B. Sira and Mr. L. P. Louwe Kooijmans, students of the Institute for Prehistory had the daily supervision. Professor Modderman directed a training-course for students in April 1965. During that period, the remaining quadrants (except the NW. one in Tumulus I) were excavated. In the field the drawings were made by

Mr. J. P. Boogerd and Mr. B. C. Dekker made them ready for publication. Mr. R. R. Newell kindly corrected the English manuscript. We are greatly indebted to the municipal authorities of Berghem and to Mr. H. Teunissen, medical doctor at Berghem, for the indispensable help offered to us.

A LATE BRONZE AGE/EARLY IRON AGE URNFIELD AT GOIRLE, PROV. NOORD-BRABANT

G. J. VERWERS

In addition to the investigations of 1924/1925 by A.E. Remouchamps, part of an urnfield at Goirle was excavated. The soilmarks belonged to two types of monuments. Circular ditches had once surrounded low tumuli, which covered urns of HaB and HaC/D date. Long parallel ditches bordered elongated enclosures, measuring 60×3.5 m on the average. They were related to some of the circular ditches. Sherds and charcoal, collected from their fillings, date these monuments to HaB. They are interpreted as agricultural fields, that served some purposes connected with the funeral rite. We propose for them the name "Long Ditches of Goirle type".

Introduction

'Impressive' is what one might call the number of urns deriving from the 'urnenvelden'¹ in the southern part of the Netherlands. The museums of Leiden, 's-Hertogenbosch and Maastricht, together with several local museums and private collections, hold hundreds of pots, which because of their reputed uniformity are a dreaded subject in prehistory seminars. Many of the urns escaped annihilation because of the activities of collectors hunting for antiquities on the moorlands under reclamation at the turn of the century. Their interests were usually restricted to complete pieces, sherds were invariably thrown aside, and in many cases the exact origin of their treasures is unknown.

It is unfortunate that the smallest part of our 'urnenvelden'-inheritance comes from scientific investigations, originated in 1909 at Riethoven by Mr. M. A. Evelein from the *Rijksmuseum van Oudheden* (National Museum of Antiquities) at Leiden and since carried on by several other archaeologists (Evelein, 1910). A better appreciation of the Dutch prehistory of the last

millennium B.C. might be furthered by increasing the number of fully documented finds. We were therefore pleased by the notification from Mr. G. Beex of Eindhoven that the site of the partially investigated urnfield near Goirle was open to excavations because forthcoming construction. We are indebted to the municipal authorities of Goirle for their consent, to the antiquarian society 'De Vyer Heertganghen' for their co-operation and their hospitality offered to our students, to Mr. H. van Puyenbroek who kindly showed us his collection, and to all others who contributed to the success of these investigations.

Situation

In the coversand area near the Belgian frontier, some 7 kilometers south of Tilburg, the village of Goirle is situated. Today its oldest part lies in the valley of the Poppelsche and Rovertsche Lei. Mr. A. Hoogendoorn, Secretary to the society 'De Vyer Heertganghen', who did much work on the earliest history of Goirle, informed us that the first settlement of Goirle must have been more westerly, on the higher sandridge,

1. For the relation between the Dutch 'Urnenvelden' and the German 'Urnfelder', see p. 49.

which on its western side borders the small valley of the Oude Lei.

This ridge, still partly covered with heath, carries several traces of prehistoric occupation among which the Bronze Age tumuli on the 'Rechte Heide', excavated by Professor A. E. van Giffen, belong to those best known (van Giffen, 1937).

East of Goirle, the sandridge has the name of 'Hoogeind' (hoog = high). There, along the Rielse Dijk, the urnfield is situated². The soil consists of very loamy fine sand of very poor quality, which has been podzolised. It does not contain any gravel. A few hundred meters to the north, the dark colour of the topsoil indicates the presence of old arable land on almost the same type of soil.

2. Dutch topographic map. 1 : 50.000. 50 Oost. 131.45/392.60.

Previous excavations

After the notice by Mr. E. J. van Puyenbroek of Goirle, that by sand-digging on the Hoogeind pots had come to light, the Curator of the National Museum of Antiquities, Mr. A. E. Remouchamps, visited the place in May 1924. It was decided to start a scientific exploration, for although part of the area had been removed, in the remaining portion several small barrows were visible. Also a few hundred meters to the south, urns had been discovered during forest planting in 1917. This information was provided by Mr. van Puyenbroek, in whose possession were about a dozen of the urns.

In the summer of 1924 Remouchamps excavated several tumuli for two weeks; in 1925 one week was devoted to the investigation of their surroundings by one meter wide trenches (fig. 1). The results of these excavations were published in 1926 (Remouchamps, 1926).

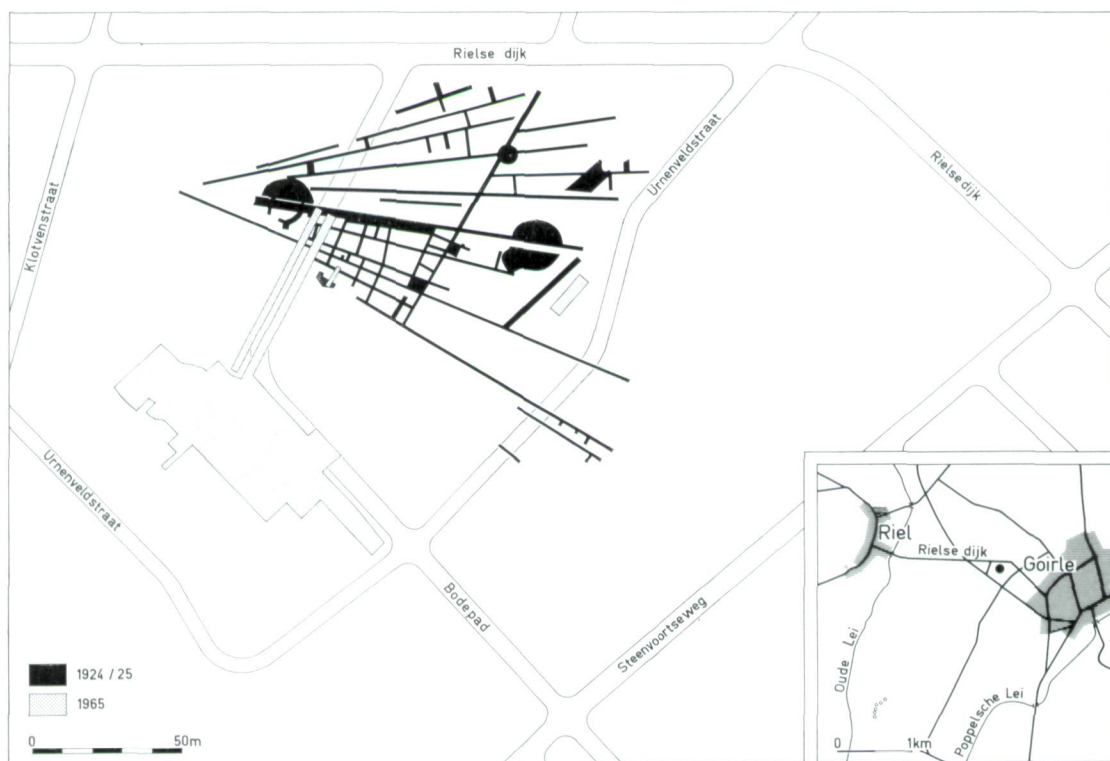


Fig. 1. Geographic location of the Urnfield at Goirle. Scale 1 : 25.000 and 1 : 100.000.

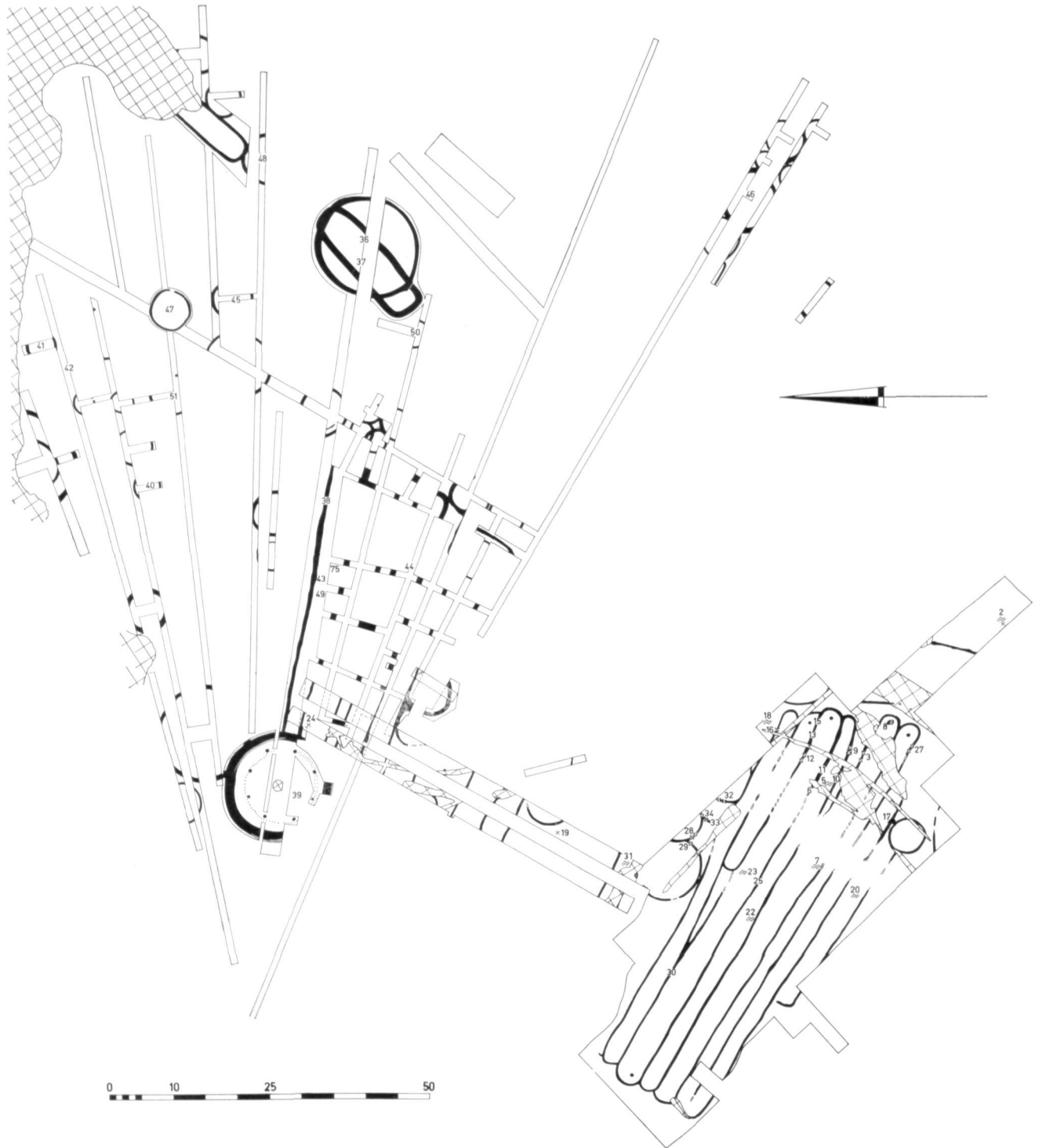


Fig. 2. Plan of the Excavations at the Urnfield at Gairle. Scale 1 : 900.



