Berichten van de Rijksdienst voor het Oudheidkundig Bodemonderzoek

jaargang 40, 1990

AFKORTINGEN/ABBREVIATIONS

AE	*L'Année Epigraphique*
AOO	all-over-ornamented beaker
APL	*Analecta Praehistorica Leidensia*
ARA	Algemeen Rijksarchief, 's-Gravenhage
ARCHIS	Archeologisch Informatie Systeem, Amersfoort
AWN	Archeologische Werkgemeenschap voor Nederland
BAI	Biologisch-Archaeologisch Instituut, Groningen
BAR	British Archaeological Reports
BJ	*Bonner Jahrbücher*
B(K)NOB	*Bulletin van de(n) (Koninklijke) Nederlands(ch)e(n) Oudheidkundige(n) Bond*
BRGK	*Bericht der Römisch-Germanischen Kommission des Deutschen Archäologischen Instituts*
BROB	*Berichten van de Rijksdienst voor het Oudheidkundig Bodemonderzoek*
CIL	*Corpus Inscriptionum Latinarum*
CIO	Centrum voor Isotopen Onderzoek, Groningen
CUT	Colonia Ulpia Traiana
DKS	Drakestein phase (of *HVS*)
EGK	Enkeltgravskultur (single grave culture)
FM	Fries Museum, Leeuwarden
GAA	Gemeente Archief Alkmaar
GrN	laboratory code CIO
HB	Hatzum-Boomborg pottery
Hv	laboratory code Niedersächsisches Landesamt für Bodenforschung, Hannover
HVS	Hilversum culture
IPL	Instituut voor Prehistorie Leiden
IPP	Instituut voor Prae- en Protohistorische Archeologie Albert Egges van Giffen, Amsterdam
JROB	*Jaarverslag van de ROB*
JVT	*Jaarverslag van de Vereniging voor Terpenonderzoek*
KPK	Koninklijk Penningkabinet, Leiden
LL. M	Master of Laws
LRK	Leen- en Registerkamer
Med. RGD	*Mededelingen van de Rijks Geologische Dienst*
MN	Middle Neolithic
NAFN	*Neue Ausgrabungen und Forschungen in Niedersachsen*
(N)AGN	*(Nieuwe) Algemene Geschiedenis der Nederlanden*
NAP	(above) Normaal Amsterdams Peil (Dutch Datum Level)
–NAP	under Normaal Amsterdams Peil (Dutch Datum Level)
NAR	Nederlandse Archeologische Rapporten
NDV	*Nieuwe Drents(ch)e Volksalmanak*
NKNOB	*Nieuwsbulletin van de Koninklijke Nederlandse Oudheidkundige Bond*
NRC	*Nieuwe Rotterdamse Courant Algemeen Handelsblad*
Handelsblad	*Handelsblad* (Dutch daily newspaper)
NWO	Nederlandse Organisatie voor Wetenschappelijk Onderzoek, 's-Gravenhage
OHZ	*Oorkondenboek van Holland en Zeeland*
OML	*Oudheidkundige Mededе(e)lingen uit het Rijksmuseum van Oudheden te Leiden*
OWA	Openbare Werken Alkmaar
PPS	*Proceedings of the Prehistoric Society*
PZ	*Praehistorische Zeitschrift*
RAU	Rijks Archief Utrecht
RCRF	Rei Cretariae Romanae Fautores
RCRFA	*Rei Cretariae Romanae Fautorum Acta*
RCRFC	*Rei Cretariae Romanae Fautorum Communicationes*
RE	*Pauly's Realencyclopädie der classischen Altertumswissenschaft*
RGD	Rijks Geologische Dienst, Haarlem
RMO	Rijksmuseum van Oudheden, Leiden
ROB	Rijksdienst voor het Oudheidkundig Bodemonderzoek, Amersfoort
RW	Ruinen-Wommels pottery
SJ	*Saalburg-Jahrbuch*
TRB	Trichterbecher Kultur (funnel beaker culture)
TZ	*Trierer Zeitschrift*
UVA	Universiteit van Amsterdam
VU	Vrije Universiteit, Amsterdam
WKD	wikkeldraad (barbed wire) pottery

NOOT/NOTE

Het aardewerk is op schaal 1:4 afgebeeld, tenzij anders aangegeven; de profielen van het handgevormde aardewerk zijn wit; die van gedraaid aardewerk zijn zwart getekend.
Unless otherwise stated, the pottery is drawn to a scale of 1:4; the profiles of handmade pottery are represented in white, those of wheelmade pottery in black.

ROB

Berichten van de Rijksdienst voor het Oudheidkundig Bodemonderzoek

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for Archeological Investigations
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jaargang 40, 1990

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Preface

In this year, 1992, the publication of volume 40 of the 'Berichten van de Rijksdienst voor het Oudheidkundig Bodemonderzoek' coincides with the 45th anniversary of the State Service.
This is not a volume with contributions especially commissioned for the occasion: as usual, it contains an overview of recent work in Dutch archaeology. That is appropiate for the occasion since, after all, a 45th anniversary is not a true landmark.
However, the coincidence is there, and such round numbers invite reflection, not about the past but especially about the future. In another five years, the ROB will celebrate its 50th anniversary. For people, that is an age at which it is customary to start worrying about getting old; for institutes it is an opportunity to boast about what has been achieved. So we can safely postpone reflections on the past until the ROB reaches that landmark and turn to the future: where do we stand and where do we want to be five years from now?
This year will probably be of special importance for the ROB, for Dutch archaeology in general, and even for archaeology at the European level. In January, on Malta, many countries including the Netherlands signed the revised Convention for the Protection of the Archaeological Heritage, prepared by the Council of Europe. Ratification of this convention, and its subsequent implementation in national law, will greatly improve the basis for archaeological heritage management and of archaeological research, which is a vital part of that task. The convention should be implemented as soon as possible, because the protection and research of monuments and sites can no longer do without its provisions in the face of the relentless pressure on available space and the ever- increasing use of our soil. At the moment, there is every reason to believe that implementation can be achieved in the Netherlands, as has already been done in several other countries.
International co-operation is another relevant topic. This year will see the birth of the European Association of Archaeologists, to provide a truly European network for all aspects of archaeological work and to promote archaeological interests at a European level. The ROB will, through its own archaeologists, participate in that network as well as in the increasing number of bi- and multilateral projects which arise from various initiatives. It is gratifying to see that this collaboration involves both universities and institutes for archaeological heritage management. In the Netherlands, this has long been established practice, as is witnessed by the contents of this and previous volumes of the 'Berichten'. We mean to keep it that way.
There are several other developments which will influence the position and character of the ROB in the coming years. One is the need to invest more of the institute's resources in the preventive part of heritage management: the recording and protecting of sites. If those resources are not increased, this may lead to, at least a temporary, reduction of the curative – or, rather, the terminal – part of archaeological heritage management, which are the rescue excavations and associated research. This is a choice that has to be made, because we need to use every single opportunity offered by existing as well as new laws or regulations and technological and methodological advances. It is, however, at the same time a choice which should not have to be made, because it may lead to a serious setback in the long-term research projects which have been set up in various regions where a high rate of destruction of the landscape coincides with a high archaeological potential.
Fortunately, the prospects for an increase of resources for archaeology are not bleak. In addition to the opportunities already mentioned, the Minister of Culture has given the ROB the means to start a comprehensive backlog-programme which will enable the analysis and publication of many excavations that have remained in stor-

age far too long. Not all of these will be published in the 'Berichten' because some reports will undoubtedly turn into monographs. That means we will probably not be able to make up for the first years of the institute's existence (when the series had not yet started) and celebrate our 50th anniversary with the 50th volume. But in any case many results of the considerable investments from the last decades will finally become available, and that is much more important!

W.J.H. Willems
Director

We look forward to the next five years with some fears on the one hand but with high hopes and confidence on the other, and with the certainty that a considerable increase in the published results of our work is within reach. For archaeologists, that is a deeply gratifying prospect.

Landscape and Habitation History of 'De Horden' at Wijk bij Duurstede: an Overview

Keywords: habitation history, reconstruction of paleolandscapes, Holocene geology, fluvial sedimentation, point bar, excavation, settlement, radiocarbon dates, Bronze Age, Iron Age, Roman Period, De Horden, Wijk bij Duurstede, Province of Utrecht, central part of the Dutch river area, the Netherlands; 25 references.

INTRODUCTION

In the spring of 1977, the ROB began a large-scale archaeological investigation on an area covered by orchards approximately 1 km west of the centre of Wijk bij Duurstede (fig. 1b). The name of the excavation, De Horden, is based on an old field name which was used for the area's town development scheme. The reason for and original aims of the investigation were presented in an article by Van der Voort, Poelman and Van Es in *BROB* 29 (1979).[1] Even then, the first results pointed to a very lengthy period of habitation at De Horden. The ten seasons of excavation which have taken place since 1977 indicate that the habitation history of this small area of the Kromme Rijn region spanned a period of more than 4000 years. In the past few years, several detailed studies of various aspects of the investigation at De Horden have appeared.[2] But until now, there has been no summarizing overview of its rather complex habitation history.

As the investigation at De Horden progressed, it became increasingly clear that the area's prolonged habitation was not continuous. Several periods of rather intensive use of the terrain were succeeded by longer or shorter periods with no trace of human activity. Mostly the factors which were instrumental in the settling or the departure of a group of people in the past remain concealed from the investigator. Fortunately, at archaeological sites which lie in an area with a dynamic landscape history, such as the river area, it is possible to go somewhat deeper into this problem. That is, it can be expected that people who lived there must have reacted to the results of the frequently changing fluvial activity. Because De Horden is a good example of such a site, we have chosen an approach which attempts to explore the extent to which a connection between the geological development and the settlement history of the site exists. Undoubtedly, there are other factors which have played a role in the colonizing and abandonment of De Horden, and the authors are conscious in this regard that a somewhat one-sided image is being sketched. As the investigation progresses, attention must certainly be paid to possible indications of these other factors. Nevertheless, the role of fluvial activity in the fluctuating occupation on a slowly drowning stream ridge, as was the case at De Horden, cannot easily be overestimated.

THE INVESTIGATION

The area of De Horden that has been completely investigated lies between the Wijkersloot and the Hordenweg and covers approximately 14 ha (fig. 1b). For the excavation, trenches were used which measured 40×20 m following an almost east-west orientation. The four vertical sides of each trench functioned as section-walls. The systematic spacing of the trenches across the site meant that the trench walls could later be assembled into north-south and east-west oriented cross-sections of the site, sometimes hundreds of metres long.

Furthermore, from 1983 to 1985, as a consequence of the first investigation by Van der Voort in 1978, a grid of boreholes was made in the vicinity of the excavation to provide a clearer idea of the position of the settle-

1 Van der Voort, Poelman & Van Es 1979, 433 ff.

2 See reference list.

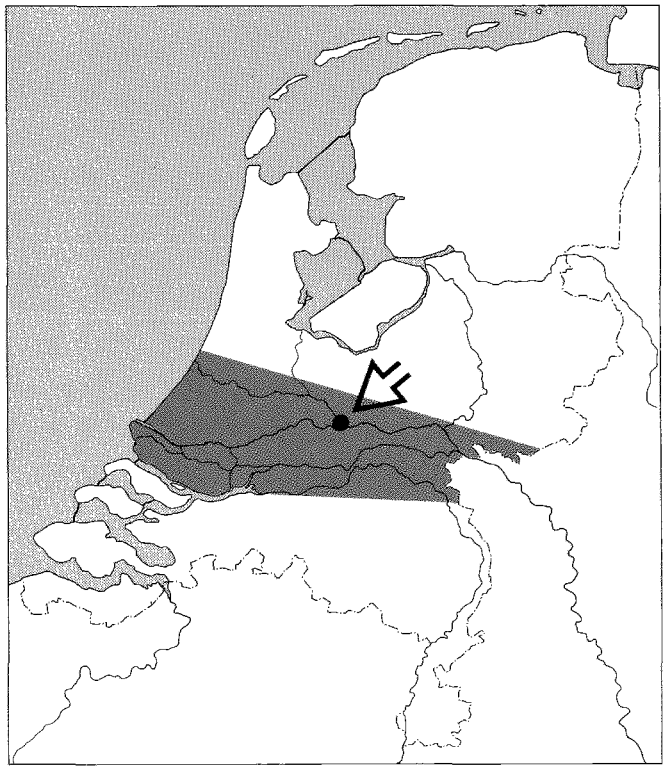


Figure 1a The location of Wijk bij Duurstede (shown by the arrow) within the central part of the Dutch river area (in grey).

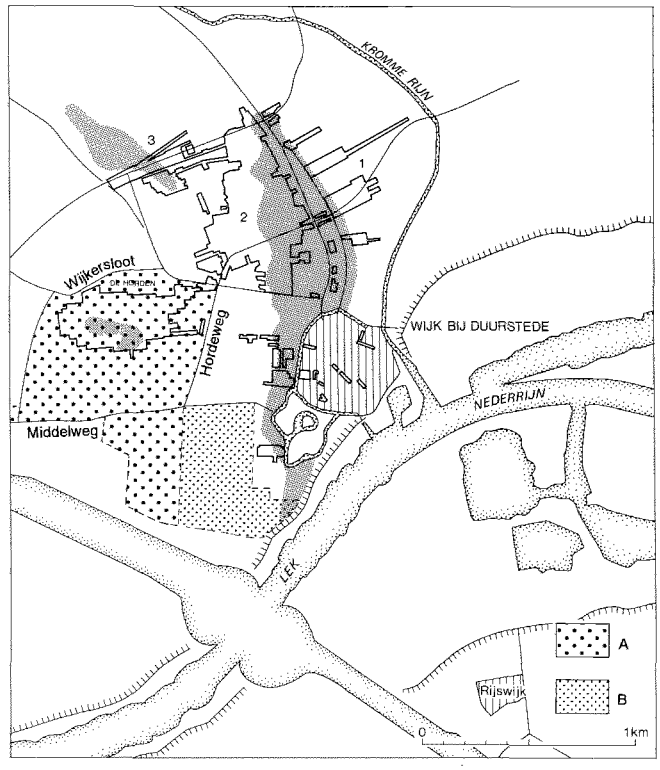


Figure 1b Archaeological and physical-geographical research in the Wijk bij Duurstede area. Represented are the phosphate concentrations of ancient settlement soils (in grey); the contour lines of the areas excavated before 1988 (1 Dorestad-Harbour, 2 Dorestad-De Heul, 3 Trekweg/De Geer); the primary study area (A); and the area with supplementary borings (B) on De Horden.

ment site within the paleolandscape.[3] More than 320 boreholes were made to a maximum depth of 7 m. The advancing new housing development determined the limits of the investigation, which meant that intense investigation could only be undertaken in the still-rural area to the south of the Middelweg, the eastern part in particular (see fig. 1b).

A third investigation which offered useful data for the reconstruction of the paleolandscape took place in the winter of 1983–4. In order to determine how far the habitation of De Horden extended beyond what then were the northern and eastern borders of the excavation, 350 small test pits were dug every 20 m with a small machine (fig. 2). A vertical cross-section was drawn for each of the pits and the excavated soil examined for finds. The oldest finds from the excavation (see the following paragraph, period 0) originate from these test pits. The development of the landscape as sketched below, and the accompanying maps, are based on the combination of data from the cross-sections of the excavation, the test pits, and the borehole investigation.

THE RECONSTRUCTION OF THE PALEOLANDSCAPES AND THE CORRESPONDING HABITATION

The Rhine and Maas rivers are by far the most important waterways of the Netherlands. The east-west zone in the central Netherlands, covered by a broad plain through which the major branches of the Rhine and

3 See Van der Voort, Poelman & Van Es 1979, 439 ff.

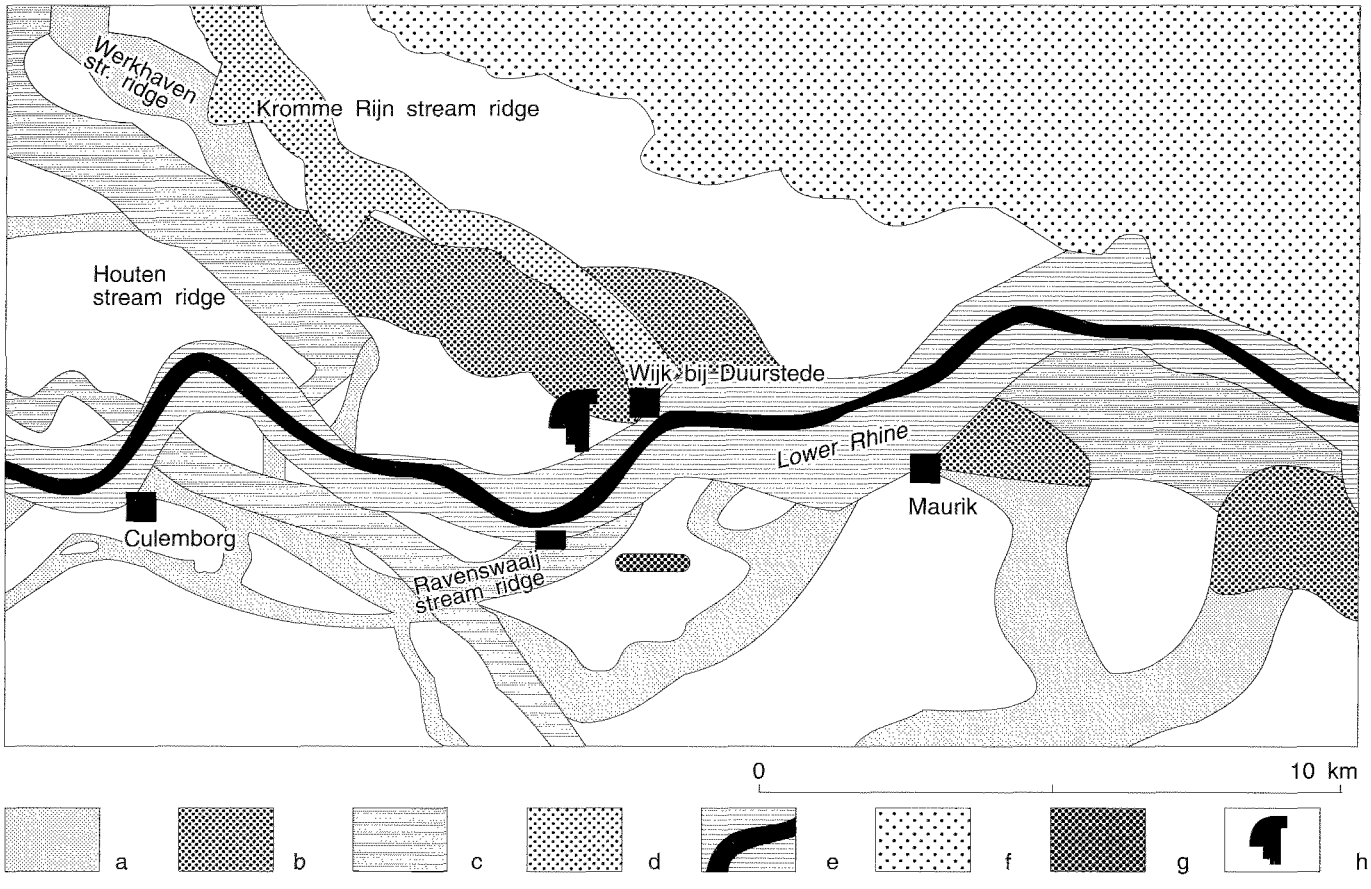


Figure 1c Simplified geological map of the Wijk bij Duurstede area. Legend: a Atlantic to Early Subboreal stream ridges; b Atlantic to Early Subatlantic stream ridges; c Subboreal to Early Subatlantic stream ridges; d Subatlantic stream ridges; e recent meander belt with present-day river; f outcropping Pleistocene deposits; g outcropping Late Pleistocene fossil river dune complex (Zandberg); h De Horden study area.