Fig. 3. The Long Ditches of the Urnfield at Goirle, viewing southeast.

Remouchamps' map (fig. 2) shows over 30 fragments of circular discolourations, which are the remnants of ringditches that usually enclosed the small urnfield tumuli. In the centres of several of these, urns with cremated bones had been buried. At least six circles were interrupted in the southeast but the method of excavation applied does not enable us to see whether there were more circles of this type.

Besides the long ditches to be described below, in the western part of the excavation a tumulus, nearly one meter high, was investigated. It was surrounded by a single, widely spaced post-circle with another circle of close-set stakes, outside of which two ringditches had been dug. In the centre there had been a rectangular grave-pit containing cremated bones. These features all belonged to one period, according to Remouchamps, and could be dated in the Late Neolithic period or slightly later. W. Glasbergen correctly distinguished three periods; the first

period, with post and stake circles and the cremation grave is dated to the Early or Middle Bronze Age (Glasbergen, 1954). It remains uncertain whether two of the long ditches running towards this barrow actually formed an 'allée' to it, as Remouchamps suggested.

Finally an almost rectangular ditch about 20 m in length was discovered. It contained an urn with cremated bones in the centre (fig. 5, no. 37). It was later covered by a tumulus with a circular ditch, to which belongs urn no. 36 (fig. 6).

The finds of this excavation are described below together with those from the 1965 excavation. Most of them come from the centres of the circular ditches. It is to be regretted that not more attention was paid to the long ditches, as they could have supplied much conclusive information.

On the plot investigated by Remouchamps, firs were planted in November and December

1934. During this work, several urns again turned up. On the suggestion of Dr. F. C. Bursch of the National Museum, the labourers accurately mapped their finds. Unfortunately the numbers on the map were not noted on the urns. The descriptions in the findbook, like 'black, in sherds', 'dark, complete', or 'decorated, trampled down' etc., proved to be insufficient for exact determination. Only one pot could be located; this one having a handle, a fact that also struck the scribe of 1934.

Excavation 1965

Assisted by the '*Koninklijke Nederlandsche Hei-
demaatschappij*' from 26 April till 5 June 1965, archaeological investigations were carried out on part of the future bungalow estate (fig. 1). Parallel to the Bodepad, a strip 30 × 80 meters was excavated. Connected with this strip two trenches were opened in the direction of the

Remouchamps' excavations, enabling us to combine the plans of 1925 and 1965. Finally, along the Urnenveldstraat a small testpit did not offer any information, as the soil had been worked to a great depth. Recently the area west of the Bodepad was covered with heath and some small firs. Although broken up earlier, this was done so superficially that the old micro-relief of small ridges running about north-south was left intact. The disturbance of the topsoil reached for some 20 cm in depth at the top of the ridges, leaving part of the B-layer of the podzolised profile in place. In the depressions between the ridges, the soil had been broken up to a greater depth. Here the podzol profile had vanished completely. These depressions are visible on the map as strips without soilmarks.

By taking away the disturbed topsoil, especially in the higher parts, parallel lines of dark brown colour became visible in the brownish yellow sand. They may be interpreted as the remnants



Fig. 4. The northwestern ends of the Long Ditches in the Urnfield at Goirle, viewing east.

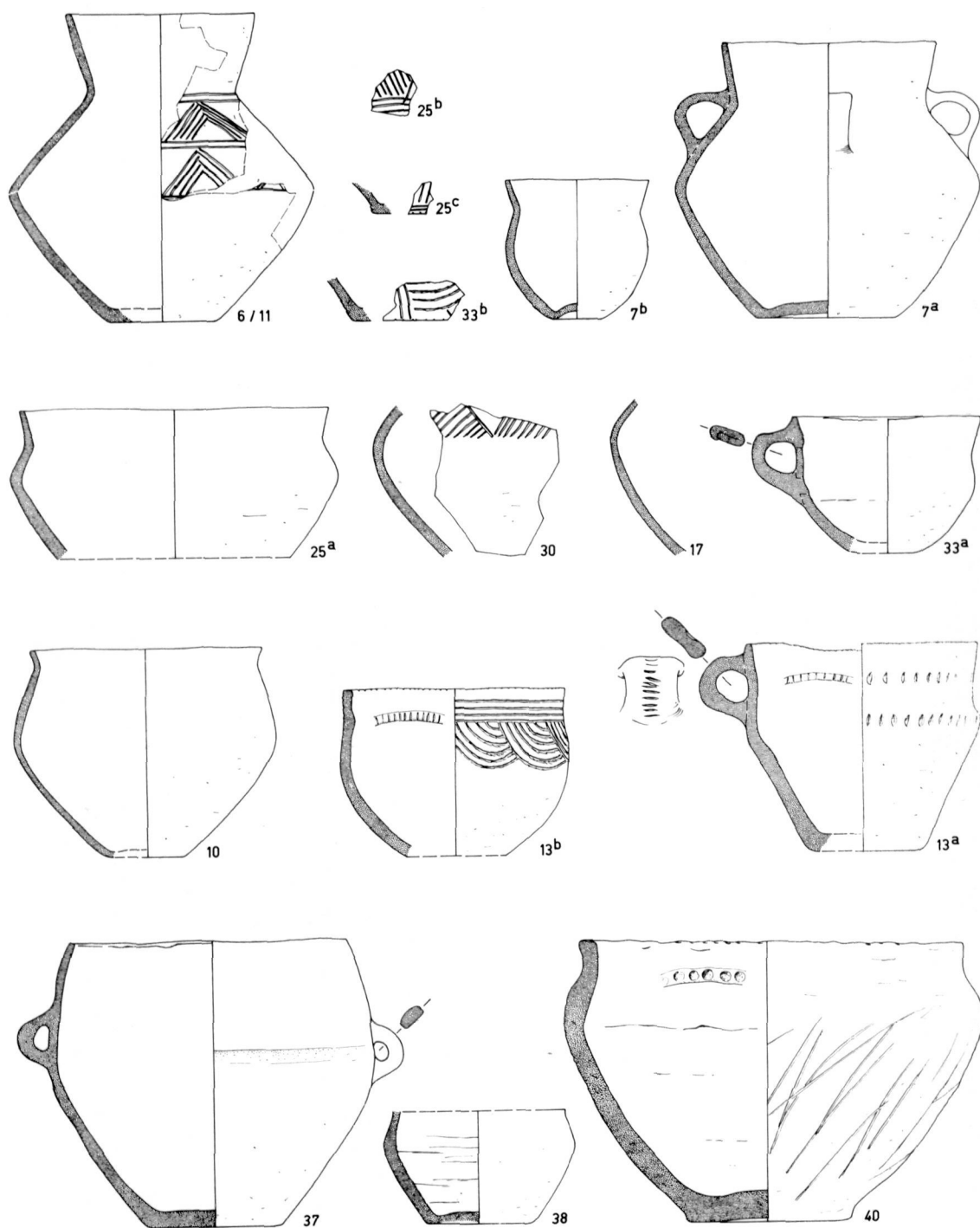


Fig. 5. Pottery from the Urnfield at Gairle, Scale 1 : 4. 4.

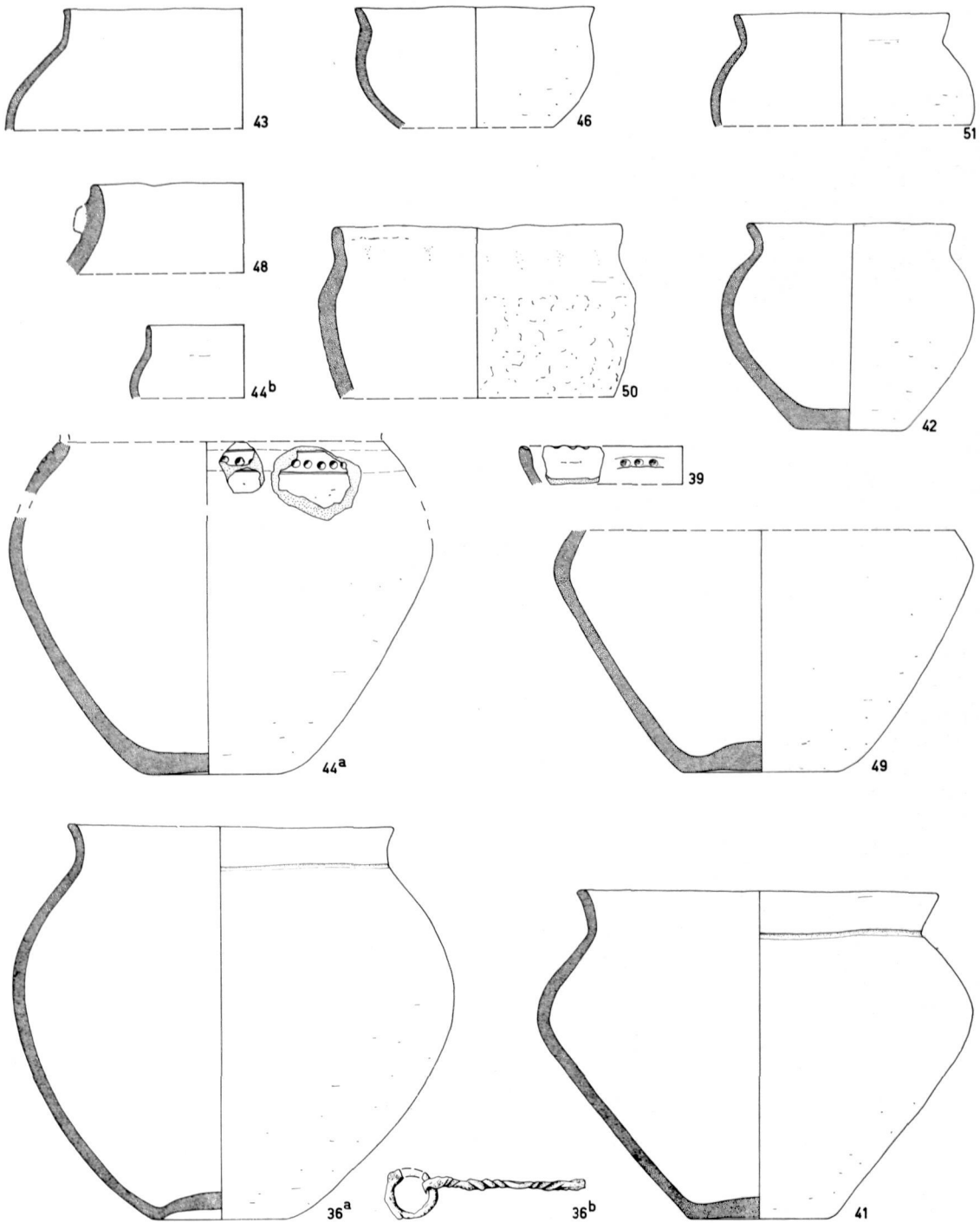


Fig. 6. Pottery from the Urnfield at Gairle. Scale 1 : 4. No. 36b: iron, scale 1 : 2.

of podzolised profiles originating below and beside the ditches. Seven to nine of these ditches run parallel to each other at distances of about 3.5 meters in a northwesterly to southeasterly direction over 60 to 70 meters, through the excavated area. At both ends they turn towards each other, and form long, narrow enclosures.

Also to the north of this group of ditches, in the narrow trenches, parts of other ditches showed up which certainly enclose similar spaces. Finally, Remouchamps also mapped fragments of these long ditches in the southwestern corner of his excavation.

That these ditches formerly enclosed long artificial banks is made plausible by the following observation. In plan, the colour of the soil outside the long enclosures was more brown, inside more yellow. This may find an explanation in assuming that the old surface outside the long ditches was lower than inside; consequently podzolisation formed a soil-profile with the same differences in height. After wind and rain had levelled the terrain, the podzol profile on the former banks vanished. Beside these banks it was preserved. A second argument may be seen in the similarity of the Goirle type long ditches with still existing artificial banks in the middle of urnfields, e.g. on the Noordse Veld near Zeyen (prov. Drente) and at Pestrup (Germany)³.

The plan of the Goirle urnfield shows two groups of multiple systems of long ditches: the one in the northeast was excavated by Remouchamps, whereas the southwestern group was exposed in 1965.

In between there are single and double systems. From the shape of the ditches at both ends of the southwestern group it can be deduced that there is one central, somewhat wider, symmetrical enclosure; against it the other enclosures were afterwards constructed. At two times shorter ditches were dug.

The southeastern ends of the 1965 group of ditches lie on one of the small natural ridges mentioned above. Here the lowest part of the old filling of the ditches was still present. Mainly here, charcoal was found in the filling. At several

places pottery sherds turned up as well. It seems obvious that the pottery and charcoal got into the ditches before they were completely filled in. These finds therefore present important dating evidence. C_{14} measurements on sample Goirle 3 were dated to 870 ± 50 B.C. (GrN-4919)⁴. In some cases, sherds could be combined to form halves of pottery vessels. Similar finds came from circular ditches against the long ones. None of the ditches contained any cremated bone.

From the enclosures inside the long ditches, only a few finds were located: some small pits with cremated bone, and in one place bone together with three small sherds of rough pottery. An exception is an urn (fig. 5, no. 7a), which was found lying against one of the long ditches. It contained a cremation on top of which a small beaker had been placed. Cremated bone also occurred in the black soil around the urn. Although no certainty could be obtained, we believe the urn to have been buried after the long ditch was constructed. It is remarkable that an almost identical urn (no. 75, fig. 10) was discovered in a similar position.

Near the inside end of a number of the long enclosures, a dark spot was noticed. These spots might be interpreted as postholes. In one of the enclosures, the place of the posthole had been taken by a rectangular pit, containing much charcoal, still partly recognizable as charred beams. At the bottom of this pit two postholes became visible. The C_{14} sample Goirle 8 from this pit was dated to 830 ± 50 B.C. (GrN-4920).

In addition to the described long ditches, in both excavations circular ditches have been mapped. They occur over the whole surface of the excavated area. As to their relation to the long ditches it is to be noticed that the circles and long ditches never intersect. Some circles touch the outermost long ditches in the northeastern and southwestern group. It is clear that at least a number of circles are contemporaneous with a number of long ditches; while digging the

3. For further information on artificial banks, see G. J. Verwers, 1966.

4. We are indebted to Dr. J. C. Vogel at Groningen for his prompt information about the results of his measurements.

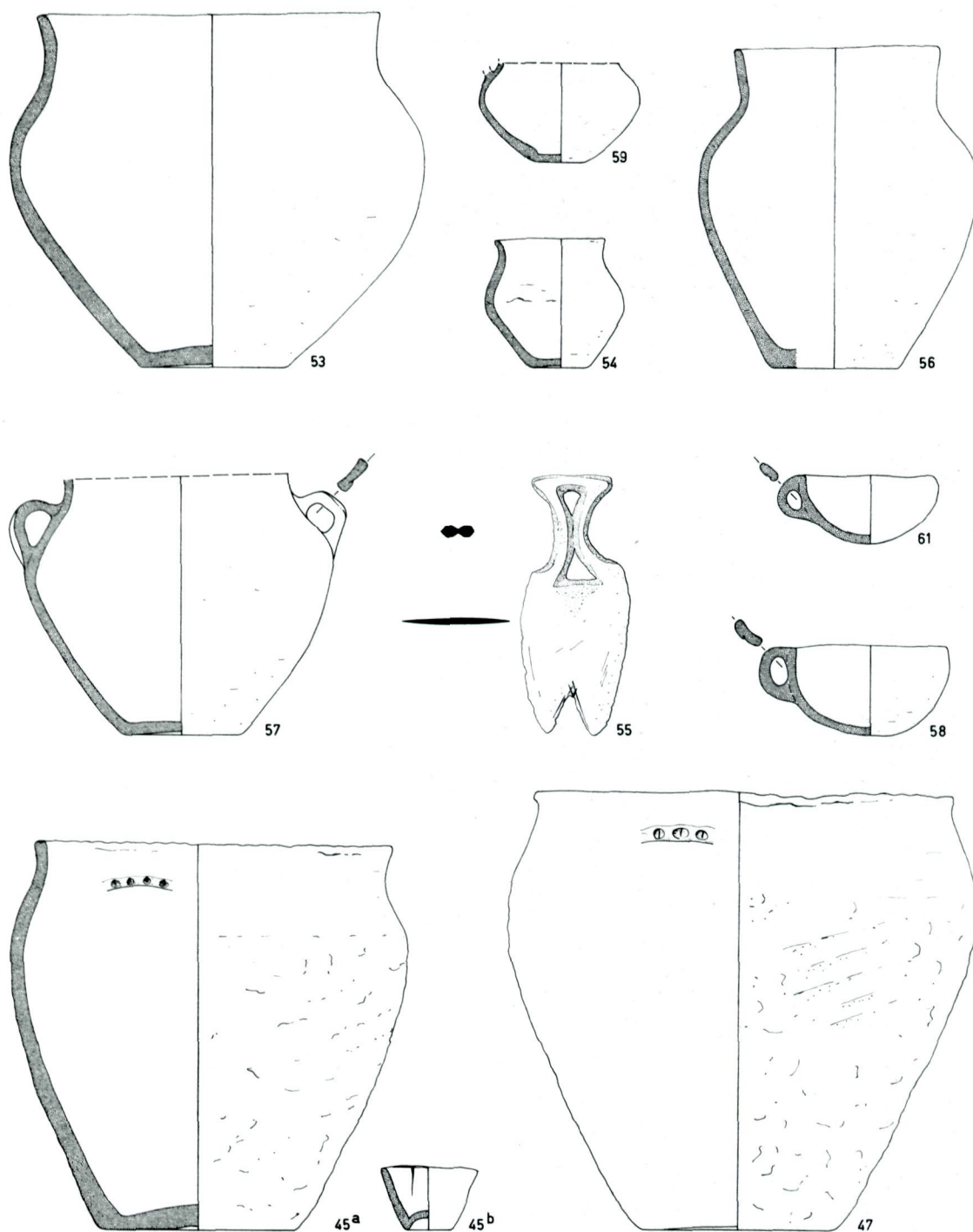


Fig. 7. Pottery from the Urnfield at Gairle. Scale 1 : 4. No. 55: bronze, scale 1 : 2.

one, the other was taken into account, sometimes even used.

The finds

From the fillings of these circular ditches also charcoal and a few pottery sherds were collected. Sample Goirle 39 from one of these ditches was C_{14} dated to 920 ± 50 B.C. (GrN-4921), thus providing another argument for the contemporaneity of both types of ditches.

A very characteristic urn of low bi-conical shape with cylindrical neck belongs to the oldest phase of the southern Dutch urnfields. It is related to the *Zylinderhalsurne* from southern Germany and Switzerland. Most of the urns of this Lower Rhine group are decorated in *Kerbschnitt* technique, but also other decorations occur (Desittere, 1964). There are also undecorated specimens.

In the Goirle urnfield no. 6/11 (fig. 5) represents this early type of urn. Here it is decorated with incised lines and triangles, a combination well known from Swiss HaB pottery (Vogt, 1930). The sherds from which 6/11 was reconstructed came from the fill of one of the long ditches. These constructions therefore can be dated to the HaB period. Related in shape is no. 68 (fig. 8), with a decoration typical for HaB pottery in the Upper-Rhine region. In the decoration on no. 73 (fig. 9) the half of circles could be derived from the German *Halbbuckel* belonging to HaA. In the shape, a relation to the cylinder-necked urn is present. Further away from this group stands no. 83a (fig. 9) whose decorations with triangles occurs frequently in HaB. Perhaps no. 30 (fig. 5) from the fill of a long ditch might also be dated in this period. The urn no. 44a (fig. 6) is decorated with lines and points, the latter used frequently together with *Kerbschnitt* motives. This urn, found nearby one of Remouchamps' long ditches, therefore also belongs to the oldest pottery of this urnfield. In no. 65 (fig. 8) resemblances with *Kerbschnitt* decoration seem present.

Handled cups occur in many places. The southern German *Henkeltassen* date from HaA and B and in B they are often decorated. Better parallels come from Westphalia, where in Rad-

berg they were deposited in the fill of keyhole-shaped ditches and therefore belong to HaB (Kroll, 1938). In Holland, both northern and southern urnfields offer further examples. An undecorated cup from Holsloot (Prov. Drenthe) was found in the ditch of a *lang bed* of Gasteren type. This monument has a C_{14} date of 930 ± 70 B.C., which is very well comparable with the C_{14} dates from Goirle (GrN-1561; Clason, 1959). At Goirle, nos. 13a and 33a (fig. 5), both out of long ditches, represent this group.