Maas find their way seaward, is therefore known as the Dutch river area (fig. 1a). The river area is built up of extensive Holocene sediments which in the east are mainly mineroclastic and in the west contain important organic layers.

The net development of the Dutch river area during the Holocene has been one of predominant vertical accretion. The Rhine and Maas formed meandering aggrading rivers during much of the Holocene, with several active channels. Along these channels natural levees were being built up, and fluvial basin areas (backswamps) developed in between. The geographical position of channels and basins varied over time due to the occurrence of avulsion and of lateral shifting of the streams. On a schematic map of the stream ridges in the Wijk bij Duurstede area (fig. 1c) the result of this process is pictured. As a result, complex vertical alternations of channel/levee deposits (fossilized under the form of so-called stream ridges) and basin deposits have developed, which at many locations are characteristic of the Holocene fluvial succession.

The eastern part of the Dutch river area is some 15–20 km wide. At the northern side, it is bordered mainly by (Saalian) ice-pushed ridges which rise some 25–75 m above the floodplain area. To the south, the eastern river area is bordered by a more gently north-sloping landscape built up mainly of Pleistocene fluvial deposits.

Figure 2 Wijk bij Duurstede, De Horden: digging test pits with a small machine in the winter of 1983.

In the west the river area gradually widens, and eventually it merges with the coastal plain of the western Netherlands, which consists of Holocene marine, fluvial and organic (peat) deposits.
The subdivision of the river area into a western and an eastern part is also reflected in the lithological composition of the Holocene succession. In the eastern part (the river clay area) the natural levees consist of sand and sandy clay, whereas in the basin areas mainly heavy clay has been deposited. In the western part (the clay and peat area) the natural levees consist mainly of clay, while in the basin areas peat and organic sediment (gyttja) predominate. The area around Wijk bij Duurstede is situated in the eastern part of the river area in which mineroclastic deposition has prevailed.
When we look at the section of a borehole made at a random site in the eastern part of the Dutch river area, it appears that the Holocene sedimentation mostly followed a more or less intermittent course. Periods with heavy sedimentation alternate with periods of greatly reduced sedimentation. The periods of reduced fluvial activity are usually characterized by the formation of dark bands: vegetation horizons. These vegetation horizons, if they contain sufficient organic material, can be dated with help from the radiocarbon method. This occurred at De Horden with a number of vegetation horizons from the basin area directly to the south of the excavation.[4] On the basis of these radiocarbon dates, the changes in the paleogeography for each habitation period can be determined. The analysis of the build-up of sediments on the site itself facilitates the correlation of the data from the basin with those from the excavation. Figure 3, a north-south section through the studied area, gives an impression of the complex build-up of the subsoil of De Horden. The various zones within this section will be discussed in the following text.
In total, five main periods of landscape development and habitation have been differentiated:
Period 0 formation of the stream ridge, oldest artefacts (*c.* 5000–*c.* 2650 cal. BC);
Period 1 formation of the oldest vegetation horizons on top of the stream ridge, Bronze Age habitation (*c.* 2650–*c.* 1050 cal. BC);
Period 2 sedimentation of Horden deposits and subsequent habitation in the Early Iron Age (*c.* 1050–*c.* 200 cal. BC);
Period 3 sedimentation of Middle Iron Age deposits and subsequent habitation in the Late Iron Age and the Roman Period (*c.* 200 cal. BC–cal. AD *c.* 500);
Period 4 increasing fluvial activity of and sedimentation by the Lek, occasional human presence in the Early Middle Ages (cal. AD *c.* 500–AD 1400).

The variations in fluvial activity in connection with the onset of human activity at De Horden are summarized at the end of this article in figure 12, while the ^{14}C figures for archaeological material used in the text are summarized in figure 13.

Period 0 (5000–2650 cal. BC)
From the available literature, it appears that the Holocene sedimentation from the Rhine and its forerunners in the vicinity of Wijk bij Duurstede began around 7000 BP.[5] At first there appears to have been some clay sedimentation under rather steady conditions, but at a certain point a major water course developed in the vicinity of Wijk bij Duurstede. The end phase of this heightened fluvial activity occurred possibly just before

4 This method of dating vegetation horizons brings with it certain difficulties. Not only because the proportion of organic material is often extremely low, but also because the sediment can contain old, re-worked material (see Schoute 1984, 109 ff.). For an account of the radiocarbon dating employed here, see Steenbeek 1990. For the calibration curve, see Van der Plicht & Mook 1988.
5 Berendsen 1982, 59 ff.

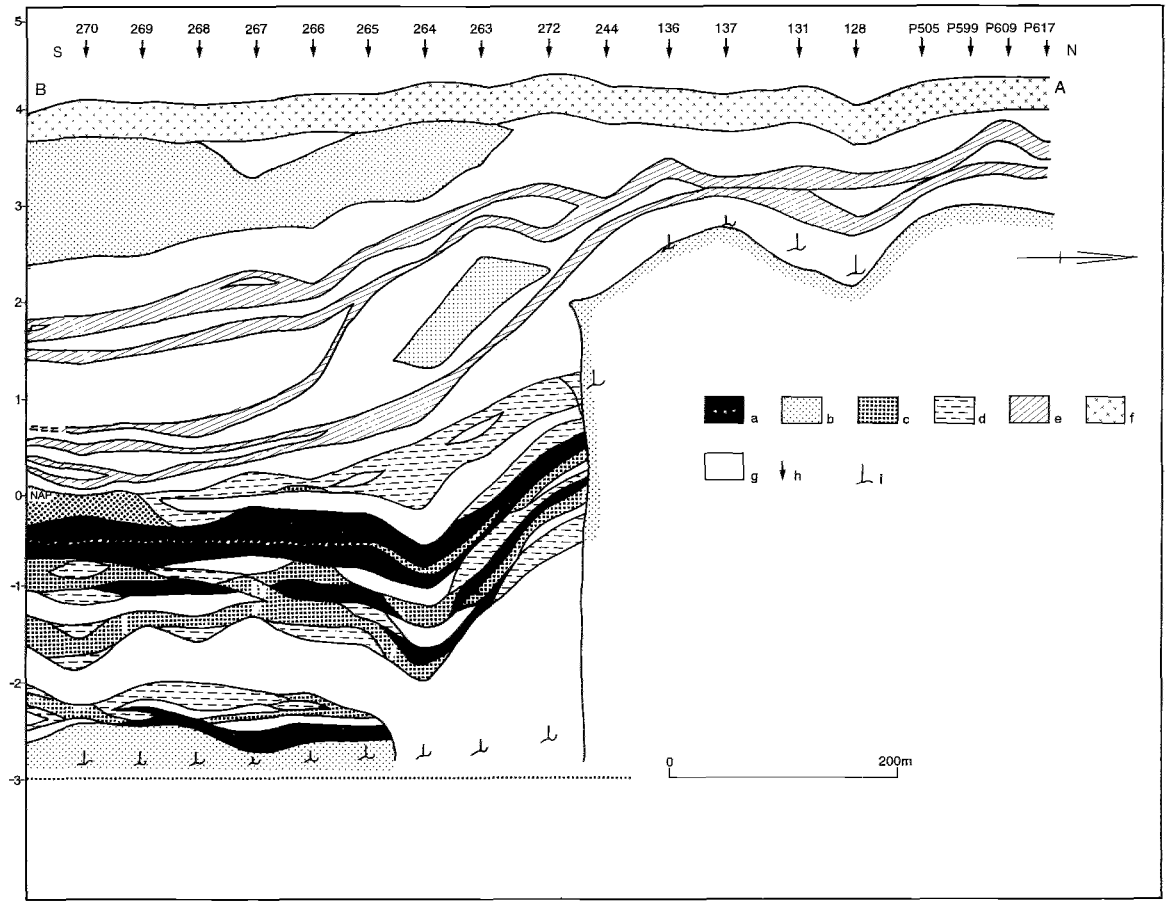


Figure 3 Wijk bij Duurstede, De Horden: North-South cross-section through the primary study area. The exact position of this section is represented in fig. 4. Legend: a clayey peat with 'black layer'; b sand and sandy clay; c peaty clay; d humic clay; e vegetation horizon; f top soil; g fluvial clay; h number of boring or excavation trench (P); i maximum depth of boring.

4000 cal. BC.[6] To the southeast of the excavation and at a depth of approximately 3 to 4 m below the current surface (which lies at *c.* 4 m NAP), several erosion residuals of the stream ridge formed by this river (called the Middelweg stream ridge) have been found.[7]

In the period directly following the formation of the Middelweg stream ridge the zone of greatest fluvial activity was situated to the north or east of the investigated area. Thus in the basin area to the south of the Middelweg stream ridge peat growth was alternated with some clay sedimentation, while at the highest parts of the ridge a vegetation horizon was formed.

Around 4130 BP (*c.* 2725 cal. BC) the Rhine shifted its course to such an extent that once more the main branch, the Werkhoven river, began to flow through De Horden itself.[8] The stream ridge formed in this period consisted of a meandering belt in the De Horden area in

6 As far as its age is concerned, this stream is comparable to the Benschop fluvial system mentioned by Berendsen (1982, 145 ff.). It is not certain, however, whether the oldest stream ridge in the vicinity of Wijk bij Duurstede belonged to this system as well.

7 This stream ridge is not discussed by Berendsen; see further Steenbeek 1990.

8 Radiocarbon dating of the upper side of the underlying humic clay:
GrN-12164, 4130 ± 40 BP, i.e. 2725 (2821–2632) cal. BP.

Figure 4 Wijk bij Duurstede, De Horden: top of the sand within the Werkhoven deposits and the position of the cross-section of fig. 3.

Legend
a above 3.00 m NAP
b 2.50–3.00 m NAP
c 2.00–2.50 m NAP
d below 2.00 m NAP
e no sand within the Werkhoven deposits
f contour line for 3.25 m NAP
g limit of the archaeological excavation
h cross-section fig. 3

which various geomorphological elements can be recognized. An impression of the depth of the sand deposits of the Werkhoven stream ridge can be seen in figure 4. The pattern of a number of ridges and depressions is recognizable as a point bar. The course of the residual channel passing around the point bar is clearly revealed. To the south of the Middelweg lay a basin area where no sand deposits occurred. The residual channel will long continue as an important element of the landscape. The current height of the top of the Werkhoven deposits is reproduced in figure 5. The point bar and the residual channel emerge in this figure somewhat less clearly. What is striking is the great difference in height between the stream ridge and the basin. It must be noted here that this difference originated largely from the compacting of the basin clay caused by the weight of later deposits. Although the degree of compacting is difficult to calculate, we can still assume that in some places, certainly in the southern part of the investigated area, it amounted to roughly 2 m.

Figure 5 Wijk bij Duurstede, De Horden: top of the Werkhoven deposits and the major features of the Middle Bronze Age settlement.

Legend
a above 3.50 m NAP
b 3.00–3.50 m NAP
c 2.50–3.00 m NAP
d 2.00–2.50 m NAP
e 1.50–2.00 m NAP
f 1.00–1.50 m NAP
g below 1.00 m NAP
h Werkhoven deposits subsequently eroded
i Bronze Age house and Bronze Age ditch
j Bronze age Tumulus
k contour line for 3.25 m NAP
l limit of the archaeological excavation

Flint, bone, and antler material were found in two test pits lying directly to the east of the excavated site at a depth of approximately 2 m below the current surface (which lies at *c.* 4 m NAP). A shafted antler tool and a retouched blade of moraine flint, approximately 5 cm long, are the most significant finds from this place (fig. 6). The artefacts come from the top of a layer of gravel and sand covered by sandy clay. From a sedimentological point of view, this level does not indicate an inactive phase, rather, it points to a gradual decrease of stream velocity. None of the artefacts, however, show signs of water abrasion. The most plausible explanation for the presence of these objects is that they originate from a nearby site which was subsequently eroded by the Werkhoven stream.

The above-mentioned radiocarbon date of *c.* 4130 BP (*c.* 2725 cal. BC) for the top of the humic clay lying under the Werkhoven deposits seems much too young to connect that level with the artefacts. Certainly neither the blade nor the antler tool belong to the cultural period

expected from the results of the radiocarbon dating: the middle phase of the Vlaardingen culture. We ought to turn to the Hazendonk I or Swifterbant cultures (5300 BP), although in the context of those cultures flint blades are also very rare. An even earlier date for the artefacts must not be ruled out.[9] Therefore it is quite possible that the accompanying site lay on the above-described Middelweg stream ridge and that considerable time passed before the site was washed away by the much later Werkhoven river and the artefacts were deposited on a lithostratigraphically later level.

Period 1 (2650–1050 cal. BC)

The formation of the Werkhoven stream ridge was followed by a period of reduced fluvial activity. On the basis of radiocarbon dating we assume that the beginning of this period occurred at around 2650 cal. BC and the end around 1050 cal. BC.[10] After the sedimentation of the Werkhoven deposits described under period 0, the mainstream of the Werkhoven system shifted away from the investigated area. The three thin clay layers which were then laid down in and around De Horden indicate that the new channel lay to the northeast. The combined thickness of these clay layers amounted to not more than a maximum of 40 cm. The approximate dates of the layers are, from bottom to top, around 2300 cal. BC, 2000 cal. BC, and 1600 cal. BC.[11]

Still no traces of human settlement have been established at De Horden with any certainty from the first part of this period of reduced fluvial activity. However, on the basis of a pollen diagram and a few scattered pottery finds from the excavated site Late Neolithic activity on or near De Horden is not to be ruled out.[12]

More finds and traces are known from the last part of period 1. Pottery sherds with barbed-wire decoration

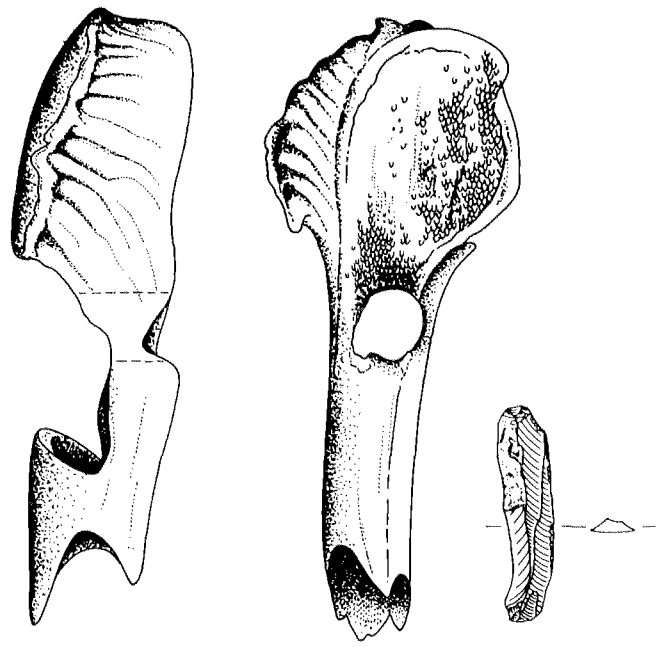


Figure 6 Wijk bij Duurstede, De Horden: antler implement and retouched flint blade. Scale 1:2.

9 Oral statement, Professor L.P. Louwe Kooijmans.

10 Radiocarbon dates for the oldest and youngest vegetation horizons from this period:
GrN-12741, 4080±110 BP, i.e. 2657 (2825–2510) cal. BC;
GrN-12154, 2890±50 BP, i.e. 1085 (1182–1013) cal. BC.
The last dating is based on a sample from the entire layer. The probable actual age for the top is therefore set at *c.* 1050 cal. BC.

11 The corresponding radiocarbon datings are as follows:
Clay layer 1
GrN-12162, 3910±70 BP, i.e. 2400 (2495–2294) cal. BC;
GrN-12739, 3930±260 BP, i.e. 2429 (2768–2100) cal. BC;
probable actual age *c.* 2250 cal. BC.
Clay layer 2
GrN-12160, younger than 3860±90 BP, i.e. 2336 (2452–2200) cal. BC;
probable actual age *c.* 2100 cal. BC.
GrN-12159, 3700±60 BP, i.e. 2107 (2209–2023) cal. BC;
probable actual age *c.* 2000 cal. BC for the base of the above-lying vegetation horizon, just as
GrN-12156, 3740±70 BP, i.e. 2173 (2280–2057) cal. BC;
probable actual age *c.* 2000 cal. BC.
Clay layer 3
younger than the result of the C14-determinations of the samples which were taken from the top of the underlying vegetation horizon:
GrN-12736, 3520±60 BP, i.e. 1852 (1940–1775) cal. BC;
probable actual age *c.* 1750 cal. BC and
GrN-12733, 3520±110 BP, i.e. 1867 (2017–1730) cal. BC;
probable actual age *c.* 1750 cal. BC.
The vegetation horizon lying above produced:
GrN-12735, 3020±70 BP, i.e. 1275 (1368–1156) cal. BC.
For this last determination the total vegetation horizon was sampled. The age of the base of the vegetation horizon falls probably around *c.* 1450 cal. BC. For a second determination of this level, see note 10.

and a number of flint arrowheads are the oldest finds belonging to the vegetation horizon which must have been formed after 2000 cal. BC. A much greater number of finds as well as a few difficult to interpret soil traces can be attributed to the Hilversum culture. Part of this material was published by F. Letterlé.[13] The inactive phase of the river during which this habitation occurred can be dated between 2000 and 1750 cal. BC[14] by means of organic material from the upper and lower deposits of the corresponding vegetation horizons in the basin. These dates are in agreement with radiocarbon dates for Barbed-wire and Hilversum material known from other sites.[15] Rather extensive habitation is associated with the last vegetation horizon from this period in the basin. This has been investigated mainly since 1982 in the eastern part of the excavated area. Finds point to the Drakestein/Laren phase of the Middle Bronze Age. The radiocarbon date for this level, which once again conforms with the archaeological material, is around 1350 cal. BC.[16]

On the basis of the sedimentation history, namely the appearance in some places of clay sediments on the stream ridge itself, indications were obtained of a possible interruption in the Bronze Age habitation. These are endorsed by the archaeological data. The variation in distribution over the excavated area of pottery which belongs to both phases is an example of this. The finds of WKD (barbed-wire) and HVS (Hilversum) pottery are limited roughly to the western half of the excavation. The undecorated DKS (Drakestein) and Laren pottery are confined to the eastern part of the excavation and in most cases can be correlated with the house plans present there. In the DKS and Laren phases, the highest parts of the Werkhoven deposits were always selected as sites for the widely scattered houses. These parts lie at 3.25 m NAP or even higher (fig. 5). The soil traces and finds from the older habitation phase, characterized by WKD and HVS pottery, are concentrated primarily in the lower part of De Horden. There is no evidence of houses, but they could have been situated only on relatively low-lying grounds in the immediate vicinity. All higher grounds have been included in the archaeological investigation. The selection of higher-lying habitation sites at the end of the Middle Bronze Age could have been the consequence of the gradual rise in the (ground)water level in the adjacent basin. This development reflects the contrasting settlement pattern in West-Friesland in the course of the Middle and Late Bronze Age. Farms which during the earliest phase had been built high on the flanks of a sandy ridge between the cultivated land on the ridge peak and the pasture areas in the basin areas later moved down the slopes. After that, due to the rise in the water level, the farms were built on small terps.[17]

Period 2 (1050–200 cal. BC)

After the Middle Bronze Age, sedimentation occurred again in and around De Horden. Probably the deposits are related to the development of a new mainstream in the vicinity of Wijk bij Duurstede: the Houten stream.[18] For the investigated area this means that during this time a number of small branches of the mainstream, crevasses, worked their way through the landscape which had been formed in the previous period. On the Werkhoven stream ridge itself they are connected to the depressions, as was for example the residual channel to the south of the excavation. At the same time, a more important crevasse formed just to the south of the Middelweg. From the crevasses and the mainstream was deposited a layer of sandy clay, the Horden deposits, which entirely covered De Horden. Figure 7 shows the thickness of these deposits and therefore of the course

12 For a discussion of the pollen diagrams from De Horden, see Steenbeek 1990.

13 Letterlé 1981.

14 See note 12 under clay layers 2 and 3. Charcoal from a refuse pit at the settlement site gave the following radiocarbon dating (fig. 13, no. 20):
GrN-15996, 3420 ± 70 BP, i.e. 1738 (1847–1648) cal. BC.

15 For radiocarbon datings (although uncalibrated) for this period, see among others Lanting & Mook 1977, 100–30.

16 Measurement of the C14 samples from this vegetation horizon in its entirety produces the following results:
GrN-12735, 3020 ± 70 BP, i.e. 1275 (1368–1156) cal. BC;
GrN-12154, 2890 ± 50 BP, i.e. 1085 (1182–1013) cal. BC.
The probable age for this level falls between *c.* 1450 and 1050 cal. BC. See further under notes 10 and 11.
Radiocarbon measurements of charcoal taken from post-holes of a few houses and a refuse pit from the Middle Bronze Age settlement have offered the following datings (fig. 13, nos. 1, 2, 11, 12):
GrN-14677, 3060 ± 100 BP, i.e. 1311 (1424–1164) cal. BC;
GrN-14678, 3095 ± 30 BP, i.e. 1343 (1408–1318) cal. BC;
GrN-15987, 3035 ± 45 BP, i.e. 1311 (1372–1241) cal. BC;
GrN-15988, 3050 ± 60 BP, i.e. 1319 (1387–1228) cal. BC.

17 IJzereef 1981, 17.

18 Berendsen 1982, 159 ff.

Figure 7 Wijk bij Duurstede, De Horden: thickness of De Horden deposits.

Legend
a less than 0.50 m
b 0.50–1.00 m
c more than 1.00 m
d limit of the archaeological excavation

of the above-mentioned crevasses. Unfortunately, there are no radiocarbon dates for the vegetation horizon which forms the top of the Horden deposits.[19]
On the top of the Horden deposits traces of habitation have been found from the Early Iron Age (800–500 cal. BC).[20] To afford some insight into the differences in height which then existed, the top of the Horden sediments are reproduced in figure 8. In considering these differences, however, compacting in the basin area to the south of the Middelweg should be taken into account. In the Early Iron Age the houses were once more situated chiefly on the highest part of the terrain. The

19 For the dating of the base of this sediment, compare note 11, clay layer 3.
20 Radiocarbon datings of the corresponding urnfield (fig. 13, nos. 3, 4, 5, 8):
GrN-14679, 2500 ± 50 BP, i.e. 628 (750–533) cal. BC;
GrN-14680, 2390 ± 50 BP, i.e. 498 (709–433) cal. BC;
GrN-14681, 2440 ± 80 BP, i.e. 585 (727–451) cal. BC;
GrN-15989, 2495 ± 35 BP, i.e. 627 (725–552) cal. BC.

Figure 8 Wijk bij Duurstede, De Horden: top of De Horden deposits and the major features of the Early Iron Age occupation.

Legend
a above 3.50 m NAP
b 3.00–3.50 m NAP
c 2.50–3.00 m NAP
d 2.00–2.50 m NAP
e 1.50–2.00 m NAP
f 1.00–1.50 m NAP
g below 1.00 m NAP
h Iron Age house and Iron Age ditch
i urnfield
j contour line for 3.75 m and 3.25 m NAP
k limit of the archaeological excavation

corresponding urnfield lies on the flank of a local extension of this high part of De Horden, there where the slope toward the basin area is greatest. The lower-lying parts of the De Horden terrain seem to have been less suitable for habitation in this period: no finds or traces were found there.[21]

In the period after the deposition of the Horden sediments, probably shortly before the beginning of the Iron Age habitation, a thin clay layer was deposited in a few places in the basin area to the south of the excavation. The precise age of this clay layer has not been established. A rough estimate points in the direction of *c.* 750 cal. BC.

During the Middle Iron Age (500–200 cal. BC) in the southern basin area a rather thick clay layer (in some places thicker than 75 cm) was laid down. We call this the Middle Iron Age deposits. The thickness of the layer indicates greatly increased fluvial activity directly to the south of the excavated site during this period (see

21 A report on the Early Iron Age and the urnfield can be found in Hessing 1989, 297–344.

Figure 9 Wijk bij Duurstede, De Horden: top of De Horden and Middle Iron Age deposits and the major features of the Roman Period settlement.

Legend
a above 3.50 m NAP
b 3.00–3.50 m NAP
c 2.50–3.00 m NAP
d 2.00–2.50 m NAP
e 1.00–2.00 m NAP
f Late Iron Age or Roman Period house and Roman Period ditch system
g contour line for 3.75 and 3.25 m NAP
h limit of the archaeological excavation

fig. 10). The border of this last sediment reaches further north than the thin clay layer lying beneath it. On the stream ridge and at the excavated site the two cannot be differentiated. Figure 10 shows the northern borders of these clay layers. The Middle Iron Age deposits described here are probably connected to the Ravenswaay stream described by Berendsen.[22] This stream can be seen as a part of the primeval Boven-Lek and as such forms the connection between the environment of Wijk bij Duurstede and the stream ridge complex between Buren and Beusichem (approximately 5 km southwest of Wijk bij Duurstede).

Whether the increased river activity south of the excavated site, which went hand in hand with the formation of the Ravenswaay stream, signalled the end for the Early Iron Age habitation on De Horden is not entirely certain. In any case, the stream ridge on the excavated site itself was not flooded. A rise in the groundwater level and an increase in the danger of river floods could have limited the prospects for habitation. Scattered

22 Berendsen 1982, 147, 182, fig. 8.13: L16.

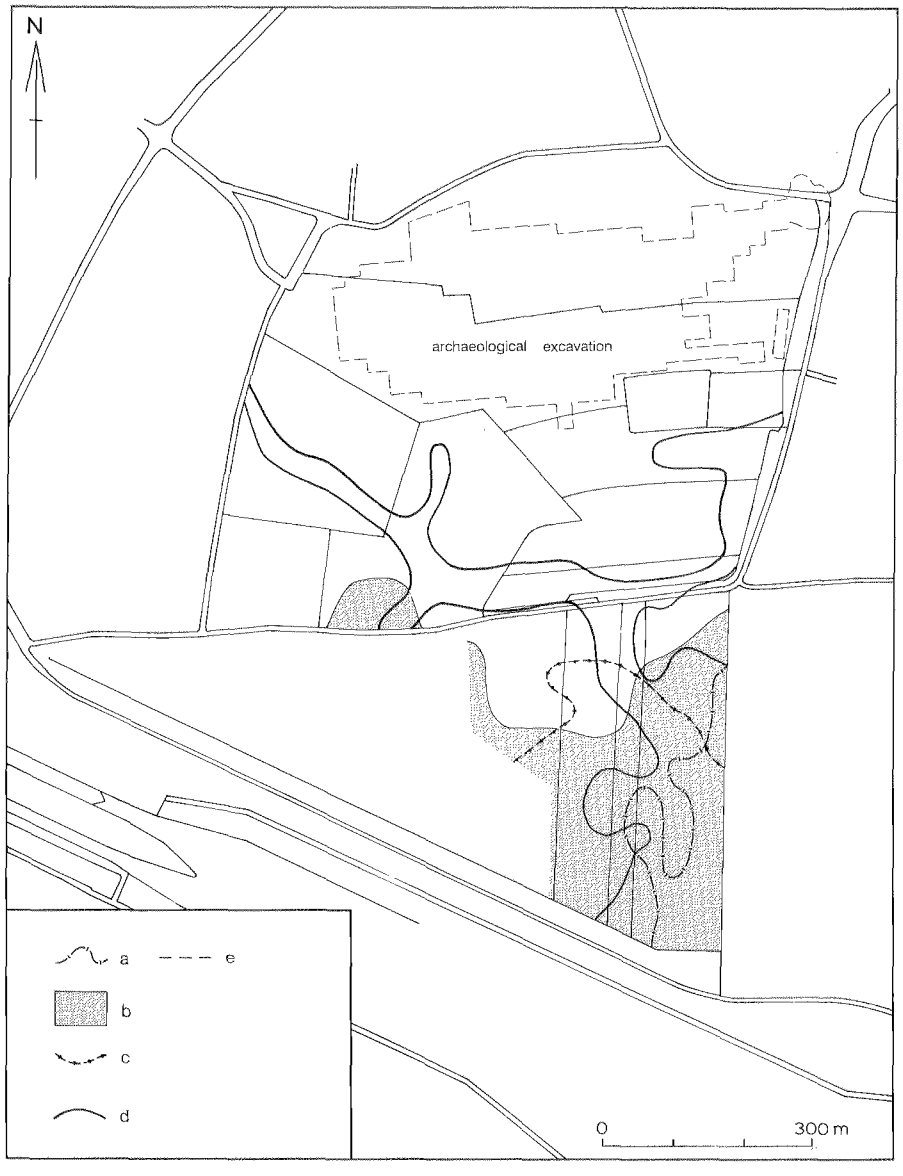


Figure 10 Wijk bij Duurstede, De Horden: distribution of clay beds from Period 2 (1050–200 BC) and 3 (200 BC–AD 500).

Legend
a and b limits of Middle Iron Age thin deposits
c and d limits of deposits from the 3rd and 4th century AD
e limit of the archaeological excavation

farmsteads may still have been situated just outside the excavated area, since a number of graves from the Middle and Late Iron Age have been found on the higher parts of De Horden.[23] The deposition of the top of the Middle Iron Age clays in the basin, and with it the end of this sedimentation phase, can be dated around 210 cal. BC.[24] The remaining bed of this stream to the south of Wijk bij Duurstede may have remained an important landscape element for a very long time. Possibly this dried branch of the Rhine played a role in the development of the current Boven-Lek after the Roman Period (see period 4).

23 The following C14 figures are derived from a few of these graves (fig. 13, nos. 6, 7, 14, 16, 18):
GrN-15990, 2365 ± 30 BP, i.e. 446 (498–399) cal. BC;
GrN-15992, 2285 ± 30 BP, i.e. 384 (389–374) cal. BC;
GrN-15994, 2090 ± 70 BP, i.e. 126 (242–34) cal. BC;
GrN-14682, 2180 ± 25 BP, i.e. 288 (336–205) cal. BC;
GrN-14683, 2130 ± 40 BP, i.e. 170 (310–120) cal. BC.
24 GrN-12153, 2150 ± 50 BP, i.e. 210 (326–132) cal. BC.

Period 3 (200 cal. BC–cal. AD 500)

In the period between 200 cal. BC and *c.* AD 850, fluvial activity at De Horden was in general rather limited. From time to time, however, this activity appears to have become somewhat stronger, followed by a new decrease. Also on the basis of the archaeological data it is likely that from the beginning of the 3rd century to the second half of the 4th century AD a clear rise in the water level occurred. Figure 10 shows the spread of two clay layers in the investigated area from period 3. These date back to a period following the abandonment of the native settlement discussed below. The younger of the two layers extends over a much larger area than the older.[25]

At the beginning of period 3 there is still no trace of settlement within the excavated part of De Horden. A small burial ground, dating in the 3rd or 2nd century BC, along the northern edge of the excavated site makes habitation in the immediate vicinity very probable.[26]

The oldest house plans of the native settlement at the excavated site itself are from shortly before the start of the current era (fig. 9). From that time onwards, the preferred position for houses was no longer the highest part of the streamridge but the somewhat sloping section to the south and southwest of it. The houses built in the lowest position from the first phase of the habitation are furnished with deep, sometimes double, drainage ditches along the walls and the entrance paths.[27] Later, in the course of the 1st century the digging of a parcelling system which seemed to take care of the drainage for the entire settlement area was begun. As time passed, the houses were moved to the middle of the parcels, which were enclosed by ditches. The drainage ditches around the houses themselves disappeared for the time being. The parcel ditches drained into what was apparently the residual channel of the Werkhoven stream ridge, which still existed as a depression.

During the last phase of the habitation in the Roman Period, the drainage of the settlement area by use of parcel ditches alone proved unsatisfactory. The houses themselves were once more provided with trenches along the walls which were connected to the nearest parcel ditch. Around AD 225 the settlement was once again abandoned, apparently as a result of the rising water level.[28] At approximately the same time, the Kromme Rijn deposited a thin clay layer in the eastern half of the investigated area (fig. 10). As this sediment was laid down, the residual channel of the Werkhoven stream ridge seems to have continued to function as a watercourse. The maximum thickness of this and the following deposits from the 4th or 5th century AD measured, within the investigated area, not more than 25 cm. Although the topographic conditions were not substantially changed by this sedimentation, the habitation which occurred afterwards concentrated itself outside the investigated area. The burial grounds on the highest part of the stream ridge stayed in use somewhat longer, possibly until the second half of the 3rd century.[29] In the second half of the 4th century or possibly the beginning of the 5th, the abandoned settlement site must have been visited a few times. Bronze coins struck under Emperor Magnentius (AD 350–353) constitute the proof of this.[30] Soil traces from this period are completely absent, however, so that a prolonged occupation seems unlikely. But it is probable that in the period between the deposition of the two clay layers, and possibly afterward as well, the former settlement area was used for agrarian purposes only (see period 4).

25 Dating of the older clay layer:
GrN-12152, 1830 ± 30 BP, i.e. 180 (142–218) cal. AD.
Dating of the base of the younger clay layer:
GrN-12151, 1825 ± 35 BP, i.e. 183 (145–221) cal. AD.
Dating of the top of this clay layer:
GrN-12150, 1635 ± 50 BP, i.e. 411 (349–489) cal. AD.
Dating of the top of the vegetation horizon:
GrN-12149, 1660 ± 50 BP, i.e. 378 (293–427) cal. AD.

26 For the radiocarbon dating of a few of these graves, see note 23.

27 An example of such a house plan is described in Van Es 1982, 139 ff.

28 It is still conceivable that the settlement was abandoned for other reasons. But it seems less likely that the political factor, in this case the decreasing Roman military presence, played a role here because there is no indication of a definitive abandonment of the area. Otherwise, it remains striking that according to Lange (1988) the botanic material as yet shows no signs of a rise in the ground-water during the last settlement phase.

29 For one of these burial grounds see Verwers 1975, for the other Hessing (in preparation). Radiocarbon dates: fig. 13, nos. 19, 21, 22, 28.

30 J. van der Vin and Mrs J. Radstaat of the KPK kindly identified these coins.

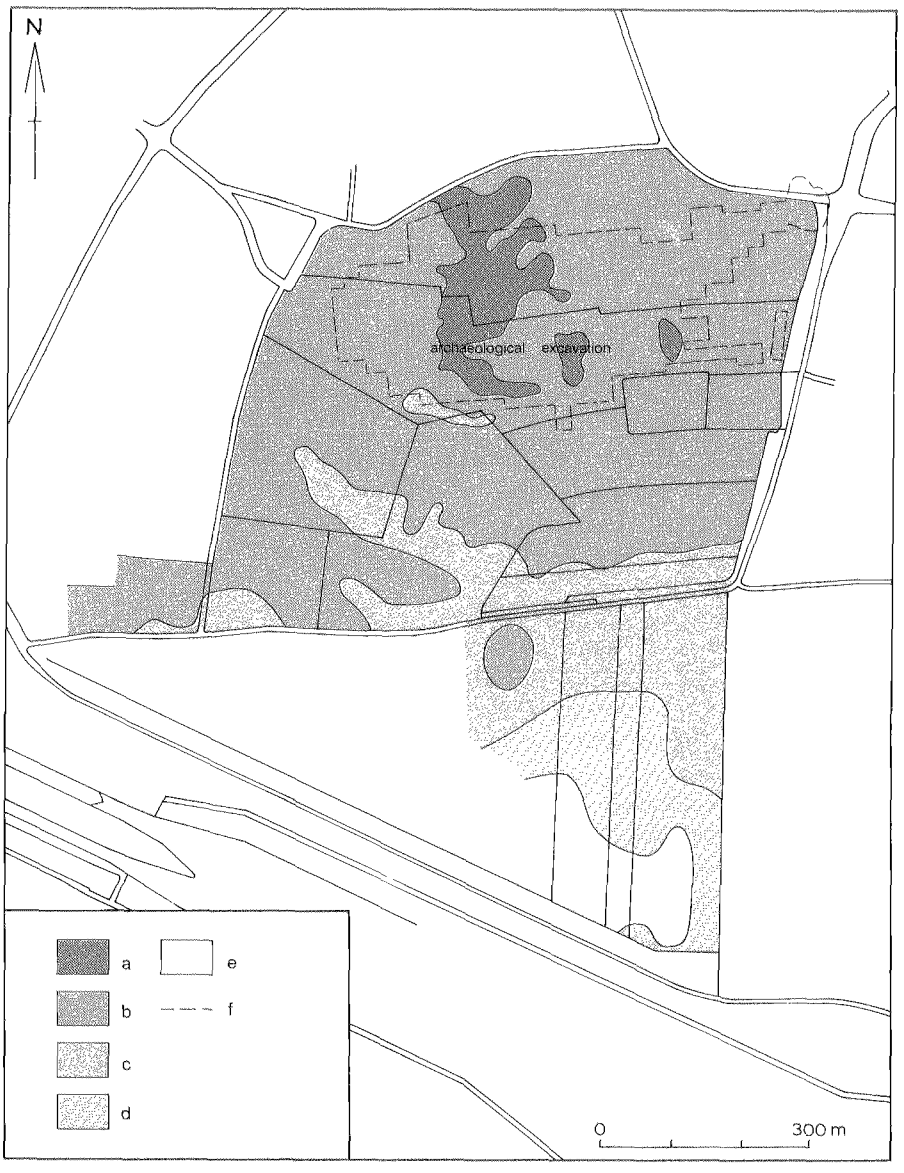


Figure 11 Wijk bij Duurstede, De Horden: thickness of the Post-Carolingian sand and clay deposits.