Also of HaB date is the bi-conical urn no. 37 (fig. 5) with two vertical handles. Bi-conical pots of this shape are comparable with specimens to the north and east of the Lower Rhine; they are unlike the scarce examples of *Doppelkonus* ceramics in southern Germany.

Nor of southern origin is the interesting group of handled urns no. 7a (fig. 5), no. 57 (fig. 7) and no. 75 (fig. 9). For these urns, parallel are present in Westphalia and the northern Netherlands, where they belong to HaB. Nearby an example comes from the HaB part of the urnfield at Best (Prov. N.-Brabant) (Willems, 1935). Nos. 7a and 75 are accompanied by small beakers that might have some relation with the HaB *Spitzbecher*. Both urns were found near long ditches.

Nos. 36a and 41 (fig. 6) are good representatives of a large group of urns that have a low splayed neck and a rather rounded profile. In Germany they are sometimes called *Schrägrandurne* and are typical for the later phase of the *Niederrheinische Grabhügelkultur*. They are therefore dated to HaC (and D?). Both examples from Goirle belong to cremation burials in the centre of circular ditches.

In the HaC or D period the urns of Harpstedt type appear in the Lower Rhine. Their shape more or less resembles a bucket, the lower part of the body is rusticated, and the rim often shows small impressions of fingertips or a spatula. Nos. 45a, 47 (fig. 7), no. 50 (fig. 6), no. 66 (fig. 8), no. 79 (fig. 9) belong to this type. Three of them were collected at the centre of the circular ditches.

A HaC date can be assigned to no. 40 (fig. 5),

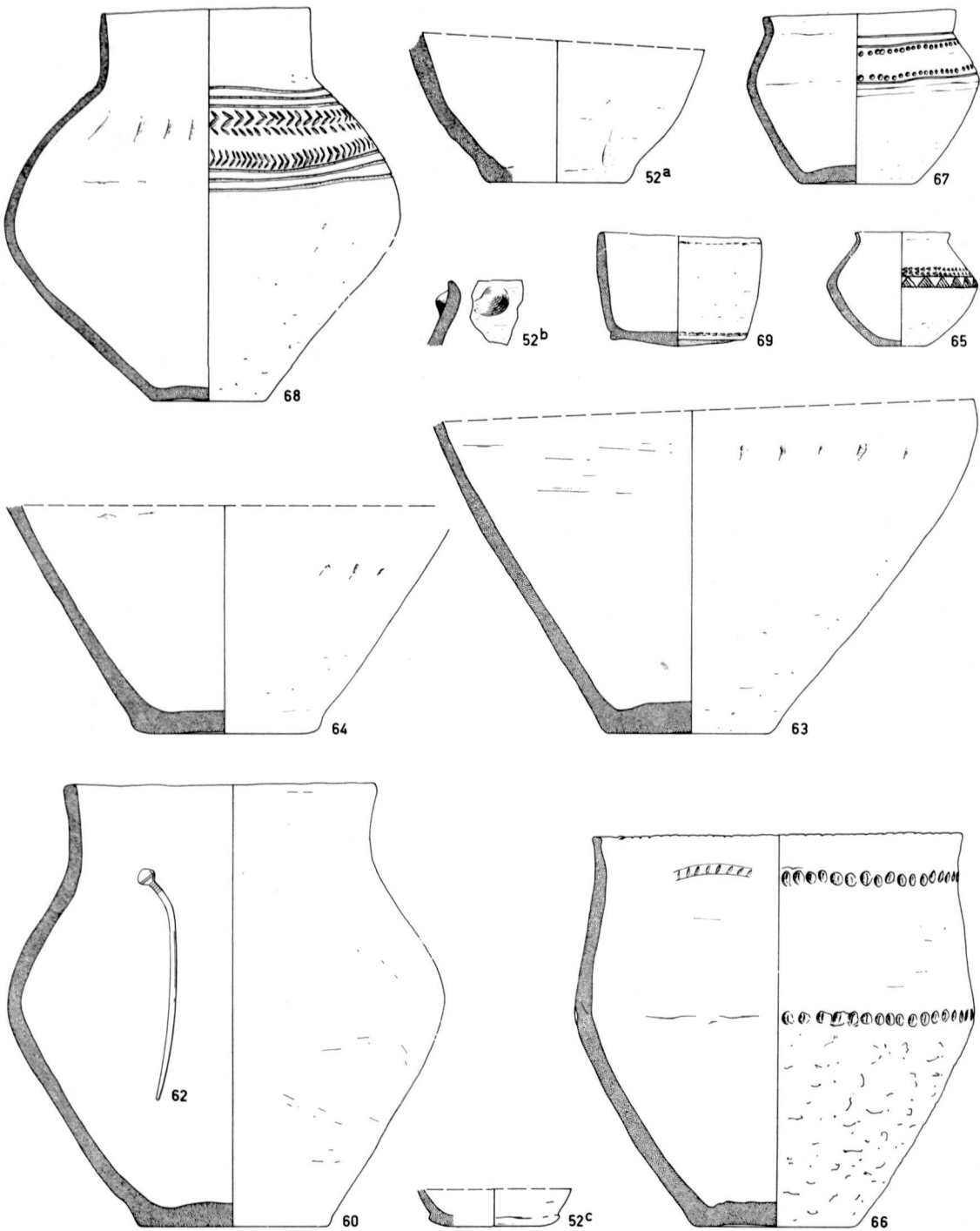


Fig. 8. Pottery from the Urnfield at Gairle. Scale 1 : 4. No. 62: bronze, scale 1 : 2.

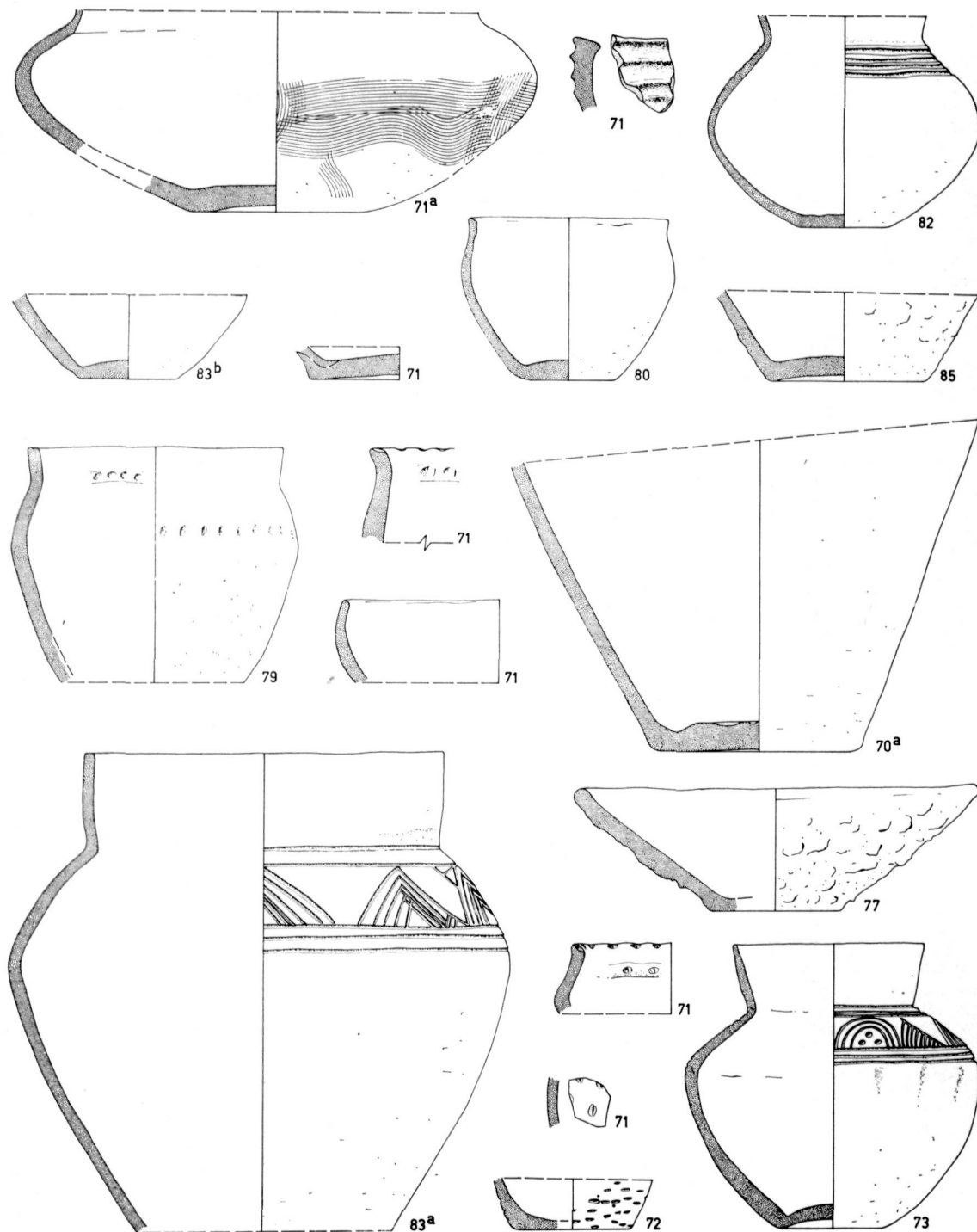


Fig. 9. Pottery from the Urnfield at Gairle. Scale 1 : 4.

no. 42 (fig. 6) and no. 82 (fig. 9). These urns can be compared with pots from German cemeteries like Bassenheim and Laufeld. Of similar date or somewhat older might be no. 53 (fig. 7). This urn contained the bronze razor(?) (fig. 7, no. 55) for which no comparisons could be found.

The fragments of a so-called *Lappenschale* are difficult to date (fig. 10, no. 78). They are known from the HaD *Hunsrück-Eifel* culture but were certainly in use already in HaC, if not in B. The bronze pin no. 62 (fig. 8) with the small bi-conical head is a widespread type, that in the southern Netherlands is known for instance from the, partially HaB, urnfield at Riethoven (Holwerda, 1913). At Best, W. J. A. Willems (1935) twice found a pin of this type together with *Kerbschnitt* pottery, thus dating the pin to HaB.

Final considerations

A number of finds from Goirle remain undiscussed. They are either too fragmentary or their shape is not typical enough to mention dates. The indications above give some information

as to the period during which the urnfield at Goirle was used.