Legend
a less than 0.50 m
b 0.50–1.00 m
c 1.00–1.50 m
d 1.50–2.00 m
e more than 2.00 m
f limit of the archaeological excavation

Period 4 (cal. AD 500–AD 1400)

Around cal. AD 520 in the basin to the south of the excavated site a renewed increase in fluvial activity is discernible.[31] In contrast to period 3, when the deposits laid down at De Horden came from the east, now the accompanying stream must be sought in the south as at the end of period 2. Sedimentation by this stream, which must have been the Lek, began at this time and continued until the dikes were built around AD 1100, thus putting a stop to the natural process. The sediments reached a thickness of more than 2 m in some places (fig. 11). The lowest part of these deposits (*c.* a quarter of the total thickness) shows a more clayey development than the rest of the layer (fig. 3), indicating less energetic fluvial activity at the start than later on.

In the previous paragraph it is stated that the last inhabitants of De Horden abandoned their settlement in the course of the first half of the 3rd century AD. But in

31 The beginning of a rise in the water table in the basin area:
GrN-11570, 1530 ± 50 BP, i.e. 522 (460–582) cal. AD.

the immediate surroundings on higher-laid terrain, such as the more recent natural levees along the Trekweg (fig. 1b) and possibly also an area to the east of De Horden within the built-up area of Wijk bij Duurstede, habitation was able to maintain itself longer. Uninterrupted presence at the settlement site along the Trekweg beginning at the Roman Period and continuing until the 7th or 8th century AD cannot be ruled out.[32] The still higher natural levees along the Kromme Rijn itself to the north of the current centre of Wijk bij Duurstede seem not to have been occupied until the second half of the 7th century.

Although De Horden itself was less suitable for habitation than the other terrains because of its relatively low position, it was still regularly used for other purposes until the 9th century. Impressions of cattle hooves and plough tracks in the clay layers from the last part of period 3 show that cattle breeding and even agriculture must still have been possible. The finds from this level not only date the agricultural activities but also form a *terminus post quem* for the beginning of the sedimentation from the Lek at the highest part of De Horden. Except for the 4th century coins already mentioned, these finds comprise in particular some fragments of Carolingian pottery, a Carolingian sword and two silver coins: a so-called *sceatta* of the porcupine type and an obol from Charles the Bald (843–877).[33] Shortly afterward, a thick sand and clay layer came to cover the whole settlement area. From figure 11 it can be concluded that this sediment was supplied from the south.

At the end of the 11th or the beginning of the 12th century, the construction of the Lek dikes began in the Kromme Rijn area.[34] The large-scale limitations on habitation possibilities which had resulted from changing fluvial activities ceased. Because of the sedimentation of the thick Lek deposits, a new reclamation of De Horden in the Late Middle Ages must have been necessary. The oldest finds on top of the Lek deposits come from the northernmost part of the investigated area and date to the 12th and 13th centuries.[35] The earliest pottery from the fill of the ditches is only of 14th century date. These ditches still existed in part until recently

Figure 12 Wijk bij Duurstede, De Horden: presentation of lithostratgraphical and chronostratgraphical development within the study area. Legend: a sand; b fluvial clay; c humic clay, peaty clay and peat; d vegetation horizon; e non-deposition; f deposits eroded; g occupation archaeologically confirmed; h occupation probable; 1 Post-Carolingian deposits from Lek river; 2 Middle Iron Age and Roman deposits; 3 De Horden deposits; 4 intermediate clay layers of Period 1; 5 Werkhoven deposits; 6 Middelweg deposits; 7 clay sedimentation under steady conditions; 8 Late Pleistocene.

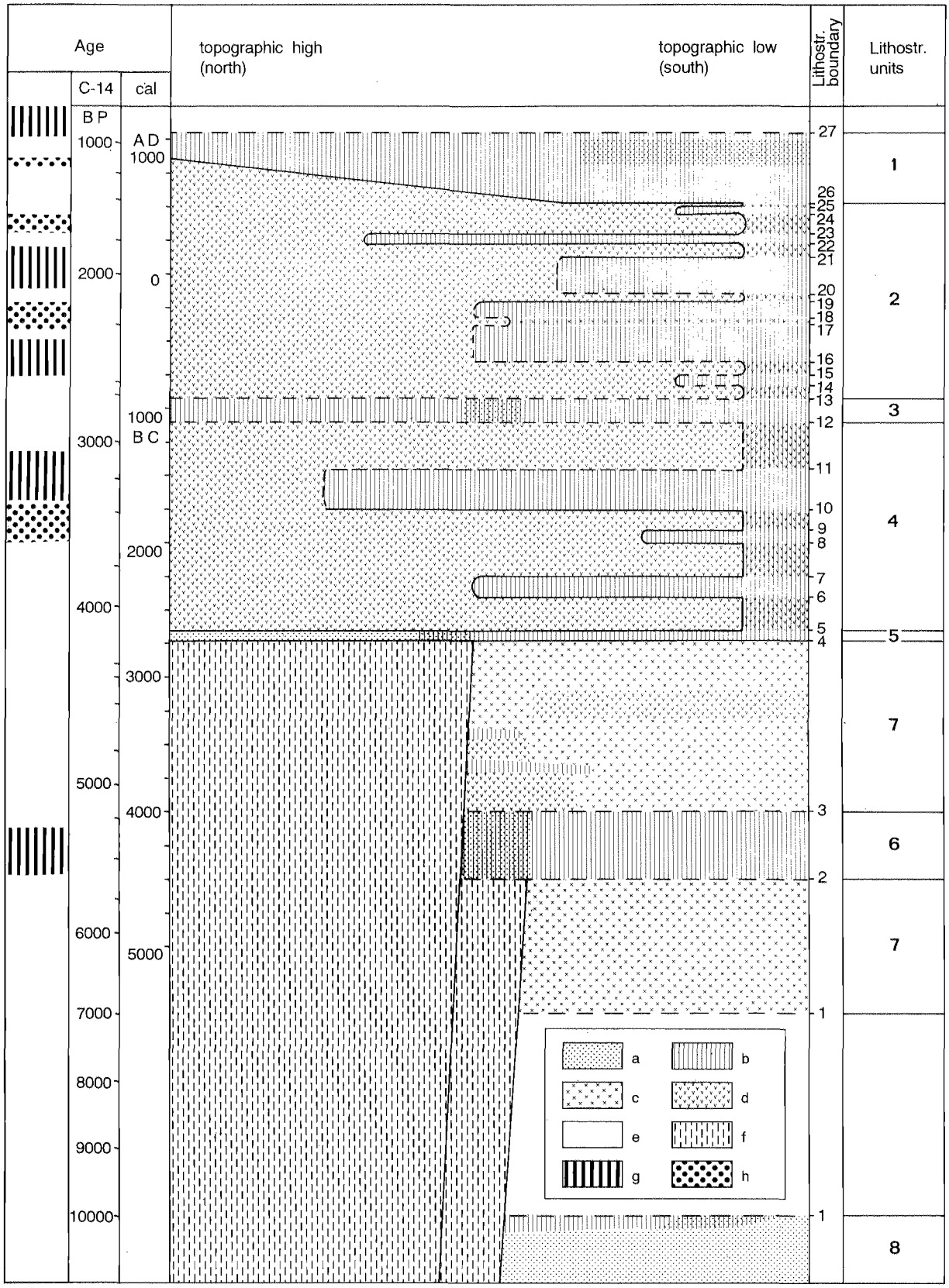
and were mainly east-west oriented. The first mention of 10 *morgen* of land in Wijk bij Duurstede, dates from the same time, this reads: '*die heyten op die Horne ende legghen op den horninc van den Middelwegh ende van der Boenlycstraet*'.[36]

CONCLUSION

In the preceding article, an attempt has been made to sketch a picture of the changes, as far as they are archaeologically or geologically observable, which took place in a small part of the Kromme Rijn area over a period of many thousands of years. Figure 12 presents a shortened version of this overview in tabular form. According to the authors, there is strong evidence of a link between the colonization and abandonment of the De Horden area and the decrease and increase of fluvial activity in the immediate surroundings. Further investigation will have to reveal the extent to which the phasing of fluvial activity observed at De Horden is also valid for the Kromme Rijn area as a whole or perhaps for the entire central part of the Dutch river area.[37]

Even if the general validity of this observation can be established, this does not mean that during periods of raised fluvial activity over the whole Kromme Rijn area the habitation possibilities were everywhere as drastically reduced as was the case at De Horden. The conditions were less marginal on the relatively higher-lying natural levees, which were further removed from an

32 Van Es & Verwers 1978, 222–6.
33 Identified by J. van der Vin, KPK.
34 Dekker 1983, 586 ff.
35 These finds are principally fragments of Pingsdorf and Paffrath pottery which were found in several test pits to the south of the Wijkersloot.
36 In English: 'These are called *op die Horne* [on the corner] and lie at the corner of the Middelweg and the Boenlycstraet'. Feudal inventory of the lord of Culemborg in 1373, see Dekker 1983, 104, notes 33 and 34.
37 In Steenbeek 1990 this subject is discussed at length.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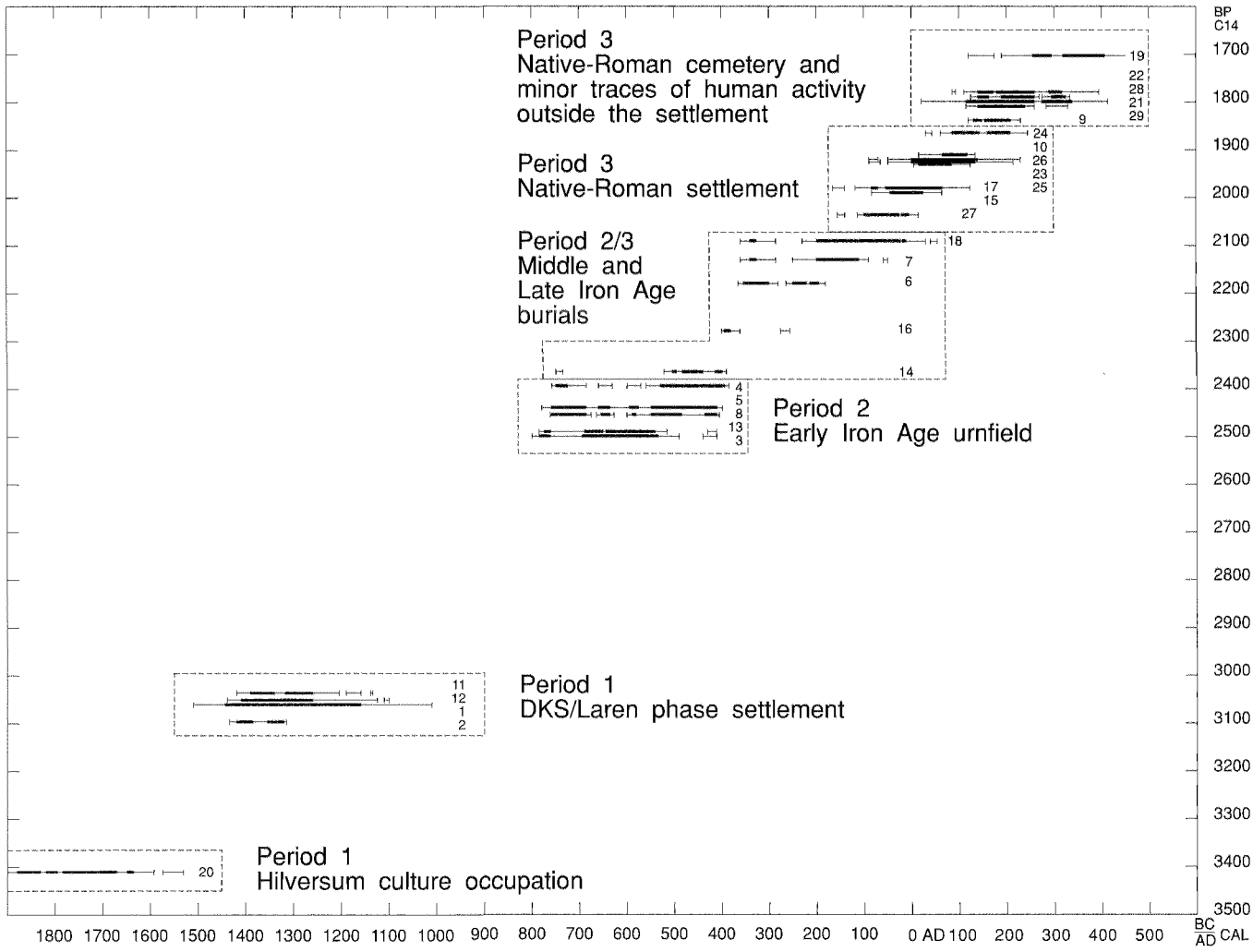

Figure 13 Wijk bij Duurstede, De Horden: graphic presentation of the calibrated radiocarbon dates of archaeological material from the excavation (as referred to in this paper). Legend: thick black line: 1 sigma (68%) confidence level: thin black line: 2 sigma (95%) confidence level.

active river course. Good examples of these settlement terrains in the Kromme Rijn area can be found in Houten and its surroundings. These have been almost continually inhabited from the Early Iron Age up to the present day. Indications of periods with a rising water level or river-flooding at these sites are absent.[38]

38 This has been verified by the archaeological investigation carried out by the ROB to the west of the centre of the village of Houten. See Houten-Tiellandt, in *JROB* 1985, 49–51; 1986, 54–7; 1987, 46–8.

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Prehistory Visualised: Hunebedden on Dutch School Pictures as a Reflection of Contemporary Research and Society

Keywords: education, teaching materials, illustration, reconstruction, prehistoric society, antiquarianism, historical novels, historical painting, Neolithic, megalithic tombs, TRB culture, Funnel Beaker culture, W.J. Hofdijk, J.H. Isings, Johan Dijkstra, B. Bueninck, Rasmus Christiansen, Province of Drenthe, the Netherlands, Denmark, 161 references.

The use of *schoolplaten*, school pictures,[2] was a response to the call for teaching with visual aids, from educationalists such as J.A. Comenius (1592–1670), J.H. Pestalozzi (1746–1827), and in the Netherlands, Jan Ligthart (1859–1916). These pictures were used in primary schools, mainly between 1850 and 1950, in the Netherlands,[3] England,[4] Germany, Denmark,[5] and probably many other European countries and their colonies. The Dutch, cardboard-backed, coloured *schoolplaten*, measuring 80–115 x 60–85 cm, show scenes of geography or natural history, various crafts and professions, and events in history or everyday life. They would be hung on the classroom wall, to be discussed by the teacher during a lesson. In the 20th century the teacher would be aided by a 'Commentary' (in Dutch *Handleiding* or *Toelichting*), a booklet of *c.* 24 pages that accompanied each school picture. The purpose was to show the children, or rather to have them discover in the school picture, as much as possible about a subject; this would develop their knowledge, insight, power of imagination, and linguistic skill.

The Dutch school pictures, which in the 1960s and 1970s almost entirely disappeared as teaching materials, have in the last three decades become popular collector's items and objects of academic study. Painted in many cases by highly talented artists, and designed to be comprehensible and appealing to children, they are imprinted in the memory of anyone fortunate enough to have been exposed to them at school.

The history and reading-exercise school pictures in particular have been the subject of thorough art-historical studies and important exhibitions in the 1970s and 1980s. In the Netherlands, the historical school pictures by Charles Rochussen (1814–1894) and J.H. Isings (1884–1977) and the reading-exercise school pictures by Cornelis Jetses (1873–1955) are particularly renowned. All three artists were quite prolific and their school pictures are of considerable artistic and documentary value. The often equally well-painted geography and natural history school pictures seem rather undervalued, since so far they have not inspired any studies of the calibre of those dealing with history school pictures.

The only prehistoric subjects to be shown on Dutch school pictures are the 'Hunebed Builders' by J.H. Isings, dating to 1959, and the *hunebedden* shown on

1 Instituut voor Pre- en Protohistorische Archeologie Albert Egges van Giffen (IPP), Amsterdam University. The translation was prepared by Ms Xandra Bardet, Groningen. Ms Karen Waugh edited the English. Many of the literature titles in the text are English translations of original titles. The radiocarbon dates are calibrated to calendar years according to Pearson *et al.* 1986.

2 The English translation for *schoolplaten* was provided by Mrs J.E. Waugh. The author thanks her for her perseverance in finding the correct words.

3 Burgers 1979; Heij 1982.

4 Mrs J.E. Waugh informed the author that in England school pictures were published by MacMillan. The series began in 1930s–1940s in England when approximately A3-sized pictures were issued as a pack to be handed out around the class and to the teacher. No accompanying text is known for this period. In the 1950s and 1960s MacMillan published much larger examples, some 2.5 feet^2 in size. These were issued with texts, often written by well-known children's authors such as Enid Blyton.

5 *Kulturhistoriske Billeder* 1982; Thuesen *c.* 1982.

four, older, geography school pictures (figs. 1, 3, 6, 11).[6] No other school pictures of Dutch geography show any prehistoric or historical ruins or earthworks.

Among the history school pictures only a few relate to the Roman period; these are followed by subjects such as Charlemagne, the Vikings, the Feudal System, and the Counts of Holland. This distribution roughly reflects the amount of attention these themes received in (older) works of general history, school textbooks and book illustrations, and in the paintings of historical subjects that were to serve as examples for the history school pictures.

Such a distribution of subjects differs per nation or state and is determined by the moral and spiritual values and ideals that people wish to impart to their children and fellow citizens. Such values and ideals are formed both by original ideas and by what people are taught at home or at school. The need for a nation to retain and even create its own history is evident from Jellinek's definition of a nation: 'a group of people who through communal, characteristic elements of culture and a communal historical past feel united and hence distinct from others'.[7] In new states or old ones experiencing changing circumstances, priority is given not only to teaching the national language, but also to teaching, popularising, and elaborating the nation's glorious past, including, if possible, its prehistory. This is not just a matter of cold, calculating self-interest on the part of a government; such endeavours are usually supported by a major part of the nation's intelligentsia.