To HaB belong: nos. 6/11, 7a, 13a, 30, 33a, 37, 44a, 57, 62, 68, 73, 75 and 83a. Of this group 6/11, 13a and 30 come from the filling of long ditches, which are thereby dated. Close to the long ditches, nos. 7a, 44a and 75 had been deposited. No. 33a proves the circular ditch to be on archaeological grounds roughly contemporary with the long ditch against it. No. 37 dates the rectangular ditch of Remouchamps' excavation. For further discussion on this type of monument see G. J. Verwers (1966). Finally no. 62 indicates that also in the part of the urnfield destroyed in 1924, HaB finds were made.

HaC dates can be assigned to nos. 40, 42, 53 and 82. The first two urns come from the centres of circular ditches.

Without giving due attention to the plan of this urnfield, one would be tempted to conclude that apparently the two main types of monuments, the long and the circular ditches, represent two subsequent periods; the first belonging to HaB, while the second is connected with HaC/D pottery. Considering the plan

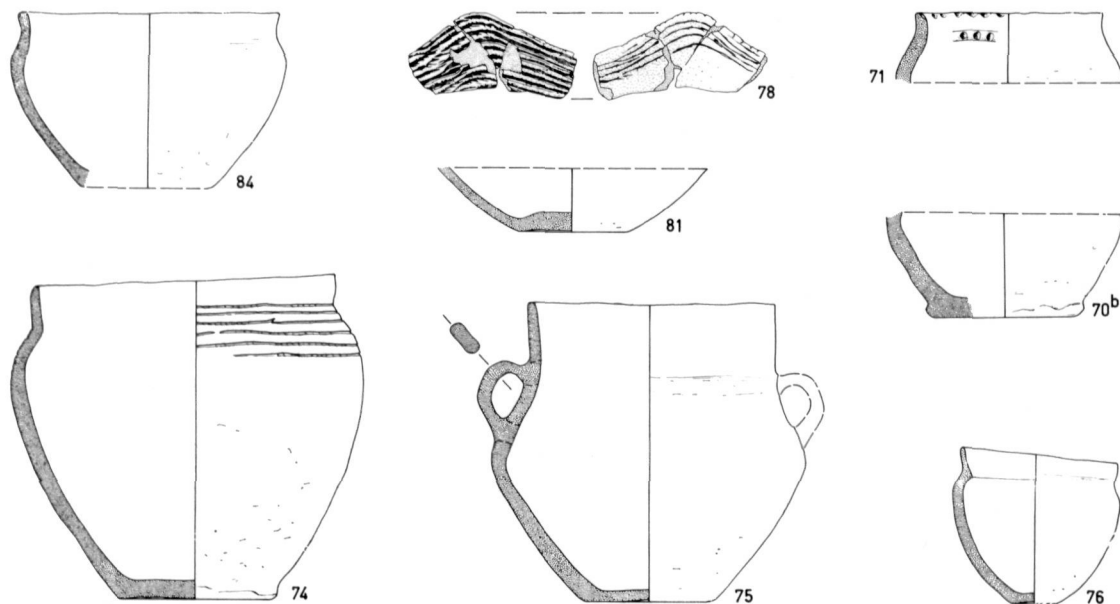


Fig. 10. Pottery from the Urnfield at Goirle. Scale 1 : 4.

however, two objections must be made. Firstly, at several places monuments of both types have been constructed against each other, using each others ditches, and never intersecting. Secondly, all circular ditches dated to HaC/D lie at some distance from the long ditches. With the exception of no. 33a (fig. 5) (HaB!) none of the circles against long ditches offered any dating. Contemporaneity is also suggested by the striking similarity between the sherds nos. 25b-c and 33b (fig. 5), deriving respectively from the fillings of a long and of a circular ditch. Both sherds could even belong to the same vessel.

Finally there are the C₁₄ measurements. Not only do they indicate a HaB date, but they moreover provide a strong argument in favour of the simultaneousness of the long and the circular ditches.

These facts and considerations lead us to the conclusion that during the HaB period at several places in the urnfield at Goirle, urns containing cremated human bones were buried under small barrows, which were surrounded by a circular ditch. In connection with these barrows, long ditches were constructed around elongated artificial banks. In the following HaC/D period, only small barrows were erected over urns. The contemporaneity of the artificial banks and several of the barrows seem to indicate that the banks had a function connected with the burial rite. That they themselves were grave-monuments is contradicted by the almost complete absence of interments. Only three urns with cremations nos. 7a, 44a and 75 come from nearby long ditches, while of this group only no. 44a had a central position in the middle of the bank. Together with the scattered heaps of cremated bones, these urns may be secondary to the long banks as we actually seemed to notice during the excavation of no. 7a.

We propose to call these long and narrow enclosures: Long Ditches of Goirle type (Dutch: *Lange greppels van het type Goirle*; German: *Langgräben, Typus Goirle*)⁵. As it is explained

5. Deliberately the word 'Long Bed' (*Lange bedden, Langbetten*) has been avoided, as this term is too much connected with gravemonuments of Gasteren type (Waterbolk, 1962).

in the following article (Verwers, 1966), we consider the Goirle group of artificial banks to be ancient fields of the *Hochäcker* type. Furthermore we follow J. Pätzold's hypothesis which states that the agricultural activities carried out in these fields in the middle of cemeteries served ritual purposes (Pätzold, 1960)⁶. The crop produced here may have been used during funeral meals and may also have served as an offering to the dead. The pottery collected from the ditches is also to be regarded as related to these offerings. That during one or more acts in the funeral rite fire played a roll, is indicated by the presence of charcoal concentrations in the ditches both around the *Hochäcker* and the barrows. From the absence of remains in the long ditches that can be dated to later periods, it may be concluded that at least at Goirle the *Hochäcker* were no longer in use during HaC/D, unless the fields from that period have not yet been discovered.⁷

Postscript

Unfortunately the results of the pollen analysis of soil samples from the long ditches, are not yet available for publication.

Findlist 1965

2. cremated bones, charcoal, in small pit.
3. charcoal in long ditch.
5. cremated bones in small pit.
- 6/11. (fig. 5) pottery sherds in long ditch, surface polished, incised decoration, dark brown.⁸
7. (fig. 5) urn, small beaker, cremated bones, charcoal, in small pit against long ditch. 7a: surface polished, dark reddish brown, contains cremated bones. 7b: surface polished, very dark gray/dark reddish brown, inside 7a.
8. charcoal in deep pit.
6. The same suggestion was made by Professor van Giffen during a recent discussion at Amersfoort on the results of the Goirle excavations.
7. During the excavation the author was assisted by the draughtsman Mr. J. P. Boogerd. The drawings for the publication were prepared by Mr. B. C. Dekker. Miss Mieke H. Hille made the authors photographs ready for publication. We are especially indebted to Mr. R. R. Newell for his correction of the English manuscript.
8. Descriptions of colours according to Munsell Color Chart.

9. charcoal in small pit.
10. (fig. 5) pottery sherds in long ditch, surface polished, reddish brown/strong brown.
12. charcoal in long ditch.
13. (fig. 5) pottery sherds in long ditch. 13a: smooth surface, reddish yellow. 13b: rough surface, yellowish brown.
15. pottery sherds in long ditch, small polished wall-sherd.
16. charcoal in long ditch.
17. (fig. 5) pottery sherds, cremated bones, in long ditch, polished surface, brown.
18. cremated bones in small pit.
19. charcoal in small pit.
20. cremated bones in small pit.
22. cremated bones in small pit.
23. cremated bones in small pit.
24. charcoal, in pit?
25. (fig. 5) pottery sherds in long ditch. 25a: polished surface, dark brown. 25b: rough surface, incised decoration, brown. 25c: same type of pottery, almost certainly belonging to 25b.
27. charcoal in long ditch.
28. charcoal in circular ditch.
29. charcoal in circular ditch.
30. (fig. 5) pottery sherds in long ditch, polished surface, incised decoration, yellowish red/dark brown.
31. cremated bones in small pit.
32. charcoal, in circular? ditch.
33. pottery sherds in circular ditch. 33a: polished surface, brown/dark brown, almost complete. 33b: surface rough, incised decoration, brown, very much like 25b, c.
34. charcoal in circular ditch.

Finds from the excavation 1924/1925:

Of the numbers between parentheses, the first refers to Remouchamps' excavation number, the second to the catalogue number in the National Museum of Antiquities at Leiden, where all finds are stored.

- 36a. (1-k1925/5.5; fig. 6) polished surface, grayish brown/light yellowish brown.
- 36b. (1-k1925/5.5; fig. 6) iron pin on ring, found inside 36a.
37. (1a-k1925/5.6; fig. 5) polished surface, very dark gray.
38. (3-k1925/5.7; fig. 5) polished surface, very dark brown.
39. (4-k1925/5.8; fig. 6) exact location unknown, rough surface, brown.
40. (9-k1925/5.9; fig. 5) smooth uneven surface with scratches, pinkish gray.
41. (14-k1925/5.13; fig. 6) polished surface, very dark gray/light yellowish brown.
42. (15-k1925/5.14; fig. 6) polished surface, very dark gray.
43. (16-k1925/5.15; fig. 6) polished surface, very dark gray.
- 44a. (18-k1925/5.17; fig. 6) polished surface, incised line decoration with impressed points, reddish brown.
- 44b. (18-k1925/5.17; fig. 6) polished surface, reddish yellow.
- 45a. (19-k1925/5.18; fig. 7) surface deliberately roughened, upper part smooth, light brown.

- 45b. (19-k1925/5.18; fig. 7) found together with 45a, smooth surface, light reddish brown.
46. (20-k1925/5.19; fig. 6) polished surface, very dark gray.
47. (21-k1925/5.20; fig. 7) only copy present in collection of Mr. van Puyenbroek, original lost, rough surface, smoothed with the fingertips in places.
48. (22-k1925/5.21; fig. 6) uneven smooth surface, formerly a horizontal band must have been applied to the outer surface, one centimeter below the rim, light brown.
49. (24-k1925/5.23; fig. 6) polished surface, reddish brown.
50. (25-k1925/5.24; fig. 6) surface deliberately roughened, upper part smoothed, grayish brown.
51. (26-k1925/5.25; fig. 6) smooth surface, reddish brown.
52. (k1925/5.27; fig. 8) not located find. a: rough surface, very pale brown. b: reddish yellow. c: rough surface, brown.

Finds from the area south of Remouchamps' excavation:

Numbers 53, 54 and 55 were discovered by Mr. Beckers at Goirle, and described by Remouchamps who indicated that they were found together, in the area directly bordering on his excavated plot. Location of the other finds was possible by means of an old photograph, probably taken by Remouchamps in the garden of Mr. van Puyenbroek. On the photograph all pots of this group are visible together with the information that they were collected in the area south of the 'urnenveld'. It seems probable that at least part of this group comes from the plot excavated in 1965.

53. (k1925/5.28; fig. 7) together with 54 and 55, polished surface, very dark gray.
54. (k1924/10.1; fig. 7) polished surface, gray.
55. (k1924/10.2; fig. 7) bronze.
56. (k1934/5.3; fig. 7) polished surface, (dark) reddish brown.
57. (k1934/5.4; fig. 7) polished surface, brown.
58. (no. 4; fig. 7) collection of Mr. van Puyenbroek, polished surface, brown.
59. (no. 14; fig. 7) collection of Mr. van Puyenbroek, polished surface, brown/pale brown.

Finds from the area to the northeast of Remouchamps' excavation:

This group, discovered in 1924, was the direct cause of the investigations of 1924/1925.

60. (k1925/5.29; fig. 8) original in collection of Mr. van Puyenbroek, copy at Leiden, surface polished, yellowish brown.
61. (k1925/5.30; fig. 7) found inside 60, original lost, copy at Leiden, smooth surface.
62. (k1925/5.31; fig. 8) bronze.
63. (k1925/5.33; fig. 8) polished surface, grayish brown.
64. (k1925/5.34; fig. 8) polished surface, brown/reddish yellow.
65. (k1925/5.36; fig. 8) smooth surface, decoration applied with spatula, light brown.

66. (k1934/5.1; fig. 8) lower part somewhat rough, upper part smooth, decoration with fingertip impressions, reddish yellow.

67. (k1934/5.2; fig. 8) found together with or inside 66, polished surface, incised decoration, very dark gray.

From the 'urnenveld':

The register at the Leiden Museum does not give any further information on the following objects.

68. (k1932/8.1; fig. 8) polished surface, incised decoration, pale brown.

69. (k1932/8.2; fig. 8) polished surface, spatula decoration, very dark gray.

Probably from the 'urnenveld':

70a. (k1934/5.6; fig. 9) polished surface, grayish brown.

70b. (k1934/5.6; fig. 10) rough surface, yellowish brown.

71. (k1934/5.7, 8; fig. 9) a: with comb decoration; other sherds with uneven surfaces.

72. (k1934/5.9; fig. 9) uneven surface, light yellowish brown.

From the 'urnenveld':

This group was collected in 1934 on the area investigated by Remouchamps. Only nos. 75 and 76 have been located.

73. (k1935/2.2; fig. 9) polished surface, incised decoration, dark gray/reddish yellow.

74. (k1935/2.3; fig. 10) smooth surface, spatula decoration, grayish brown.

75. (k1935/2.4; fig. 10) polished surface, dark gray.

76. (k1935/2.5; fig. 10) 'belongs to' no. 75, polished surface, dark brown.

77. (k1935/2.6; fig. 9) deliberately roughened surface, reddish brown.

78. (k1935/2.7; fig. 10) decorated with a spatula, light brown.

79. (k1935/2.8; fig. 9) upper part polished, lower part rough, fingertip impressions, dark brown.

80. (k1935/2.9; fig. 9) polished surface, very dark gray.

81. (k1935/2.10; fig. 10) polished surface, very dark gray.

82. (k1935/2.11; fig. 9) polished surface, reddish brown.

83a. (k1935/2.12; fig. 9) polished surface, incised decoration, dark brown.

83b. (k1935/2.12; fig. 9) smooth surface, grayish brown.

84. (k1935/2.13; fig. 10) upper part polished, lower part smooth, very dark gray.

85. (k1935/2.14; fig. 9) surface deliberately roughened, dark brown.

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NON-CIRCULAR MONUMENTS IN THE SOUTHERN DUTCH URNFIELDS

G. J. VERWERS

The urnfields in the southern part of the Netherlands, which mainly belong to HaB and HaC/D, once consisted of a great number of low tumuli, now only recognisable by their circular ditches. Among the circular ditches, elongated ones have been recorded. There exist two types. The Long Ditches of Riethoven type, with average measurements of 15.5×5.5 m, almost always have a central interment and are therefore regarded as oval grave monuments. For the Long Ditches of Goirle type, which frequently occur in groups and are generally much longer and narrower than the Riethoven type, the use as agricultural fields is suggested. These fields are supposed to have had a function in the funeral rite.

Introduction

At the end of the fourteenth century B.C. waves of renovations, both spiritual and material, originating in the Balkans, swept over Europe. Urnfields being the most obvious and rather overestimated phenomenon of these renovations, the newly created cultures were labelled '*Urnenfelder Kulturen*'. They represent groups that accepted new customs and techniques, while in the meantime preserving old traditions. Southern Germany and Switzerland saw the development of W. Kimmig's '*Mitteuropäische Gruppe*', in which the older, local traditions became so much incorporated that he could distinguish provinces like the '*Rheinisch-Schweizerische Gruppe*' and the '*Unterrheinisch-Schwäbische Gruppe*' (Kimmig, 1940 and 1964).

Both of these groups exercised their influence on the Middle Rhine region, while in its turn this region passed on modified *Urnenfelder* traditions to the Lower Rhine, including the southern Netherlands.¹ Here the local Bronze

Age population had already adopted the rite of cremating their dead and depositing the ashes in an urn. The new influences from the south resulted here in the creation of urnfields, wherein however each urn was covered with a small barrow, so keeping alive the local Neolithic/Bronze Age tradition. Another proof of renovation is the pottery now used as urns. This includes vessels that have good parallels in the southern German and Swiss *Urnenfelderkultur*. The earliest ones among them can be dated to HaB indicating that the beginning of the urnfields in the southern Netherlands is about 1000 B.C.

Although there are clear indications that the Lower Rhine people were influenced by the *Urnenfelderkultur*, these influences came through so modified, and in the newly developing culture the old traditions were incorporated so strongly, that this new culture had only a distant similarity to the pure *Urnenfelderkultur*. This is the reason why W. Kersten proposed the name *Niederrheinische Grabhügelskultur* (Kersten, 1948). It came into existence during HaB and

1. For the different way along which the northern Dutch urnfields came into existence: de Laet & Glasbergen, 1959 and Waterbolk, 1962.

carried on probably well into the HaD period, or even later. The urnfield tradition with the construction of low barrows continued to be in vogue during the whole of this period. Translating the Dutch word *urnenvelden* into the German *Urnenfelder* therefore causes much confusion as there the *Urnenfelderkultur* ends at the end of the HaB period.

Here only the Rhine is indicated as a road by which the *Urnenfelder* influences were disseminated to the North but Kersten already saw northeastern France and Belgium as another possible route. We would like to add Westphalia. However we feel that a discussion on these problems would be out of order at this time.

Non-circular monuments

During more than half a century accurate maps of urnfield excavations have been produced in the southern Netherlands. M. A. Evelein and J. H. Holwerda at the beginning of this century started a tradition which was maintained by many archaeologists ever since. While providing an interesting picture of the developing excavation methods, their plans together show what are the characteristic features of the southern Dutch urnfields. Optimum soil conditions such as sandy sub-soil without gravel, play a large part in the preservation of the structural features of the Dutch urnfields. In almost all urnfields the circular ditches can be seen to surround the interments. Digging the ditches must at the same time have provided a boundary to and the material for a small barrow that was built over the urn burial.

In addition to circles, non-circular ditches almost always appear. They have a considerable variation in shape. In this group the long and narrow Long Ditches of Goirle-type are one extreme, while the small rectangle at Someren is another (Verwers, 1966b; Modderman, 1955). These differences in shape are paralleled by differences in nomenclature. '*Lange bedden*' (long bed), 'oblong bed', 'elongated lay-out', 'oval monument', etc. are names that have been used. In several reports the presence of these non-circular ditches has only been mentioned.

In a few instances explanations regarding their significance have been offered, varying between sepulchral monument and agricultural field.

However their different shapes make questionable whether they should be grouped together. Moreover different dates can be assigned to them.

In the present study the non-circular ditch systems that have been recorded in southern Dutch urnfields are reviewed and compared with similar phenomena in other regions. From the evidence thus presented the possibility of classification, dating, and interpretation may be deduced.

Riethoven: In 1909 M. A. Evelein started an excavation near Riethoven, southwest of Eindhoven (Prov. Noord-Brabant). The investigations were completed in 1913 by J. H. Holwerda. The maps going with their reports show an urnfield with a great number of circular ditches (Evelein, 1909; Holwerda, 1913). At two places in the urnfield a non-circular ditch came to light. The ditch to the east, described by Evelein as an 'elongated lay-out' is about 23 m long and 6.5 m wide. At one end it touches a circular ditch. Almost in the middle of the long axis an urn with *Kerbschnitt* decoration had been placed. The second oval monument, an 'oblong bed' according to Holwerda, measuring 19×7 m, did not offer any associated finds. It touched circular ditches. Many of the urns deriving from the Riethoven urnfield are to be dated in HaB. So is at least one of the oval monuments. Both authors give no explanation as to the purpose of these monuments.

De Hamert: North of Venlo (Prov. Limburg), near the German border the urnfield of 'De Hamert' is situated. It has been excavated by J. H. Holwerda (Holwerda, 1914). The tumuli, which were still visible at the surface, had all been surrounded by circular ditches. Many urns were still in place. Most of them belong to the HaC/D period. At two places in this cemetery 'quadrangular lay-outs' were discovered. They consisted of two long ditches running parallel to each other 3.5 m apart. Both ends curve

toward each other, thus forming an oval rather than a 'quadrangular' enclosure. Their length was 30 and 37 m respectively. The western 'lay-out' contained sherds with 'incised concentric half circles'. In the second 'lay-out' the lower part of a smooth urn, containing cremated bone, was discovered. The exact location of both finds is unknown. Holwerda believed both non-circular monuments to be contemporary with the oldest tumuli at De Hamert. He does not explain their meaning.

Goirle: In 1924/25 A. E. Remouchamps discovered several long ditches in the middle of an urnfield at Goirle, south of Tilburg (Prov. Noord-Brabant). From his plan, the presence of 3-5 long oval enclosures may be deduced (Remouchamps, 1926). They have been constructed against each other. Their length is estimated at about 40 m and their width is 3-5 m. No central interment was found. Close to the ditches two urns of HaB date had been placed. Against the long ditches, circular ones were visible. Remouchamps describes the long ditches as '*langwerpige cultusruimten*' (elongated cult enclosures), and refers to the publication of the cemetery at Rijssen (Holwerda, 1925). He believes the ditches to have held a wooden palisade.