This was certainly the case in the Kingdom of the (Belgian and Northern) Netherlands after 1815, and in the Kingdom of the (Northern) Netherlands after the Belgian separation in 1830, be it to a fairly moderate degree. As soon as the survival of state and nation seemed secure, as for instance in the Netherlands after World War II, the 19th-century expressions of patriotism seemed so exaggerated and full of pathos that they evoked hilarity more than anything else. But at the time this was a serious matter, as it still is in modern nations struggling for their identity and survival.

It is a well-known fact that in Denmark archaeology plays a far greater part in providing national identity and self-esteem than it does in the Netherlands. This interest in Danish prehistory and early history was stimulated by a variety of factors: a lively and competitive scientific debate with Sweden – Denmark's political rival – on who had the most ancient ancestors, a series of eminent scholars, the active interest of their monarchs, the progressive shrinking of the Danish Empire, and a wealth of remarkable finds in still largely uncultivated areas. The 19th century saw military defeat and the loss of Schleswig–Holstein to Prussia in 1864, the global impact of prehistoric research by Thomsen and Worsaae, and the financial support and intense interest from the Danish royal house, which made possible the appointment of these two specialists and the extension of the Copenhagen museum.[8] Time and again in the last two centuries, Dutch research into the hunebed builders has been inspired by southern Scandinavian and German publications on the Stone Age.

In Germany, the interest in Germanic archaeology markedly increased after World War I, in reaction to the defeat and the 'Versailles *Diktat*', especially among the National-Socialists. This produced a boom in prehistoric archaeology, in which popularisation was practised

6 *Hunebedden*, occasionally spelt *hunnebedden* with double n, are megalithic tombs of the Neolithic Funnel Beaker or TRB (in Dutch *Trechterbeker*, in Danish *Tragtbæger*, in German *Trichterbecher*) culture in the northern Netherlands (3400–2850 BC), which are not unlike the megalithic TRB tombs in northern Germany and southern Scandinavia. In view of the high frequency of the use of the words *hunebed* and its plural *hunebedden* in this article it was decided not to italicize these words.

The school picture 'A *terp* at Dokkum', depicting a dwelling mound that may have a prehistoric core, falls outside the scope of this study. The picture was painted by B. Bueninck, school picture no. 11 in the geography series *Nederland in Woord en Beeld* (The Netherlands in Words and Pictures) published by J.B. Wolters, and is mentioned on the back covers of Mulder (1918) and Pelder [*c.* 1942].

The 'Oudheidkundige Wandplaat van Nederland' (Tableau of Dutch Archaeology), by J.H. Holwerda and N. Holwerda-Jentink (Leiden, S.C. van Doesburgh 1908; cf. Van Wijngaarden 1951, 9) shows prehistoric objects, not scenes.

7 Georg Jellinek, quoted by A. Spoor in the Saturday supplement of the *NRC Handelsblad* of 18th January, 1992. On history textbooks for Dutch schools, see Mulder 1990.

8 Klindt-Jensen 1975. The opening speech by J.J.A. Worsaae, president of the 4th Congrès International d'Archéologie Préhistorique, Copenhagen, 27.VIII.1869 (*Compte-rendu* 1875, 1–9), in which he boasts about the international influence of the Vikings and the Three-Age system.

with great expertise, among others by H. Reinerth about whom we shall presently hear more. Nowadays this line of archaeology is viewed with rather mixed feelings.[9]

As we shall see, Danish school pictures from 1907–1919 were devoted to life at the time of the *kjøkkenmøddinger* (the kitchen middens or shell heaps of the Ertebølle culture), the Funnel Beaker or TRB culture, the Bronze Age, and the Germanic period (figs. 15–18). The first two school pictures and their examples in the archaeological journals of southern Scandinavia came to serve as examples for German school pictures and sculpture in the 1920s and 1930s (fig. 14). Through these, their influence extended even to Isings' 'Hunebed Builders' (fig. 11).

The six Dutch school pictures that show hunebedden are the subject of this study. The geography school pictures, which were the first to appear, are discussed in Chapter I. Most space is taken up by Chapter II, which deals with the lengthy and interesting preparation, the content, and the context of Isings' picture (fig. 11). Isings was faced with the difficulty of evoking a situation in the prehistoric past, which could only be reconstructed through archaeological and ethnographic research. This contrasts with the geography school pictures, which represent and explain an existing situation.[10] The modern archaeologist, whose predecessors supplied a great deal of the necessary knowledge for school pictures of both kinds, and who appreciates the need for popularisation and 'social relevance', will not expect any 'instruction' from these school pictures, but will be interested to see how familiar problems were resolved in analogous, and indeed quite modern ways. After all, the study, reconstruction, and, if possible, the preservation of the past is what all of us archaeologists profess to aim for.

It will be seen that preparing a prehistoric or historical school picture involved a great deal more than might be suggested by the patronising smile reserved for children and the simple-minded, which is all that some can spare for this subject. The author at any rate was led ever further on a fascinating journey of discovery.

9 If one can ignore the all-pervading poison of the hidden and overt propaganda of the Nazi doctrine, inseparably linked as it is with the nightmare of industrial genocide (which the author finds virtually impossible), one may indeed be impressed by the powerful appeal of educative, popularising journals like *Germanen-Erbe* and many other publications of that epoch. Public education and popularisation were more efficient and effective than in other countries, because they were aimed at a wide, not necessarily educated readership and lavishly supported by government funds. The editor of the British archaeological journal *Antiquity* (1938, 129–34) heaped praise on German accomplishments as regards museums and public education about prehistory, and held them up as an example to British archaeology, where such initiatives were hardly getting off the ground.

H. Reinerth's preliminary – and only – publication in *Germanen-Erbe* (1939b) about the excavation of 'A Village of the Hunebed Builders' by the Reichsamt für Vorgeschichte in the marshland around Lake Dümmer beside the river Hunte, is an exemplary and inspiring piece of work and the first instance of spectacular, modern wetland archaeology in North Germany. After the war, other German archaeologists accused Reinerth of deliberate falsification of evidence, because he ascribed the remains of the EGK (*Enkeltgravskultur* in Danish; Single Grave culture) found at the same site to the TRB culture (Reinerth 1939b, Abb. 9; Dürr 1960). Whether this was an excuse for political retribution is unclear, but certainly the unravelling of stratigraphy in wetland settlements is extremely difficult, and the site had been excavated in (to us) indecent haste and inadequately documented. For Dutch and German archaeology, as well as for Isings' school picture 'Hunebed Builders' (1959), Reinerth's publication was invaluable, as right into the 1960s the Hunte village was the only properly investigated wetland settlement of the TRB West Group (Van Giffen 1943b; De Laet 1958; Knoll 1959; De Laet & Glasbergen 1959; Jacob-Friesen 1959; Bakker & Van der Waals 1973; Isings 1975; Bakker 1979c; Schirnig 1979b).

10 There is an analogous contrast if we set the painting of historic scenes and emblematic images against that of landscapes, townscapes, interiors, still lifes, and portraits, in which feeling, not intellect prevailed. According to the textbooks of the 17th and 18th centuries, the former category was the ultimate aim in art; 'art for art's sake', associated with the second category, predominated in the appreciation of art between 1850 and 1950, while nowadays the pendulum is swinging back again. Cf. De Jong 1992.

1 GEOGRAPHY SCHOOL PICTURES

A GEOGRAPHY SCHOOL PICTURE THAT WAS NEVER EXECUTED (*c.* 1877)

On 20 February 1877, *Jonkheer* Victor de Stuers LL.M. (1843–1916), director of the Rijksdienst voor Monumentenzorg (Department for the Conservation of Historic Buildings), sent a postcard to Dr W. Pleyte (1836–1903), curator at the Rijksmuseum van Oudheden at Leiden (RMO) and a member of the College van Rijksadviseurs voor de Monumenten van Geschiedenis en Kunst (Government Council for Monuments of History and Art). On it, De Stuers asked Pleyte to send him a photograph 'of the hunebed that to your mind is the most typical, for the purpose of preparing from it a large picture for use in schools'.[11] Pleyte's reply is unrecorded, but no school school picture ever resulted.
At the time, the small hunebed D6–Tinaarlo was considered 'the best preserved of all hunebedden in Drenthe'.[12] All its orthostats and capstones were still in their original position without subsidence, and were clearly visible owing to the absence of the original covering mound. A drawing, presumably made by Jan van Ravenswaay between 1840 and 1846, and a plate in Westendorp (1815) show it in the same condition as in figure 1, which dates to around 1900. Presumably the mound was dug away not long before 1790, because in that year E.M. Engelberts writes: 'This hunebed lay in the middle of the Heath, yet in a circular area of bare soil, sixteen paces [*treden*] in diameter.'[13]
The picture was probably intended for the series *Nederlandsche Historieplaten voor Schoolgebruik* (Dutch History Pictures for Use in Schools), whose editor was Joh. Ykema.[14] This series was introduced in 1877 with four pictures by Charles Rochussen and H.A. van Tricht (1829–1899), and in 1879 a new, extended edition began to appear, with contributions by the painters H. ten Kate (1822–1891), J. Mesker (1843–1890), Johannes Bosboom (1817–1891), and De Stuers himself. Snoep suspects that the names of De Stuers and the famous painter Bosboom featured mainly for promotional purposes. No school pictures by either of them are known, but the postcard to Pleyte shows that De Stuers was at any rate involved in the organisation.
The phrasing on De Stuers' postcard suggests that despite the title of the series, the actual aim was to create a 'geographic' school picture (indeed like the 'historical' painting of fig. 7), rather than a true history school picture in the style of figure 8.
The 20th-century Dutch school pictures to be discussed below were published by J.B. Wolters and P. Noordhoff, two competing publishers in Groningen, who were not to merge until many years later.

'THE HEATH AND HUNEBED AT TINAARLOO' BY B. BUENINCK (before 1905)

The school picture *De heide met hunebed bij Tinaarloo* (fig. 1) is no. 1 in the series 'The Netherlands in Words and Pictures: 30 Pictures for Teaching Geography, after Watercolours Painted from Nature by B. Bueninck', from the publisher J.B. Wolters.
The 'Commentary' by G.J.A. Mulder[15] gives a detailed account of this hunebed and others, on the basis of Holwerda's publications,[16] while also mentioning Van Giffen's barrow excavations of 1917 in the Noordse Veld near Zeijen.[17] As 1917 is referred to as 'last year' and Holwerda's book of 1918 is quoted as 'his latest work', this booklet can be dated to 1918. Geology, vegetation, and Drenthe's contemporary landscape with its heaths and streams, rye fields and thatched farming villages are all discussed at length. The illustrations in the 'Commentary' include photographs of the Drenthe landscape (among them a fine *contre-jour* photo of a flock of sheep near Zeegse), a geological profile in a sand quarry near Zuidlaren, pictures from Holwerda's report of the excavation of hunebed D20 at Drouwen, the school picture itself, and a section of the ordnance map which shows the artist's angle of vision (fig. 2). The hunebed is seen to be situated on a small coversand ridge, a favourite place for hunebedden.
The painter Bernard Bueninck (1864–1933), with his

11 Pleyte archives, vol. Drenthe 1, 47, RMOL.
12 Westendorp 1815, 375 and 1822, 327.
13 Westendorp 1815, pl. 1; or 1822, pl. 1. Jan van Ravenswaay lived at Westerbork from 1840 to 1846 (drawing in the Bodell Nijenhuis collection in the library of Leiden University, reproduced in Heij 1983; wood engraving after this drawing in Witkamp 1873, 4). Engelberts 1790, 178–9.
14 Snoep 1982, 9–11, note 8.
15 Mulder 1918. This quotation is from the inscription on the inside of the cover.
16 Holwerda 1907; 1913; 1914; 1918.
17 Van Giffen 1918.

Figure 1 School picture 'The Heath and Hunebed at Tinaarloo' with hunebed D6, after a watercolour by Bernard Bueninck, signed B. Bueninck, Groningen (J.B. Wolters), before 1905. Picture 76×56 cm, with margins 87×66 cm.

back to the Assen–Groningen railway line, looked out beyond hunebed D6-Tinaarloo and the sandy track to Zeegse, to the valley of the streamlet called Zeegser Loopje, across the heath that was not yet in bloom, towards the rye fields of Zeegse, and the 'new windmill of Oudemolen'[18] on the horizon. This view offers a good impression of the open, flat landscape of the Drenthe Plateau, a ground moraine overlain by coversands which – in most places almost imperceptibly – slopes towards very wide and shallow periglacial valleys like that of the Zeegser Loopje beyond the sheep. The hunebed is virtually on the edge of the high and dry coversands, *c.* 5.5 m above sea level. The valley floor is about 2 m lower, and the land on the horizon lies 10–12 m above sea level. A cart with the driver leading his horse by the rein over the loose sand of the track, and a shepherd with his flock complete this picturesque scene. The hunebed is staked off by five short, white-tipped

18 Mulder 1918, 3.

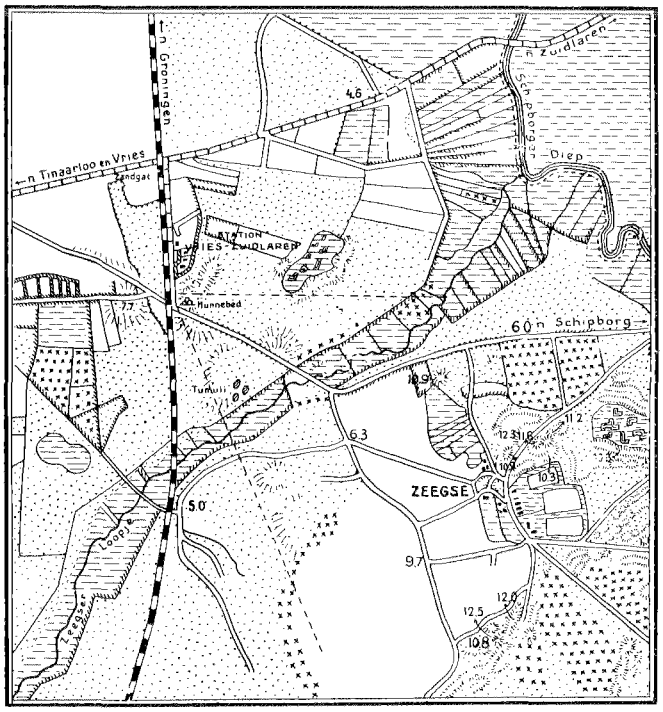

Figure 2 Map indicating the visual angle of figure 1 (dashed lines). Arable land is left white, heath is stippled, meadowland is indicated with dashes, and coppice and trees with crosses. Two parallel lines indicate unmetalled tracks, the black-and-white line is the Assen–Groningen railway line; the laddered line is a metalled road with a horse-drawn tramway. 'Zeegser Loopje' and 'Schipborger Diep' are streams. The map covers 2.75 km from north to south (after Mulder 1918, fig. 1).

oakwood posts.[19] Prehistoric barrows (three schematic tumuli in fig. 2) are seen beyond the right-hand post and the flock, where they contrast against the cornfield.[20]

The picture was probably made after 1894. It must predate 1905, because the artist would have sat in a spot where a house was built in the course of that year.[21] Also the 'Commentary' to a different school picture (fig. 6) dates Bueninck's watercolour to about 1900.[22] Whether the 'Commentary' of 1918 was preceded by an earlier version is unknown. Nor is it clear whether there was a relation between the abortive plan of 1877 and this school picture.

This view of the landscape no longer exists: behind the hunebed and to the right of the track there are houses, shrubs, and trees. Van Giffen had some shrubs planted around the hunebed in the 1950s. Beyond the hunebed to the left, the heath has been made into grassland and arable fields. The tumuli in the picture and the 'Commentary' are now hidden in a wood belonging to the 'Adderhorst' estate. Given their total number (eleven) and clustered occurrence, they presumably date from the Iron Age.[23] Finally, by 1970 all of Drenthe's rye fields had been replaced by grassland or maize fields.

HUNEBED D9-ANNEN (before 1912)

The next school picture has not been seen by the author. It is *Landschap bij een eschdorp (Annen, Drenthe)* (Landscape near a Village (Annen, Drenthe)) in the series 'Geographical School Pictures of the Netherlands' by R. Schuiling and J.M. de Feijter, published by P. Noordhoff. In the 'Commentary', the well-known Drenthe geographer R. Schuiling[24] writes about hune-

19 The small reserve that from 1880 surrounded the hunebed (a narrow rectangle around the tomb, with an approach, an area of, altogether, 0.01 ha) was marked out with eight oakwood posts at the corners. When the reserve was expanded to 0.6 ha on 3 October 1894, seven new posts were erected on the new boundary. When Van Giffen measured and described the tomb in or after 1918, there were no longer any posts around the inner area and 'eight' (seven?) white-topped, basalt markers surrounded the outer boundary (Van Giffen 1925, 23, 244, atlas-pls. 14–15). The situation on the school picture is puzzling. None or some of the posts are on the old boundary of the small reserve of 1880; they seem to be set more widely around it, within the 1894 boundary. Unless Bueninck omitted some posts, this could have been an interim arrangement, predating 1918.

20 The description of the view is largely taken from Mulder (1918), 3–4.

21 Van Veldhuizen 1933, with a discussion of the later changes to the landscape, quoted by Wanders 1980, 15–18. Mulder's map, based upon an older survey map (fig. 2), does not yet show the house.

22 Pelder [*c.* 1942], 3.

23 Tumulus maps by H. Praamstra 1:10 000, 12 Bz (8), no 419, BAI *c.* 1955; letter from J.N. Lanting, November 1991.

24 Schuiling 1912, 4.

bed D9: 'small though it may be, you will already have noticed in the picture that it lies slightly hidden behind the oak coppice but close to the above-mentioned gravel road, which in the picture passes along the row of houses and the windmill', and he continues: 'Beneath these heavy boulders, neatly piled up by almost inexplicable means, people used to inter the ashes of their most prominent fellow tribesmen in earthenware urns.' Writing in 1911–12, Schuiling was of course not yet acquainted with the results of Holwerda's excavations of hunebedden D19 and D20 at Drouwen in the summer of 1912 (Holwerda 1913), which constituted the first modern, scientific research into hunebedden in the Netherlands and north-western Germany.

HUNEBED D14-EEXTERHALTE BY A.H. GOUWE (1911)

The watercolour of 1911 by Adriaan Herman Gouwe (1875–1965) is no. 12, *De Drentsche heide* (Heathland in Drenthe) in the same series as the preceding school picture (fig. 3). The scene, with its grey, overcast sky and the dark purple heath, breathes a gloomy atmosphere. From the north, one overlooks the boundless heath south of Eext. In the foreground is a round *pingo* ruin, overgrown with greenery and probably peat-filled. Further back, to the left, is the hunebed; to the right, in the distance, a shepherd watches over his flock. These two elements were put in as characteristics of the landscape, to evoke a mood rather than to show any detail of them. In fact, the combination hunebed, heath, and shepherd-with-flock, was a well-established commonplace or stereotype; from 1845 onwards, this trio appears in countless paintings and drawings.[25]
The 'Commentary' to this school picture, with a fine Art-Nouveau cover, was written by E. Heimans[26] and R. Schuiling.[27] As is usual for Commentaries, no year of publication is given, but it appears to date from 1913. Inside it, a map (fig. 4) shows how the hunebed is viewed from the north-north-east. Hunebedden are here discussed after a thorough treatment of the regional geography, the heath and its reclamation, the geology, the flora and fauna, sheep-rearing, and the system of sod manuring; they are followed by an outline of Drenthe's traditional way of life in recent centuries. A general discussion of the hunebedden of Drenthe takes up two and a half pages, based on Holwerda's newly published report (1913) of his investigation in 1912 of the hunebedden D19 and D20 at Drouwen. In his writings Schuiling proves to be well-acquainted with the latest archaeological discoveries in Drenthe. Of the *grafkelder* (burial vault) hunebed D13-Eext, whose deviating structure is briefly mentioned, there is a good photo (fig. 5). A note refers to the 1913 excavation by Holwerda of the megalithic *langgraf* D43-Emmen during 'this summer'.
Schuiling's brief description of hunebed D14-Eexterhalte runs: '[this] is one of the finest and most regular; of the capstones five remain in place; it is clearly seen to lie on a small elevation. Of the surrounding circle of stones not much is visible at the surface, but of the stones of the portal, now gone, most were still present a quarter of a century ago; the present author saw them on several occasions.' The 'small elevation' is a narrow, late-glacial coversand ridge, which, as already mentioned, was a favourite location for hunebedden as well as later funerary monuments. Schuiling was mistaken about the portal stones that he 'saw on several occasions' before *c.* 1888 but which later seemed to have disappeared: the plans by Hooft van Iddekinge of 1874–78 and by Lukis and Dryden of 1878 show exactly the

25 Heij 1983, 7, figs. 6, 8–9, 11.
26 The schoolmaster E. Heimans (1861–1914) wrote inspiring articles on geology, as well as *Het Krijtland* (The Chalkland, i.e. Dutch South Limburg). Together with his colleague Jac. P. Thijsse, he produced a flora and a series of books entitled *Van Vlinders, Bloemen en Vogels* (On Butterflies, Flowers, and Birds) which made the study of natural history as popular in the Netherlands as archaeology in Denmark. Thijsse and Heimans in 1904 founded the Nederlandse Vereniging tot het Behoud van Natuurmonumenten (Society for the Preservation of Nature) and in 1896 started the magazine *De Levende Natuur* (Living Nature; Brouwer 1958). According to Professor Victor Westhoff (in a radio interview, January 1992), the Society was immediately successful in acquiring nature reserves because Thijsse managed to interest a banker friend, P. van Tienhoven, in the cause. Although sporadic archaeological monuments had been established in 1809 in Drenthe and at Nijmegen by King Louis Napoleon, and many more in 1847–1848 and 1868–1880 in Drenthe, even now they are still not a household concept, and private individuals and the government are by no means prepared to spend on them the sums that they unquestioningly invest in nature reserves.
27 Heimans & Schuiling 1913.

Figure 3 School picture 'Heathland in Drenthe' with hunebed D14-Eexterhalte, after a watercolour by Adriaan Herman Gouwe, lithograph by Senefelder, Groningen (P. Noordhoff), 1911. Picture 100×69 cm, with margins 113×83 cm (unfortunately, 3.5 cm have been cut off from the left side of the reproduced original).

28 See Bakker 1979a, 1979b, 1983 on the plans of the hunebedden of Drenthe drawn by Sir Henry Dryden in 1878 (sets of which are in the possession of the Society of Antiquaries, London; Drents Museum, Assen; Ashmolean Museum, Oxford). See Van Giffen 1925 for plans, descriptions and photos of 1918.
The undated sketch plans of the Drenthe hunebedden by *Jonkheer* J.E.H. Hooft van Iddekinge LL.M. (1842–1881) are in the Pleyte archive, vol. Drenthe, 16–10 (RMO). The named owners of the sketched hunebedden date the drawings to between 1873 (D18-Rolde is already state-owned) and 1880 (D6-Tinaarloo is still on common land). Hooft van Iddekinge was the director of the Numismatic and Medal Collection at Leiden from 1871 onwards, and from 1871 to 1878 secretary of the College van Rijksadviseurs voor de Monumenten van Geschiedenis en Oudheidkunde (Government Council for the Monuments of History and Antiquity), of which Pleyte too was a member. Hooft van Iddekinge drew the plans presumably in or before 1877, as in that year he donated to the Drents Museum at Assen various artefacts from the hunebedden that had been 'restored' and stripped of the remnants of their mounds around 1870 (ms. De Wilde 1906).

same situation as Van Giffen's plan of 1918.[28] It is possible that the stones were hidden in the heather when Schuiling returned for his last inspection. The school picture, which depicts the hunebed from the north, obviously shows nothing of the south-facing entrance.

'THE HUNEBED AT HAVELTE' (*c.* 1942), BY (?) JOHAN DIJKSTRA

The illustrated 'Commentary' by F. Pelder to the school picture *Het hunebed te Havelte* was probably written in the period 1940–1943.[29] This picture (fig. 6) replaced that of the hunebed at Tinaarloo (fig. 1) where the situation had been changed unrecognisably;[30] thus it became the new no. 1 in the series 'The Netherlands in Words and Pictures' of the publisher J.B. Wolters (Groningen-Batavia).

The back cover of the 'Commentary' says that the 30 pictures in the series were painted from nature by B. Bueninck, J. Dijkstra, M. Güthschmidt, and J. Gabriëlse. Although this picture is unsigned and undated, the style of painting and its bright colours seems to reveal the hand of Johan Dijkstra (1896–1978), a founder of the Groningen art society 'De Ploeg' (The Plough), who also painted several other archaeological subjects.[31] From the south-west, the artist looks out along the side of the hunebed D53-Havelte, which was investigated and restored by Van Giffen in 1918, at the narrow sandy track running towards the hunebed D54-Havelte, which stands out against a shadow cast by a cloud. To the right of this the ground rises towards the hill of Havelterberg, but this is hardly noticeable because the scene is cut off by the picture's right edge. To the left of D53, beyond the deep purple heath, the colour of bilberry juice, bright yellow driftsands shine in the sun. The verges of the sandy track and the soil around D53 that had been disturbed by the 1918 excavation are overgrown with fresh green grass. Even in those days the hunebed itself stood in sand, trodden bare by the feet of many visitors. A bush of broom flowers in the foreground.

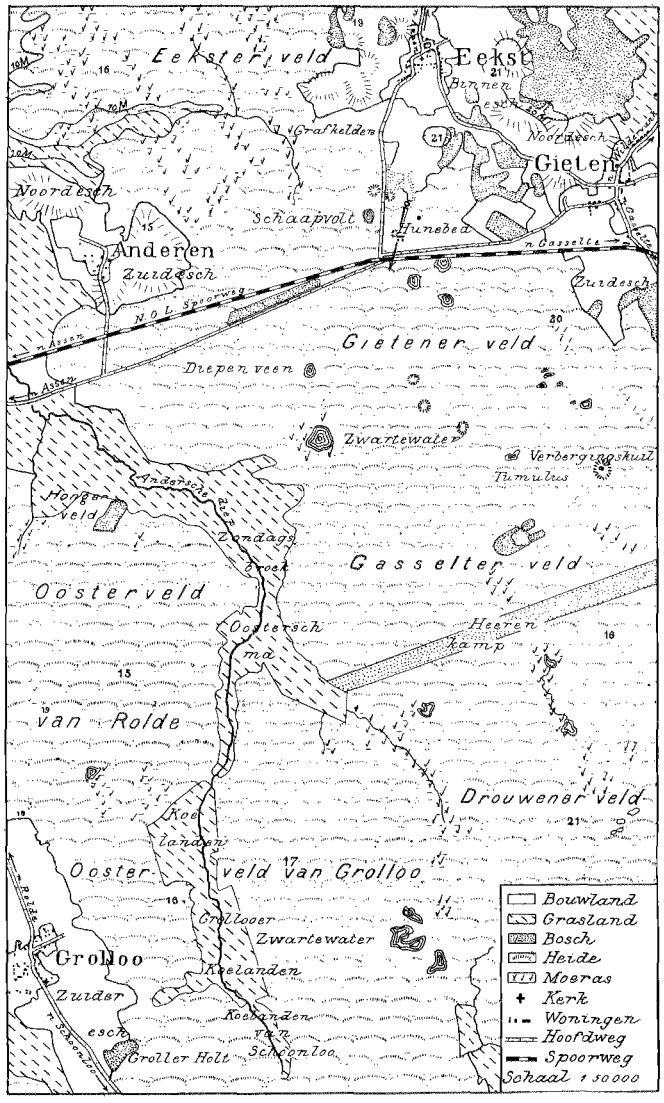

Figure 4 Map of the heath south-west of Eext, indicating the line of vision of figure 3 (arrow). Key: arable land; grassland; woodland; heath; bog; church; houses; main road; the 'Noord-Ooster Lokaal' railway line (no longer extant). Concentric rings indicate lakes. The map covers 11 km from north to south (after Heimans & Schuiling 1913).

29 Pelder [*c.* 1942]. Quotations are given from Byvanck's monograph on Dutch prehistory (1941) but none as yet from Van Giffen's survey of the prehistory of Drenthe (1943b). Could F. Pelder be a wartime pseudonym?

30 Pelder [*c.* 1942], 3–4.

31 A painting of hunebed D15-Loon after Van Giffen's restoration in 1952 (Drents Museum, Assen), and a watercolour of the foundations of the church of St Walburg in Groningen during the excavations by Van Giffen in 1950 (see Boersma 1983, for the story of its commissioning).

Figure 5 Photo of hunebed D13-Eext (after Heimans & Schuiling 1913, fig. 40). The mound of this well-known tomb (Van Lier 1760; *BROB* 29, 1979, 41) was inexpertly restored by the local authorities in September 1905. A small trench leading to the entrance was kept open (De Wilde 1910, fig. 7). Van Giffen (1927, text fig. 2 and p. 15, no. 3) shows a photo of 1908, with roughly the same pits in front of the entrance as in the photo above. Yet the latter shows a rectangular pit with straight, vertical sides, bare and somewhat weathered. They look like the work of a professional archaeologist: did someone carry out a small, unrecorded excavation?

Early in 1945, the boulders of hunebed D53 were buried in a deep pit when an airfield was laid out by the German occupying forces. The sandy track was widened and tarmacked to make a runway, while to the right (outside the picture) cuttings were made into the foot of the Havelterberg for parking aircraft. In 1948–1949 Van Giffen reassembled the hunebed, and in subsequent years had the landscape restored to its pre-war state. Only the asphalt road, serving busloads of tourists, has unfortunately remained.[32] This means that the quiet atmosphere of the watercolour can be experienced only very early in the morning. Owing to Van Giffen's land acquisition and the presence of a nature reserve and military training grounds, the other elements have remained reasonably intact. The main differences are that beyond D53 pine woods have sprung and the heath is now more grass-ridden and trampled.[33]

The 'Commentary' is a thorough, but not particularly original extract of what Van Giffen (1925; 1927) relates about the construction, the content, and the builders of the hunebedden, largely via quotations from Byvanck (1941). This is preceded by an outline of Dutch prehistory, and followed by a brief discussion of the barrows of later periods (after Byvanck 1941), but the geology and landscape remain undiscussed. The photos are by Van Giffen's Biologisch-Archaeologisch Instituut (BAI) at Groningen and the RMO; the drawings are Van Giffen's original ones, or redrawn copies.

32 See Van Giffen 1951, and his type-written reports to the Minister of Education, Arts, and Science.

33 Two of the six surviving capstones of hunebed D54 lie on the orthostats, which is at variance with the photos of 1918 (Van Giffen 1925, atlas-pl. 113), but also with a picture postcard postmarked 29.VII.1948. The presence in the picture of a sandy track instead of the asphalt road that replaced it in 1945, and the absence of publications of 1943 or later in Pelder's 'Commentary' (Van Giffen 1943b; Van Gelder *et al.* 1947), implies that the picture dates from before Van Giffen's restoration of D54 in 1955, during which the capstones were returned to their original positions. In his report of 19.III.1940 to the Minister of Education, Arts, and Science, Van Giffen refers to his unanswered written request of 24.VI.1939, in which he applied for Dfl. 75,- for 'a minor restoration', and again asks for this sum to be granted. The letter with the original request has not come to light. Although not explicitly stated, this 'minor restoration' may well have concerned D54, as D53 had already been restored in 1918. The assumption that only two capstones had been replaced on D54 by 1939–1940, but on the construction of the airfield in 1945 were put back on the ground as in the 1918 photograph, does not seem very likely.

II HISTORY SCHOOL PICTURES

THE ORIGINS OF HISTORY SCHOOL PICTURES

Several interesting studies have been written about the origins of the images on history school pictures, of which figure 11 is one.[34] Of course there is a direct link with book illustrations, paintings, etc. in which historical scenes are reconstructed. The earliest examples include Picardt's illustrations (1660) and Rembrandt's painting of the Batavian Claudius (now Julius) Civilis swearing an oath against the Romans AD 69, which was created in 1661–62 for Amsterdam's splendid new town hall (now the Royal Palace). In this scene, described by Tacitus, the 17th-century 'Batavians' in Holland saw an analogy to their own Revolt against King Philip II of the Spanish-Habsburg empire.[35] 'Historic moments' were a favourite theme and painters would try to convey the weight of the occasion and the actors' frame of mind by their facial expressions and gestures. Most of the pictures featured the Eighty Years' War and the 'Golden' 17th century, a crucial period in the Netherlands' emergence to statehood, or more recent history; only a few dealt with prehistory, the Roman period or the Middle Ages. Naturally the style of representation and the subject matter of the paintings, book illustrations, and school pictures would vary according to prevailing taste, norms, and attitudes, and of course religious denomination and school type.

The prehistoric and early historical subjects are given little attention in the recent studies, probably because they are a very small minority and because the authors considered themselves insufficiently expert on the periods concerned.

Johan Picardt in 1660 was the first Dutchman to link an illustrated 'historical' story to Dutch prehistoric monuments and earthworks such as hunebedden, barrows, and Celtic fields. Since then, certain works of general history of the Netherlands, written for the general public and for schools, did devote a few paragraphs or pages to the hunebedden, which Westendorp in 1815 ascribed to the Celts. These works would then skip the tumuli and Celtic fields, to proceed immediately to the Germanic tribes known through Tacitus, to the Romans, and to Christianisation and Charlemagne in the Dark Ages. Yet most books begin with the Germanic tribes and the Romans, and, somewhat understandably, ignore prehistory altogether.

We see the same pattern being followed by the first of the two galleries of historical painting to be established in Amsterdam in the 19th century. The *Historische Galerij* of the insurance broker and art collector Jacob de Vos Jacobszoon (1803–1878) was assembled between 1850 and 1863. It was supplied with works by 29 painters, among them some very famous ones, such as Laurens Alma Tadema. In 253 oil sketches it covered the period of AD 40 ('A Caninefate Mocks Emperor Caligula for his Victory over the Sea') up to 1860 ('Skaters Showing King William III the Way during the Flooding of the Bommelerwaard Polder'). Four relate to the 1st century AD, eight to the 8th–12th centuries, fifty to the 13th–15th centuries, and 191 to the 16th–19th centuries.[36]

The historical gallery of the artists' society 'Arti et Amicitiae' was established ten years later; 75 artists contributed work in the period 1860–1875. This began with 'The Primaeval Condition of the Netherlands', a landscape in the alluvial period: scenery reminiscent of Ruisdael with inundated virgin forest, painted by J.W. Bilders (1811–1890).[37] This was followed by 'A Hunebed in the Province of Drenthe' (fig.7) by H.D. Kruseman van Elten (1829–1904), 'A Germanic *Terp*

34 Van de Waal 1952; *Vaderlandsch Gevoel* 1978; Heij 1983; 1990.

35 Brunsting 1966; 1970; 1973. Schwartz 1984, 318–320. The selection of subjects was based upon twelve paintings of episodes in the Batavian uprising that Otto van Veen (1556–1629) sold to the States General at the Hague in 1612 (now in the Historical Department of the Rijksmuseum, Amsterdam). Schwartz 1984, 23, 319. Until the early 19th century the Dutch Republic was eager to identify itself with the *Civitas Batavorum*, witness such names as 'Batavia' (Jakarta, from 1619 to 1948) and 'Bataafsche Republiek' (the Republic of the Northern Netherlands, 1795–1806). Van der Woud 1990.

36 Carasso 1991.

37 Commentaries to each individual painting: Hofdijk 1862 and Van Lennep, De Moll & Ter Gouw 1869–1872. The last-named work contains steel engravings after the paintings. The texts accompanying the prehistoric scenes, by J. ter Gouw, are unremarkable. As the only relic of the Gallery, which was sold off by an 'innovative' Committee in 1892 (Carasso & Van der Spek 1991), Bilders' large painting 'The primaeval condition of the Netherlands' hangs in the entrance hall of 'Arti et Amicitiae'.

Figure 6 School picture 'The Hunebed at Havelte' with hunebedden D53 and D54, probably after a watercolour by Johan Dijkstra; Groningen (J.B. Wolters), *c.* 1942. Picture 74×55.5 cm, with margins 87×67 cm.

and Dwelling' by A. van Everdingen (1832–1912), 'A Germanic Sacrificial Altar' by J.W. van Borselen (1825–1892), and 'Romans Cutting the Drusus Fosse' by P.L.F. Kluyver (1816–1900) and – for the human figures – H.F.C. ten Kate (1822–1891). The hunebed, represented with its complete set of boulders, is reminiscent of hunebed D14-Eexterhalte. Like other major paintings at 'Arti et Amicitiae', it was reproduced as a steel engraving in a luxury edition, each reproduction accompanied by a separate commentary.[38, 39]

38 Van Lennep, Moll & Ter Gouw 1869, pl. 2. The original painting now may be in the Municipal Museum at Alkmaar (Scheen 1981, 138).