A second type of non-circular ditch contained a HaB bi-conical urn as the central interment. It was later covered by a barrow with a circular ditch, built over a HaC/D urn. Measurements of the oval ditch were 20×6 m. Also, this ditch once was the foundation trench for a wooden palisade, according to Remouchamps.

To the south of this excavation an additional investigation was carried out in 1965 (Verwers, 1966b). Again a group of 5-7 long enclosures with average measurements of 60×3.5 m was un-earthed. They were contemporaneous with the circular ditches that were constructed against them. No central interments inside these enclosures have been recorded. From the filling of the ditches came charcoal and sherds. The latter dated these monuments to the HaB period. C_{14} measurements of the charcoal gave the following dates: Goirle 3 from the filling of a long ditch: 870 ± 50 B.C. (GrN-4919). Goirle

8 from a posthole near a long ditch: 830 ± 50 B.C. (GrN-4920). Goirle 29 from the filling of a circular ditch adjacent to the long ditches: 920 ± 50 B.C. (GrN-4921).

Vlodrop: Southeast of Roermond, the village of Vlodrop (Prov. Limburg) is situated. There F.C. Bursch dug an urnfield in 1931 (Bursch, 1936). To the east of the main concentration of circular ditches, a group of 'long beds' was discovered. At the time of the excavation they were visible as 'elliptical elevations'. Four parallel enclosures, lying adjacent to each other and bordered by ditches showed up after the topsoil had been removed. Bursch described their measurements as about 34×8 m. The unpublished plan of this excavation, which is kept at the National Museum at Leiden, informs us that the width of the enclosures varies between 5 and 7 m. Moreover only the northwestern ends have been found. In the opposite direction the long parallel ditches are cut by a road. This means that the actual length of these monuments was at least 34 m and probably longer. Bursch observed that in the middle of the long enclosures the soil had a gray colour, 'as if it had been frequently walked over'.

On the four long axes urns had been deposited. Three urns belong to the type with bi-conical shape and cylindrical neck and were also decorated in *Kerbschnitt* technique. The fourth urn is related to the German *Henkeltasse* and has the incised zigzag decoration often found on these cups. As *Kerbschnitt* urns were also discovered in the other part of this urnfield, Bursch concluded that apparently the 'long beds' belonged to the urnfield. He does not give an explanation for these 'beds' but dates them to the earliest phase of the Dutch urnfields. This agrees with the dating for the *Kerbschnitt* urns, which can be assigned to HaB.

Best: During his excavation in 1933/34 of the urnfield at Best, northwest of Eindhoven (Prov. Noord-Brabant), W. A. Willems discovered several oval ditches, situated between circular ones (Willems, 1935). At one place two elongated oval enclosures, 49×4.5 m, were con-

structed adjacent to each other. One of them had a small pit with cremated bone near the long axis. Against this pair of ditches, circular ditches were situated. In a second long monument, 34×4 m, a bowl of smooth pottery with cremated bone had been placed almost on the long axis. An incomplete (empty?) pot with a decoration related to the *Kerbschnitt* technique, stood almost adjacent to the outer side of one of these long ditches. Willems indicates these long narrow ditches to be 'oval elongated ditches', which he dates before the surrounding circular ditches. He does not consider them to have been constructed to enclose interments.

Three other non-circular ditches measured 19×6.5 , $10? \times 5$ and 11×6 m respectively. The first one touched the circular ditches at two places. It was situated in the western part of the urnfield, where the only deliberately roughened urns in this cemetery had been buried, thus dating this part to HaC/D. Eccentric to the second monument, a small pot with two handles was found. This long ditch intersected with a circular one without a central interment.

Knegsel: The urnfield at Knegsel, west of Eindhoven (Prov. Noord-Brabant) was investigated in 1934 by W. C. Braat (Braat, 1936). In addition to a great number of circular ditches, about 13 oval ditches were brought to light. Their length varies between 15 and 22 m and their width between 4 and 6 m. In the northwest part of the urnfield they are grouped together, elsewhere they lie separately. Adjacent to the oval ditches, circular ditches have been constructed, which seem to intersect the former at a few places. Remnants of two (three?) single or multiple postcircles represent the oldest monuments in this cemetery. They underlie the urnfield ditches. At one place, one of the centres of an oval ditch coincides with the centres of a postcircle and a circular ditch. The chronological sequence of these three monuments cannot be reconstructed with certainty. In another oval ditch, an urn was discovered on the long axis. An interesting monument is a third oval ditch. Parallel to the inside of this ditch, which measures 19×5 m, posts have been placed.

Braat reconstructed this lay-out as a 'hut', with the roof resting on the posts, while the ditch could have served as foundation trench for a palisade. As to the meaning of this and the other 'long, oval beds' Braat does not give an indication. The majority of the urns excavated in this urnfield belongs to the HaB period.

Veldhoven: In 1948 excavations uncovered part of an urnfield near Veldhoven, southwest of Eindhoven (Prov. Noord-Brabant). Here also several elongated ditches were mapped (Modderman, 1966). Two single enclosures measured $(26?) \times 3$ m and 36×6 m, respectively. In two places, removed from the axis, the first enclosure had some sherds and the fragments of a small pot. In the second enclosure two small pits with cremated bone were discovered on the axis. Four or five enclosures were grouped adjacent to each other. They resemble very much the Goirle type of long ditches. As the rounded ends of the ditches were found only in the northeast, their length must have been over 38 m. The average width was 4-5 m. Cremated bone lay inside the enclosures only in one spot. Both against the single and the multiple systems of long ditches, circular ditches had been constructed. Small disturbances in the centres of these circles indicated, that the interments had been collected previous to the excavation. Sherds with *Kerbschnitt* decoration date at least part of this urnfield in the HaB period. The pollen-content of the long ditches indicated an agricultural use for the enclosures. H. T. Waterbolk dated them to the Iron Age. He thought it unlikely, that they were older than a few centuries B.C. (Waterbolk, 1954).²

Sittard: During the excavations of the Band-ceramic settlement at Sittard (Prov. Limburg) in 1953/54, P. J. R. Modderman discovered an 'elongated oval ditch' of 6×13 m. In its long axis there was an urn with cremated bones and a small pit with cremated bones (Modderman,

2. Dr. W. van Zeist at Groningen recently informed us that he now prefers a dating between 1000 and 500 B.C. for the Veldhoven ditches. This date places the ditches both at Veldhoven and at Goirle in the same period.

1958/59). This monument was described under the heading 'Non-bandceramic antiquities'.

Toterfout/Halve Mijl: In his study on the barrows in the 'Eight Beatitudes', south of Eindhoven, W. Glasbergen describes an oval monument in connection with barrow 22A (Glasbergen, 1954). This barrow had been surrounded by a double postcircle, which Glasbergen dates to Early or Middle Bronze Age, and certainly before the Iron Age. The northern long ditch of the east/west orientated oval, cut through the postcircle and the southern ditch touched it. The plan does not give the chronological relation between the barrow and the oval ditch. This oval ditch (14.5×4 m) was interpreted by Glasbergen as 'the boundary of a prehistoric arable field of the "ridge" type'. 'The field must thus have been later than the postcircle'. Part of a second ditch was found nearby.

Somerén: On a camping ground near Someren, southeast of Eindhoven (Prov. Noord-Brabant), P. J. R. Modderman made a preliminary excavation in 1953 (Modderman, 1953). From the centre of several circular ditches came a number of urns, both with smooth and with deliberately roughened surfaces. The plan shows one rectangular ditch, 8×2.5 m. On its long axis near the southeastern end, an urn with intentionally roughened surface had been buried; near the opposite end is a posthole.

Valkenswaard: An urnfield south of Eindhoven, at Valkenswaard (Prov. Noord-Brabant) was excavated by H. Brunsting in 1954 (publication in press). Circular ditches lay against elongated ditch systems. In a 34 m long oval enclosure, the ditches widened near one of the ends before turning toward each other, the result being a kind of elongated keyhole. Sherds from the filling of this monument are of a HaB date. They represent half of a bowl. Two other long ditch systems measured 36×5.5 and 18×4 m. There are no finds datable to them. In the northern part of the excavated area, fragments of long ditches were discovered. The Valkenswaard urnfield came into existence during HaB, and continued into HaC/D.

Laagspul: South of Tilburg (Prov. Noord-Brabant) the village of Hilvarenbeek is situated. This municipality includes the hamlet Laagspul, where part of an urnfield was investigated in 1957 by P. J. R. Modderman (Modderman, 1957/58). Of an elongated enclosure only a part was unearthed. Against the long ditch circular ones had been laid out. Their fillings provided fragments of pots, among which were three small cups with handle. Only a half of two of these cups was present. The sherds of a so-called *Lappenschale* (see e.g. Kersten, 1948), together with the other pottery dated this urnfield to HaC/D, according to Modderman. This dating was then supported by a C_{14} measurement of charcoal from the filling of the long ditch, giving at that time 650 ± 60 B.C. As was expressed before (Verwers, 1966b) a relation may be present between the handled cups and the German *Henkeltasse* of HaB date. The same period is indicated by the latest result of the C_{14} dating mentioned above: 900 ± 50 B.C. (GrN-1764). The *Lappenschale* does not contradict this, for although certainly used during HaC/D, it possibly came into existence before.

Veldhoven: The plan of the so-called '100th Barrow' near Veldhoven, southwest of Eindhoven (Prov. Noord-Brabant), reveals two rectangular ditches, that must have been dug prior to the construction of this barrow (Modderman, 1966). The enclosures lie against each other, the measurements are 9.5×5 m for one of them, the other being too fragmentary to be delineated. The former had a pit with cremated bone in its centre.

Bennekom: Although not situated in the southern Netherlands, we mention the group of four parallel elongated enclosures at Bennekom (Prov. Gelderland). They were discovered during the excavation of an urnfield with circular ditches (Bursch, 1933). Their length and width were 23 and 2-3 m, respectively. It is interesting that their length was determined by the presence of patches with gravel at both ends of the enclosures. The ditches are not dated. Bursch assigned to these 'long beds' a roll in the cult of the dead.

Berghem: East of 's-Hertogenbosch (Prov. Noord-Brabant) in the hamlet 'Zevenbergen' near Berghem, a small tumulus was excavated (Verwers, 1966a). Below the circular tumulus an oval ditch with parallel rows of postholes was revealed, measuring about 25×6 m. On its long axis fragments of bone and of sherds with incised decoration were discovered. Whether this find was still in its original position was uncertain. As neither the tumulus nor the oval monument offered any further finds, dating was impossible. (Preliminary C_{14} dating: 580 ± 50).