39 The two historical galleries, the book illustrations and the school pictures emanate the serious, royalist hero worship associated with the 19th-century re-establishment of the monarchy and *Biedermeier* conventionalism, when 'Fatherland' was spelt with a capital F as long as it concerned our own country. 'If the visual Arts are truly to contribute to the elevation of humanity, to the evocation of Patriotic

THE 'TABLEAUX' OF THE STONE AGE BY W.J. HOFDIJK (1856–1859)

Historical paintings and school pictures of course underwent other influences as well. Apart from religion and science, there were historical novels, poetry, plays, and operas, as well as serials and short stories about life in the past in almanacs and literary and historical journals.[40]

In this context we should place the historical 'tableaux' of life in the Stone Age that Willem Jacob Hofdijk (1816–1888) painted in words between 1856 and 1859, with descriptions of 'the earliest occupants', 'the savages of the Netherlands', or 'the founders of our hunebedden'. He was able to do so after the Leiden archaeologist L.J.F. Janssen (1806–1869) had laid the basis in a series of studies. Hofdijk's work was inspired on the one hand by Janssen's vivid description in 1853 of life in the Stone Age, in which he argues that national historiography should henceforth begin with the Stone Age, and on the other by Janssen's studies of the Stone Age remains found near Hilversum.[41]

The Dutch word *tafereel* or *tafreel* ('tableau'), deriving from Latin *tabula*, means both 'scene' and 'picture' of a situation or event. Metaphorically, it can be a picture in words, and it is in this sense that Hofdijk used it as a keyword. He was not the first to do so. The historian Van Wyn in 1800 casually used the word in this sense,[42] which suggests that it was in general use in painting as well as in literature and drama. Also the genre of describing brief, vivid, and exciting scenes from Dutch history was not new, as Jacob van Lennep had employed it with great success in his 'Our Ancestors Sketched in Various Tableaux' in 1838–1844.[43]

While Hofdijk's fame as an author of dramatised history falls behind that of authors like Willem Bilderdijk (1756–1831), Jacob van Lennep (1802–1868), J.F. Oltmans (1806–1854), and Truitje Bosboom-Toussaint (1812–1886), it is especially the *tafreelen* presented by Hofdijk and Van Lennep that show a close affinity to

sentiments and the glory of the Realm, then this can be attained above all and well-nigh exclusively through Historical Painting and Sculpture', stated Jacob de Vos Willemszoon in 1841 (Carasso & Van der Spek 1991, 13). In 1897 the gallery of his son Jacob de Vos Jacobszoon was still considered by some to be 'an eminent school [...] for living and future generations, through which to foster and cultivate the love for the soil of our Fatherland and devotion to the House of Orange' (Carasso & Van der Spek 1992, 29).

An outrageous attempt at satire by the writer Jacob van Lennep and the illustrator *Jonkheer* Pieter van Loon (1801–1873) in a very witty parody of these deadly serious Dutch histories (Van Lennep & Van Loon 1854) unfortunately misfired because of widespread indignation at this trivialising and slandering of History (typically Dutch, not unlike the row in 1967 about the nude television appearance of young, pretty Phil Bloom). The first edition of the book, with 38 illustrations, was taken out of circulation by Van Loon himself. The outlines for parts 2 and 3, covering the period up to 1651, still exist. To these, the authors later added an ironic, perversely bowdlerised version in manuscript. Two years after this failure, Van Lennep published *De Geschiedenis des Vaderlands in Schetsen* (The History of our Fatherland in Sketches) in 1856, with many illustrations, which according to Van Loon was 'as insipid and virtuous as sage milk', and which he refused to contribute to. To the present author it seems a rather boring textbook. Van Lennep and Van Loon were related by marriage and as early as 1836 had jointly produced an anonymous cartoon with twelve prints and captions (Trapman-Labouchere 1973).

Presumably Van Loon was the instigator of the 1854 satire, even though he hid behind the 'Co' of 'by Jacob van Lennep & Co' on the title page. The wit, reminiscent of *Prikkebeen*, the Dutch version (1858) of *Histoire de Monsieur Cryptogame* by Rudolph Toepfer (1845), is still amusing. Could a publisher not be found for this? (Van Loon Stichting Amsterdam; cf. Trapman-Labouchere 1973; Heij 1982, fig. 10). The author thanks Professor M.N. van Loon for granting him access to these fascinating documents.

40 Cf. Luger 1990. The study of historical painting and school pictures, which did not boom until many years after Van de Waal's fundamental study, has not employed literary sources very much up till now; art history and Dutch literature studies have been working 'back to back' on the same subjects (cf. Van Oostrom 1991 on the study of Jacob van Maerlant's illustrated 'Rhymed Bible').

41 Janssen 1853a; 1853b; 1856; see the following article in this volume of the *BROB* (Bakker 1990).

42 Van Wyn 1800.

43 Van Lennep 1838–1844. In his preface he argues that our understanding of the truth suffers less from a historical novel than from a historical work (because in the novel, truth and fiction are interwoven). His aim was 'to show the gradual progress accomplished in our country by the various peoples that inhabited it and the social systems that governed it'. Professor H.A. Heidinga (IPP) kindly extracted this information from his library.

Figure 7 A hunebed in Drenthe, steel engraving by C.L. van Kesteren (in Van Lennep *et al.* 1869), after a painting by H.D. Kruseman van Elten in the former historical gallery of 'Arti et Amicitiae'. In this 19th-century landscape an idealised hunebed, possibly D14-Eexterhalte, is shown from a non-existent high viewpoint. Photo Universiteitsbibliotheek Amsterdam.

historical painting and school pictures. As Van Lennep never ventured further back than the days of Caesar,[44] this discussion is confined to Hofdijk. This self-taught word-painter also sketched with pencil and brushes, but he owed his fame among a wide public to his historically inspired poems and prose, which he turned out at a fast rate and with which from 1851 onwards he supplemented his income as a teacher of history and Dutch literature at the municipal Barlaeus Grammar School in Amsterdam.

In 1856, Hofdijk published a series of lectures held in the winter of 1854–55, under the title of 'The Dutch Nation Sketched in the Various Epochs of its Progress'.[45] Its structure, composed of short, graphic, and vivid tableaux, well-suited to lectures, is maintained in the further elaborated 'Historical Landscapes' (1856)[46] and eventually in the six-volume, illustrated luxury edition 'Our Ancestors, Sketched in Daily Life' (1859–1865).[47]

Hofdijk directed his attention especially at the poorly-

44 From Westendorp (1822), who also waxes romantically poetical at times, Van Lennep (1838) was still unable to glean sufficient material for a lively episode about the Stone Age. This was to be provided later by Janssen 1853a; 1853b; 1856.

45 Hofdijk 1856a.

46 Hofdijk 1856b.

47 Hofdijk 1859–1864. Of a different nature are his 'Sketch of the History of the Netherlands, illuminated with pictures', a textbook for schools (Hofdijk 1857; evidently written before he had read Janssen 1848 and 1853a), and his commentary to the gallery of historical painting at 'Arti et Amicitiae' (Hofdijk 1862).

known, remotest past,[48] and in his three markedly parallel publications his treatment of the Stone Age is expanded from *c.* 630 words (3 pages) at the beginning of chapter one ('The Pagan Germanic Tribes') of 'The Dutch Nation' to *c.* 5400 words (28 pages) in the first chapter ('The Hunebed at Rolde') of 'Historical Landscapes', where it was preceded in the 'Introduction' by a very elaborate description of a prehistoric landscape. By combining, paraphrasing, and supplementing, Hofdijk developed this into a chapter devoted exclusively to the Stone Age, 'The Prehistoric Era' of some 7000 words (17 pages) in 'Our Ancestors'. The texts are enlivened with illustrative verse, including passages from Bilderdijk's translation of 'Ossian'.[49]

These texts mainly consist of three elements: archaeological evidence, adventure and 'intimate' daily life, and long descriptive reconstructions of the natural environment. For his descriptions and illustrations of Stone Age people and their way of life in 'Our Ancestors' he had an excellent source in Janssen's detailed studies, which he drew on slavishly and often almost verbatim.[50] In 'The Dutch Nation', the short passage about the unknown, nomadic tribes that built the hunebedden, 'which as monumental tombs of their worthies once domed over the artlessly formed urns', largely consists of a long, graphic quotation about their way of life from Janssen,[51] followed by a description of the natural forest and its fauna. Set in Germanic times, the arrival of Caesar features in a long and lively episode, to which the preceding paragraphs merely serve as a prelude. In the Introduction of 'Historical Landscapes' Hofdijk argues that the soil and history are most intimately related and that landscapes like the Frisian lakes, Beekbergen Forest, the heath at Ermelo, and the North Sea coast and Maas estuary at Hook of Holland provide a good impression of the environment where people lived in ancient times.[52]

The 'from-within' descriptions of nature in his three books are forerunners of those by the naturalists Heimans and Thijsse.[53] Some points are particularly striking. Science still had no notion of glaciations: Hofdijk states that the boulders in Drenthe were 'strewn down' here in primaeval times, and that Drenthe was once covered by an ocean.[54] After the sea withdrew, a swamp

48 Hofdijk 1856a, v.

49 These poems are probably by several authors, including Hofdijk himself. In the three volumes we often come across the same lines. Hofdijk 1853b, 51 refers to Bilderdijk's translation of Ossian. The poems of Ossian, a third-century bard who describes the glorious life in the Scottish Highlands, were brought to light by James Macpherson in 1762–1763, a generation after the Scots were defeated at Culloden. They became world famous and everywhere stimulated romantic, historicising literature and the study of folklore. Bilderdijk translated them in the 1790s. His portrait (by or after Charles Hodges, 1764–1837) in the Koninklijke Akademie van Wetenschappen in Amsterdam shows him resting a hand on his own manuscript of 'Ossian' and the printed *Opera Omnia* of Homer. Only in the course of the 19th century did it transpire that Macpherson himself was the poet. Evidently Hofdijk was not yet aware of this. Yet it should be noted that despite the doubts regarding Macpherson's text expressed from 1764 onwards, an anonymous contributor to Volume 11 of the *Geïllustreerde Encyclopaedie* (edited by A. Winkler Prins) defended its authenticity even in 1886.

50 Janssen 1853a; 1853b; 1856; see the following article in this volume of the *BROB* (Bakker 1990). For Hofdijk 1856a and 1856b, use was made of Janssen 1853a and 1853b, for Hofdijk 1859 also of Janssen 1856. Although Hofdijk (1859, VIII–IX) gives more archaeological references, most of these were probably taken directly from Janssen; it is unlikely that he consulted them himself.

51 The quotation is from Hofdijk himself. Janssen's text is in 1853a, 20–22. 'Artlessly formed urns' is applicable to undecorated vessels, notably those in Van Lier 1760, pl. II: 2–3 and most of those in Engelbert's illustration (see the next article in this volume of the *BROB*, Bakker 1990, fig. 1). Janssen 1840 and 1853a already described thin-walled, finely-decorated pottery from the hunebedden, but it seems that Hofdijk (1856a) had not yet seriously studied this literature.

52 Beekbergen Forest, regarded as the Netherlands' last virgin woodland, was an impenetrable alder wood in a marshy depression east of Apeldoorn (Staring 1856, 109–12; Van der Woud 1990, 140, 202 note 11), which unfortunately was to be cleared entirely by 1871. Hook of Holland was the original south-west corner of the Province of South Holland. In 1866–1872 the Nieuwe Waterweg canal was constructed north of this, connecting Rotterdam and the North Sea, and the name was transferred to the ferry port and railhead at its mouth. The heath at Ermelo and the lakes of Friesland remain more or less unchanged since Hofdijk's days.

53 See note 26.

54 In the first half of the 19th century, it was believed that the boulders of Drenthe derived from submarine reefs (A. and S.J. Brugmans, J.G.S. van Breda; cf. Van der Woud 1990, 83–101). Hofdijk merely hints that he too assumes this origin (1856b, 13; 1859, 18). See also the descriptions of the first painting in the 'Arti et Amicitiae' gallery, by Hofdijk (1862) and J. ter Gouw (Van Lennep, Moll & Ter Gouw 1869–1872).

developed in the low-lying areas, and on the sands, forests of aspen. Later, pine forests were to dominate the landscape for a long time. These were eventually succeeded by deciduous woodland in which at first durmast oak predominated; alder forests then followed, and finally the beech arrived.[55] This is the stage that saw the evolution of the Stone Age. Heaths and grassy plains also appeared.[56] Apart from the plants and animals that we would expect, Hofdijk at first furnished this landscape also with giant deer, reindeer, and fallow deer.[57]

In the first chapter of 'Historical Landscapes', entitled 'The Hunebed at Rolde', the author draws the reader into his contemplations. After some introductory poetry and ponderings, he continues: 'Let us now proceed to the ancient soil of Dutch Egypt, that wondrous region with its labyrinth of monuments from twilit prehistory lying under a veil of mystery, which it has been possible only partially to lift – quiet, desolate Drenthe.' He describes a sunset at the church of Rolde and then takes the reader on a five-minute moonlight stroll along gardens and fields to the hunebed just beyond. This is followed by a long and evocative description of the monument's appearance.

Going back in the imagination 'some five-and-twenty centuries', Hofdijk shows the reader how in the early morning light, a bold young hunter, clad in fur, emerges from a hut made of rough timbers, wattle, and reed, then bathes in the brook, and sets out.[58] Other men too set to work, such as hollowing a dugout canoe with fire, or polishing arrowheads on a piece of sandstone, for which children have collected small flints out on the heath. The young hunter witnesses a struggle between a brown bear and a huge forest bull, kills the victorious bear, but himself perishes in the event.

Meanwhile his father in the hamlet produces hunting gear and other tools from stone, wood, and antler, and his mother makes pottery.

'Those small, indeed rather fine drinking cups, and those two beakers, all made of yellow- or reddish-grey clay, and decorated here and there with lozenges or parallel, straight or undulating lines, and now exposed to the full heat of the sun's rays, are the fruits of her busy hands. None among the other women of the hamlet can make the pottery she needs in so elegant a style. From the deep pit, so carefully covered over with heather and grass sods against the influence of the summer sun, she has again taken a lump of clay mixed with fine quartz or granite, which is carefully kept there. Against a round stone which she holds in her left hand, by which she applies constant pressure, and continually turning, she presses up the clay with her right hand and thus forms a bulbous vessel; putting aside the stone, she first constricts the vessel's opening inward and then folds it out, thus obtaining a standing rim. Quickly, and with a smile of satisfaction, she now takes a piece of poplar bast and carefully smoothes away all roughness on the outside. With a denticulated wooden spatula she then draws some playful lines deep into the clay as a decoration, and with this the new, fine product is ready. Behold – she sets the vessels together in a circle, pours a loamy slip over them, and, partially filling them with dry wood chips or heaping chips around them, sets fire to the pile. And now, watching intently, she now here, then there, feeds the dying flames, which once more will provide a major requirement of domestic life.'

A description follows of how the hunter's wife prepares food and beverages. The latter are made from sloe berries or roasted acorns. Also there is mead, made from fermented honey, a most agreeable drink with which to recount stories around the hearth in winter. This is followed by hunting stories.

The peaceful scene is harshly shattered when the hunter's body is put down in front of the hut. The relatives' grief, the wild lamenting for the dead man by the women of the community, and the cremation are now described. His ashes are collected and put into the urn

55 This remarkably modern-sounding opinion (Hofdijk 1856b, 15–6), quoted from an unspecified article by H.G. Haasloop Werner, is based on J. Steenstrup's study of the peatbogs of Vidnesdam and Rudersdal in Denmark (*Videnskabernes Selskabs Afhandlinger, math. et nat. hist. ser.* 1841; cf. *Compte-rendu* 1875, 168–70).

56 Janssen nowhere mentions heaths, but instead believes that apart from marshes, lakes, and sea coasts, the Netherlands were entirely covered by forests (1853a).

57 Hofdijk 1856a, 5; 1856b, 20, 36, 40, 47; but reindeer and fallow dear no longer in 1859. Janssen did not mention these anomalous animals, but he did mention rabbits, which Hofdijk omits. The inappropriate beasts as well as the correct ones largely go back to finds from Denmark and southern Sweden, most of them discussed in studies by J. Steenstrup (cf. the review of earlier work, partly with corrections, *Compte-rendu* 1875, 160–71).

58 For references in Janssen, see the next article in this volume of the *BROB* (Bakker 1990).

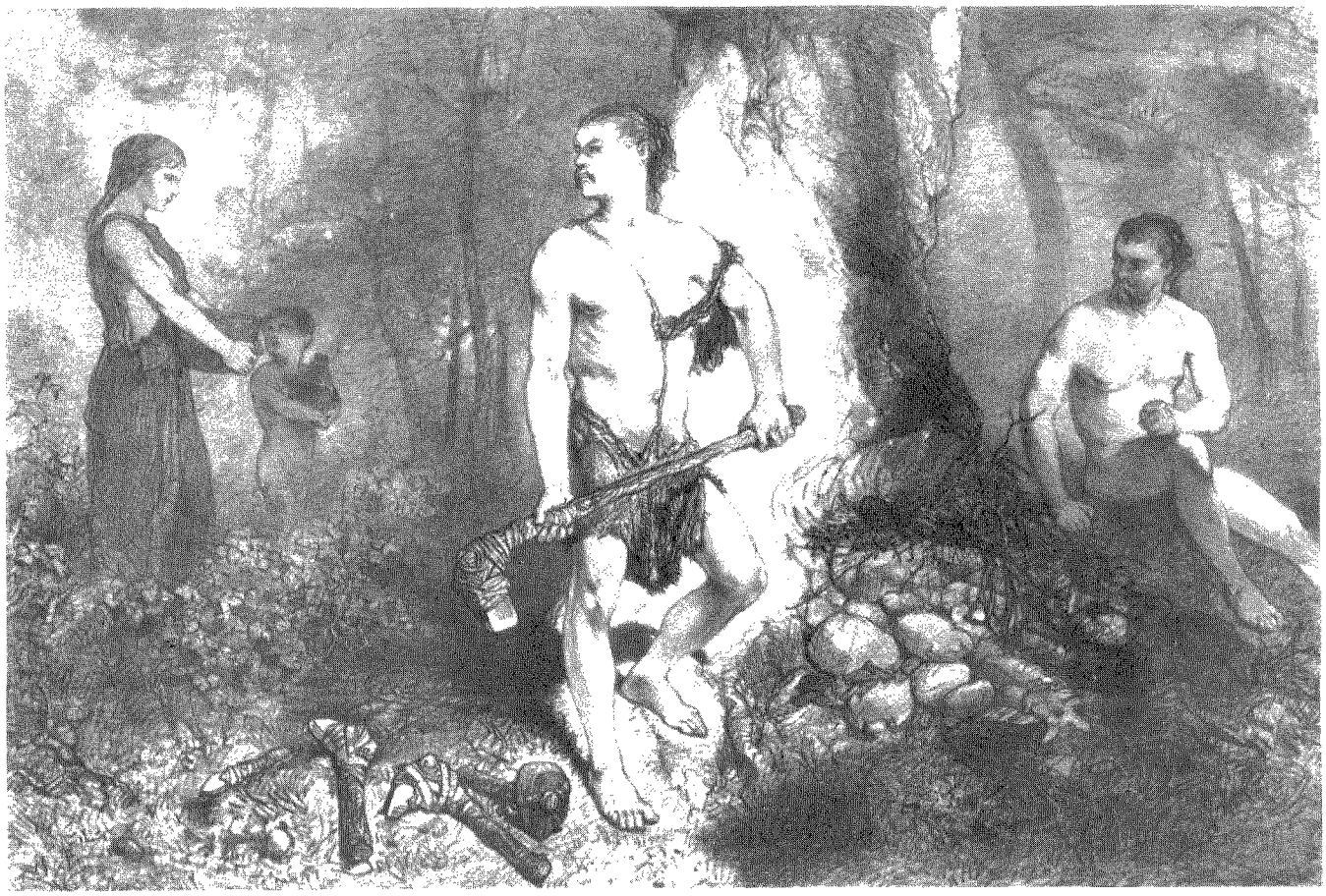

Figure 8 'Kvenes, the earliest inhabitants of our Netherlands', drawn by Charles Rochussen, lithograph by Ennik & Bingel (in Hofdijk 1859; picture 19.5 × 13 cm, in dark grey and buff). The men are felling a tree with axes and fire. The woman and child are bringing along their meal. Axes hafted in the fashion of those observed by Cook in Tahiti, and a hafted axe-hammer. Photo Universiteitsbibliotheek Amsterdam.

that his mother has just baked, and set upon a pavement of stones. Over this is built a hunebed, for which the stones are rolled along with the aid of levers. The openings in the walls between the orthostats are filled in with smaller stones, and after soil has been heaped up against the walls to form a mound, the huge capstones are rolled onto the orthostats.