Classification and dating

The 15 excavations mentioned above provided over 30 single or multiple systems of non-circular ditches. Leaving aside the keyhole shaped monument at Valkenswaard, the ditches all had an oval shape, which varied in length and width. On the average, the short monuments have a greater width than the long ones. This tendency is also indicated by the index of length : width. Indices between 2 and 4, (eleven examples extant) all belong to ditches shorter than 23 m. The average length in this group is 15.6 m, the average width 5.5 m. With one exception the remaining non-circular ditches (eight examples) have indices of 8 and up. Their length is over 30 m with an average of 42 m. The average width in this group is 3.8 m.³ Except for one at Veldhoven (index 6), there are no monuments known to us with indices between 4 and 8. On morphological grounds we can thus distinguish two groups: long and narrow ditches and short and wide ditches. The first group includes several examples with multiple systems. Although its total length is unknown, the multiple ditch system at Vlodrop may be included in this group because of its similarity with the long ditches at Goirle. Single monuments are the rule in the second group (with the exception of the two small rectangular ditches below the '100th Barrow' at Veldhoven and a few oval ditches at Knegsel).

Dated non-circular monuments are very few in number. In the 'long and narrow' group the 3. The length of the ditches at Bennekom (23 m) seemed to be determined by soil conditions.

ditches at Goirle received C_{14} dates of 870 ± 50 and 830 ± 50 . These facts and the archaeological evidence indicate these ditches to be of HaB date. So are the ditches at Vlodrop and the keyhole shaped ditch at Valkenswaard. The Laagspul ditch fragment was C_{14} dated to 900 ± 60 B.C., placing it also in HaB. At Best the ditches belonging to the long group were surrounded by the HaB part of the urnfield. At De Hamert two single ditches of the long type are undated but were discovered in a HaC/D urnfield. The ditches at Veldhoven and Bennekom are undated. From this evidence it may be concluded that the 'long and narrow' group of ditches mainly belongs to HaB but might include HaC/D examples. With the exception of the keyhole shaped ditch at Valkenswaard, all ditches in this group may be described as Long Ditches of Goirle type (Verwers, 1966b).

The 'short and wide' group numbers three dated monuments. Those at Riethoven and Goirle were constructed in HaB. The small rectangle at Someren belongs to HaC/D. At Best one of the ditches belonging to this group was surrounded by circular ditches of HaC/D date. The remaining examples of this group: Knegsel, Sittard, Toterfout, Veldhoven and Berghem are undated. These scanty facts seem to indicate that ditches of the 'short and wide' group were used during both HaB and HaC/D date. For this type of non-circular ditches, the name 'Long Ditches of Riethoven type' is suggested. (*Lange greppels van het type Riethoven; Langgräben Typus Riethoven*).

Interpretation

The division given above is based on purely morphological data. We now want to consider the possibility that it has more than a mere descriptive significance. On most plans of urnfields, it is clear that the monuments of both groups were constructed in close relation to the urnfield tumuli with circular ditches. The fact that the long and the circular ditches frequently touch one another, but never intersect, indicates a contemporaneity between both ditches. The relation between circular ditches and urn burials is evident.

In most of the Long Ditches of Riethoven type an interment was discovered on the long axis. Sometimes this was an urn with cremated bone, while in a few cases only cremated bone was found. This suggests that the Riethoven ditches are the last remnants of burial monuments. They differ from the circular tumuli only in shape, not in time nor function.

The oval monument at Berghem first brought into this group of Riethoven ditches, enclosures whereby rows of posts took the place of the ditch. Comparable to this is the oval monument discovered in the urnfield at Haps (Prov. Noord-Brabant, unpublished). There two rows of post-holes formed an oval enclosure of 20×6 m. On the long axis an urn of the HaC/D period had been placed, which might date the monument. Mention should also be made of the elongated enclosure bordered by postholes that was discovered in the urnfield 'De Roosen' at Neerpelt (Belgium). Fifty four posts, set in an oval of 36×3.6 m, enclosed an area with a central cremated interment contained in an urn with deliberately roughened surface (Beex and Roosens, 1961). This monument is an interesting combination of phenomena, related both to the ditches of Riethoven and of Goirle type.

The Long Ditches of Goirle type did not receive a central interment. With one exception, at Vlodrop, their elongated enclosures are empty. Beyond doubt however is their contemporaneity with and their relation to the urnfields. This suggested to A. E. Remouchamps that they could have had a cult function. In this he followed an hypothesis of J. H. Holwerda, who compared his single long ditches at Rijssen (Prov. Overijssel) with historical temples in Iceland (Holwerda, 1925). Worth mentioning is H. T. Waterbolk's remark, in his discussion on the Veldhoven long ditches, that 'lange bedden' were to be dated to the Iron Age, 'as appears from their relation to the urnfields' (Waterbolk, 1954). He designated the enclosures at Veldhoven as agricultural fields but did not comment on the way in which they were contemporary with it (see footnote 2).

The agricultural nature of the long ditches has also been suggested by A. E. van Giffen in his article on the excavation on the 'Noordse

Veld' near Zeijen (Prov. Drente) (van Giffen, 1949). There, in the middle of a cemetery with tumuli of Neolithic, Bronze Age, and Iron Age date, groups of parallel, elongated banks were situated. Their length varied between 30 and 60 m, their width between 3 and 5 m. They were bordered by ditches. Sections showed that the banks consisted of several layers, suggesting that at times fresh soil, taken from the ditches, had been brought on to the banks. These fields of a type resembling *Hochäcker* were dated by pollen analysis to the Bronze and Iron Ages (Waterbolk, 1949). They were in a few cases covered by tumuli of the *Brandhügel* type, that could be dated to the 4th or 3rd century B.C.⁴ The presented facts indicate that at Zeijen ditch systems similar to the Long Ditches of Goirle type are to be interpreted as agricultural fields. Moreover these fields were cultivated during a period, when the area in the immediate surroundings was in use as a cemetery. Bordering this cemetery in the east and southeast, an extensive system of Celtic Fields was discovered. Archaeological evidence and pollen analysis agree that the origin of these fields was in the Bronze Age. The fields may have been in use for a long time, according to Waterbolk. This offers the possibility, that the Celtic Fields and the *Hochäcker* at Zeijen are contemporary, making the economic value of the *Hochäcker* rather dubious.

Phenomena that are comparable to the situation at the Noordse Veld at Zeijen have been discovered in West-Germany (Pätzold, 1960). At Pestrup (Kr. Oldenburg), an extensive cemetery with Iron Age tumuli included several elongated banks, some in groups and others lying isolated. Excavations proved one of these banks to have been constructed in relation to a tumulus and after that tumulus had been erected. The funeral pyre below the tumulus contained two urns which can be dated around 400 B.C. This date then also applies to the bank. A C_{14} measurement gave 2440 ± 70 , i.e. 490 ± 70 B.C.

4. An older data, up to 600 B.C., would be possible for this type of tumulus which, according to Waterbolk, is related to the Zeyener Culture, which covers approximately the period of 600-400 B.C. (Waterbolk, 1962).

(GrN-3542). Old arable soil indicated this bank to be a prehistoric field.

Near Einen (Kr. Vechta, Oldenburg), five elongated banks were situated in the middle of a cemetery with 58 tumuli (Pätzold, 1960). Three banks lay adjacent to each other, two lay singly. Both single banks seemed at one end to be connected with a tumulus. This connection was at one place investigated. The section showed the tumulus to have been constructed in two stages. The first tumulus covered a funeral pyre and was dated to the 6th century B.C. The western end of the elongated bank lay on top of the side of the tumulus, thus being younger than this monument. The oldest tumulus and part of the bank were then covered by another tumulus, which itself could not be dated. A *terminus ante quem* for this second tumulus is provided by three urns that were finally buried in its sides. The oldest pot belonged to the Jastorf-b period, that covers the 5th century B.C. From this it follows that the bank was constructed between 600 and 400 B.C. This date is supported by a C_{14} measurement of charcoal from below the oldest tumulus, giving 2660 ± 60 , i.e. 710 ± 60 B.C. (GrN-4067). Excavation of part of the bank showed it to consist of ancient arable soil. The surrounding tumuli can also be dated to the Early Iron Age. Important is the presence of a large group of elongated banks, close to one another and immediately south of the cemetery. Here again we come upon the peculiar combination of an extensive agricultural area outside and a few fields inside the cemetery. Pätzold properly considered the cultivation of fields for economic purposes in the middle of this sacred area to be inconceivable. Taking into account the contemporaneity of tumuli and fields, he wondered whether the cultivation could have been carried out in relation with the burial ritual.

The evidence given above can be summarized by stating that agricultural fields were cultivated in the middle of cemeteries in the Late Bronze and Early Iron Age. For some fields their contemporaneity with tumuli was proved.

Returning to the Long Ditches of Goirle type in the southern Netherlands, we are again struck

by the similarity in shape of these ditch systems and the *Hochäcker*-like fields just described. Also the Goirle type ditches are supposed to have surrounded artificial banks. It were no burial monuments. At Bennekom their length seemed to be related to the soil conditions. Pollen analysis suggested an agricultural use for the enclosures at Veldhoven. In several cases, like Goirle, Veldhoven and Laagspul the long ditches were proved to be contemporaneous with and related to the circular burial monuments.

We therefore suggest that the Long Ditches of Goirle type enclosed arable fields of *Hochäcker* type. Their cultivation had a ritual purpose and was connected with the cult of the dead. Exact determination of this cult is impossible but the existence of the custom of ritual ploughing and sowing should be remembered.⁵ The crop grown on these fields may have supplied the food for funeral meals and may also have been used as offerings. From the datings available it follows that the HaB period mainly saw the practice of the custom of cultivating fields for sacred purposes.

Having divided the non-circular monuments in the southern Dutch urnfields, the possibility of a relation between the two groups should be considered. This relation could be based on their corresponding non-circular shape, which clearly marks them as exceptions to the circular ditches. Opposite this relation in shape however, stands the difference in function between the two groups. To us this difference is far more fundamental than the resemblance in shape, which moreover is only a distant resemblance. Therefore it seems impossible to derive one group from the other. An argument against this derivation also is their contemporaneity. Both the Long Ditches of Goirle and of Riethoven type were used in the southern Netherlands during the HaB period.⁶

5. Whether the presence of ploughmarks below tumuli should be interpreted as indications of ritual ploughing, seems questionable. Using these marks as support for the hypothesis of ritual cultivation of *Hochäcker*-like banks in cemeteries, is therefore debatable. However there is other evidence for the existence of ritual ploughing (Pätzold, 1960; van der Poel, 1961).

6. Mr. R. R. Newell kindly corrected the English manuscript, for which we are very grateful.

POSTSCRIPT

The soil samples from the long ditches at Goirle have not yet been analysed. We therefore intend to deal with the palynological evidence presented by non-circular monuments at a later date.

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