At the end of the story the reader is reminded that these people were definitely better off than today's paupers living on the heaths of Friesland, who, deprived of any form of civilisation, are quoted as being utterly animalised, living in hovels built of sods.

In 'Our Ancestors' the Stone Age episode is accompanied by three coloured lithographs: firstly (fig. 9) a collection of pots and other artefacts, accurately drawn from existing sources by David van der Kellen (1827–1895), who according to the author 'imparts life and grace to objects sometimes rather dull in themselves, grouping them in an inspired manner', secondly (fig. 10) hunebed D36-Valthe by H.D. Kruseman van Elten,[59] and finally (fig. 8) an action picture by Charles Rochussen of two men felling a tree using stone axes and fire, while a woman and a child bring along their lunch. After a description of the local forest, the text goes on to relate how strenuously these men are working. Tired and perspiring, they sit down for their lunch break.

59 Identification of this hunebed: Van Giffen 1925, 97.

'And now you will see that their traits bear witness to limited intellectual development, while the contours of the brow, which is low and receding, of the deep-lying bridge of the nose, of the long jaw, and the round skull, will by no means satisfy your sense of beauty. Yet their regard displays a certain rough kindliness, and their fierce looks must be due mainly to their long moustaches and their unkempt hair, gathered up at the back of their heads with bone combs. Their whole appearance reveals that they belong to the tribe of the Kvenes.'[60]

The text, which opens with this episode, explains that the wife and the little son of the elder man are bringing along a flask of mead, a bowl of 'bluish pulpy porridge', and a pot holding 'a hunk of an aromatic roast'. The pots, two 'pails' and the collared flask from hunebed D12-Eext, which is rendered too large and inaccurately shaped,[61] are prettily decorated. The younger man accidentally breaks a pot, at which his companion and especially the latter's wife glare at him, 'for not only was the ceramic well-made, with handles, but moreover it had been a present from her long-dead sister, who made pots, bowls, beakers, cups, and urns of such beauty that they were the envy of all the tribe's women'. To make up, he promises to give the woman the fresh skin of the very first game that he will kill.

On the way home, mother and son see a black butterfly, a bad omen. A little later they are chased by a furious wild sow when they get too close to her piglets and they seek refuge up 'a dead pine tree, half-toppled because of the sodden soil which is turning to peat, and therefore scalable'. However, the pig by rooting underneath the tree trunk undermines it, and mother and son both tumble down with the splintering crown. Fortunately the men hear the noise and the youngest man kills the pig with a stone ball and a heavy stone hammer. The husband and wife receive the meat, and the young man the skin of the pig, which he immediately gives to the woman to fulfil his promise.

A later episode starts with an elaborate description taken literally from the 'Historical Landscapes', of how the same woman some months later is making pots and how another woman prepares food and drink, and again how the hunter produced his hunting gear and other tools of stone, wood, and antler during winter nights at the hearth. Now he is hunting, and single-handed hunting in the various seasons is touched upon. Meanwhile, the young man is out on a lake, harpooning bass, pike, bream, carp(!), tench, eel, and elver from his canoe made from the felled oak tree, 'whose sound workmanship will amaze you and compel your admiration'. Then follows a treatise on the production of dugout canoes. The boy may be playing on the heath or in the brook with the other fellows, climbing a tree, or accompanying his father on a hunt. He may also be busy polishing stone tools with water and sand, which could be quite sensible, considering that the stone tools and weapons have recently been buried in stone-clad sacrificial hearths, together with the burnt remains of animals offered to a deity, 'according to my shrewdest guess, a god of fire'.

The final episode takes place many years later. The boy, now a middle-aged man, leans against a hunebed and ponders on the cremation rites and the building of this monument at the demise of his old father, now ten years ago. These activities are elaborately described. For centuries the hunebedden stood on the heath, uncomprehended, but only through recent research had a sparse picture of the past been obtained. 'Across these stone tombs, we reach out to our brethren from the grey morning mists of history, and their figures, fleshed out as in a serious novel, mysterious no longer, appear before us, at work in their everyday lives.'

As said before, Hofdijk closely follows Janssen's two studies of 1853. In his study (1853b) on the 'sacrificial fireplaces' of the hunebed builders, which he excavated near Hilversum, Janssen had concluded from the recovered bone fragments that the Stone Age people at Hilversum were not nomadic hunters (a belief he still held in his publications of 1848, 1850, and 1853a), but herdsmen who kept cattle, sheep and/or goats, and dogs, and lived in permanent settlements. This stage of man's development, he argued, was intermediate between those of hunting and agriculture. In Hofdijk we never find any reference to livestock rearing or domestic animals, while we do come across Janssen's theory, propounded in the same publication, about the Hilversum fireplaces serving as sites of sacrifice to a fire

60 This description is not from Janssen. For more about the Kvenes, see below.

61 Represented somewhat better in fig. 9, after the poor-quality print in Van Lier 1760, pl. III: 5. Now in the Drents Museum at Assen, inv. no. 1925/III.6. About its provenance: Van Lier 1760, 77; Van Giffen 1927, 20–1, note 5; Van Giffen 1943a, 12. Rochussen shows only one bowl, so dark that little can be seen of its decoration (fig. 8).

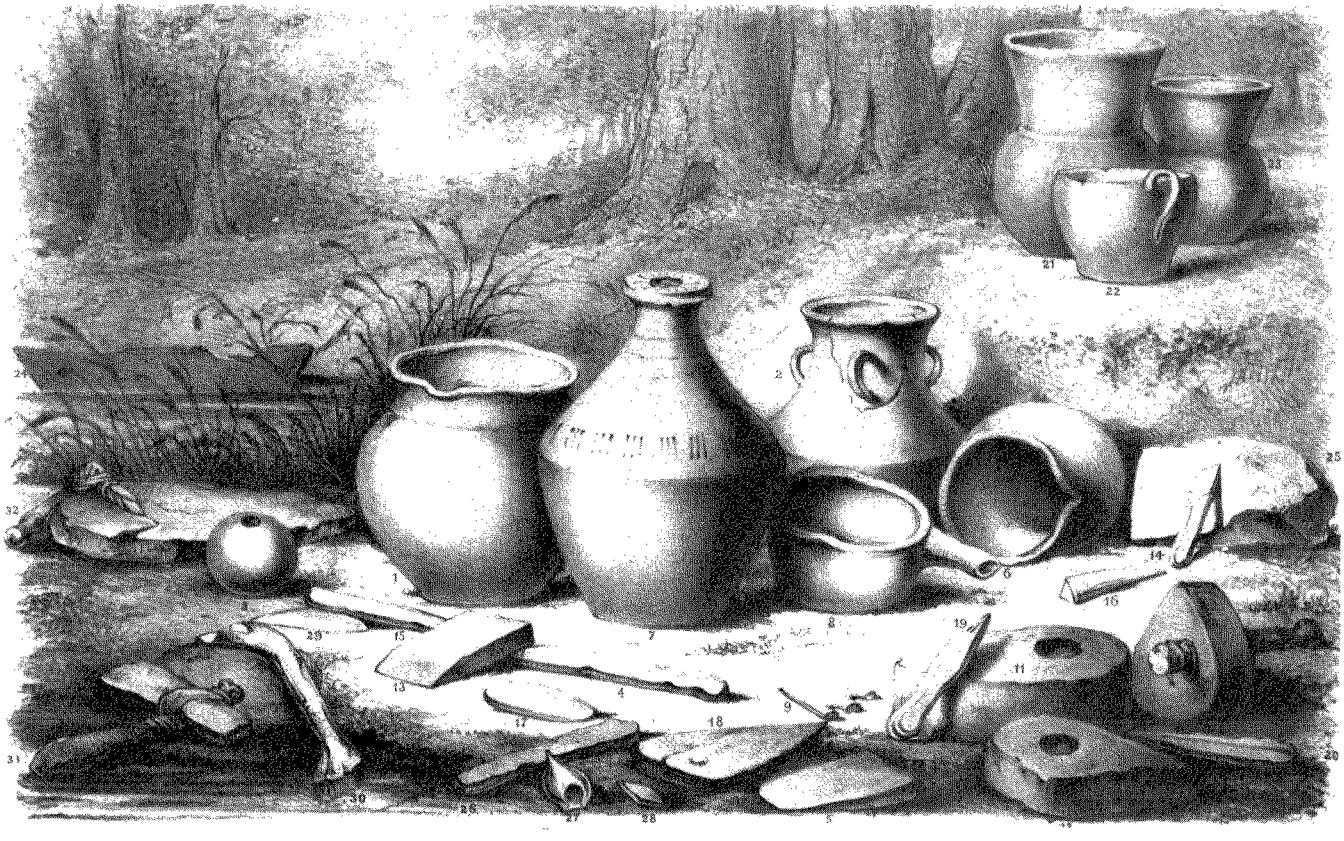

Figure 9 Objects made by the hunebed builders, not quite appropriately entitled 'Stone antiquities of the prehistoric era'; drawing by David van der Kellen, lithograph by Ennik & Bingel (in Hofdijk 1859; original size 21.5×12.5 cm, in grey and grey-blue). The majority of the tools are from Hilversum (Janssen 1853b; 1856). Other sources are given in brackets. Photo Universiteitsbibliotheek Amsterdam.
1–2, 6–7 'urns' (1–2: Van Lier 1760, pl. II: 1–2; 6: ?; 7: Van Lier 1760, pl. III: 5); 8, 21–23 'pottery vessels' (Van Lier 1760, pl. III: 6; Janssen 1840, figs. 53–54, 60); 3 'bola' (the central hole is an error); 4, 15 'chisels'; 5, 13 'wedges' (13: Van Lier 1760, pl. II: 7); 30–32 'probable mounting of the wedges as axes' (30: wooden shaft with a hole from Denmark or Mecklenburg? 31: flintaxe mounted like a tomahawk? 32: after Tahitian example, see fig. 8); 9, 19–20, 27–28 'arrowheads' (19: Van Lier 1760, pl. III: 8, barbed and tanged flint arrowhead); 10–12 'hammers' (Engelberts nrs. 6–8); 16–17 'knives'; 18 'knives'; 25 'heavy axe'; 26'whetstone'; 24 'boat' (vaguely resembling Janssen1840, fig. 25, the ceramic model allegedly from hunebed D15-Loon, see text).

god. Evidently Hofdijk had trouble accommodating a livestock economy into the idea he had earlier formed of a people of hunters, fishermen, and fruit gatherers – with pottery, polished and pierced stone tools, huts, and hunebedden.
Remarkable with both authors is their understanding of, and high regard for the TRB pottery, then known from only a few sherds and vessels. Hofdijk's passage is drawn almost entirely from an equally detailed description by Janssen. The latter based his account not only on the Neolithic pottery from megalithic and other graves in the Netherlands, Mecklenburg, and southern Scandinavia, but also on a description by the Prince of Wied of pottery production among Indian tribes in the North American Plains. Hofdijk adds to Janssen's text that the pottery was made by housewives, a notion which has recently found additional support.[62] Also

62 Bakker & Luijten 1990.

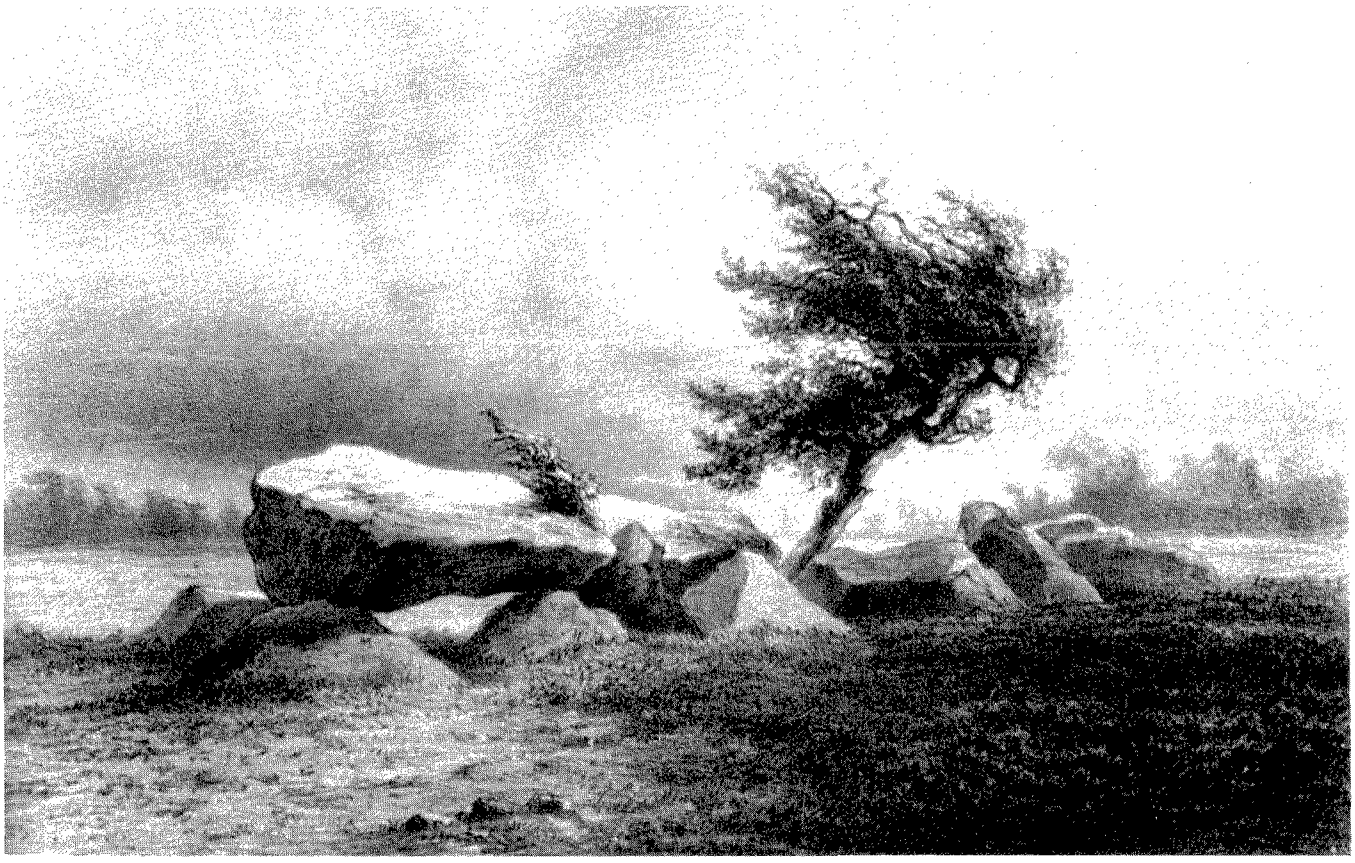

Figure 10 Hunebed D36-Valthe, drawing by H.P. Kruseman van Elten, lithograph by Ennik & Bingel (in Hofdijk 1859; original size 22×14 cm, in grey and mauve). This picture was true to life, except that certain signs of modern times were omitted (cf. Van Giffen 1927, atlas-pls. 75–6). Photo Universiteitsbibliotheek Amsterdam.

Hofdijk puts more stress than Janssen does on the drinking of mead (from jugs). This has recently been corroborated by new evidence.[63]
Curious details are that Hofdijk first has the urn with the cremation put on the paved floor of the hunebed, later beneath it, and that he has the fragile urn interred when the whole of the hunebed is yet to be erected over the floor. Also, like Janssen, he has people polishing arrowheads.[64]
The name 'Kvenes' for the hunebed builders, invented by Weinhold, may be an alteration of the 'Chounoi' of Ptolemy's maps. In 1862, however, Hofdijk speaks of 'Fenes', following Tacitus' description of this primitive people of north-eastern Europe. Janssen, when he wrote about Hilversum, decided he was dealing with Frisians.[65]
Another point of interest is that Hofdijk on the title

63 Bakker 1992, 51.
64 Hofdijk 1856b (on top of the pavement); 1859, 17 (under the pavement, before construction of the vault). The polished flint arrowheads of the Ruczewo group of the Corded Ware complex in northern Poland are probably almost unique in Europe.
65 Hofdijk (1857, written before 1853–54) calls the hunebed builders *Celts*, after Westendorp. In his later writings (1856a; 1856b), he refrains from giving them a name. In 1859 Hofdijk (6 and caption to fig. 8) calls them *Kvenes* (after Weinhold n.d., cf. Witkamp 1873, 14 and Hofdijk 1859, IX). Hofdijk 1862, 9, refers to them as *Fenes*. Janssen 1848, 167–84 presents them as 'an unknown people predating the Celts' (discussion of *Chuni*, *Huns*, and *Chounoi* on p. 170). Janssen (1853b, 147–8 and 1856, 55) rejects the name *Fennes* (from Tacitus, *Germania*, cap. 146). Janssen (1856, 60) calls them *Frisians*.

page (of his own design) of 'Our Ancestors', Part I, depicts a bronze socketed axe as a lance-head, together with various other artefacts. This too can be traced to Janssen (1840). Janssen did not yet see that the handle had been knee-shaped, made from a forking branch, so that in his 1840 catalogue of antiquities in the RMO he called a bronze palstave a *framea*, i.e. spearhead. In 1856 Janssen is better informed, but fails to explain his altered interpretation.[66]

Hofdijk was a far more fluent writer than Janssen. His vivid stories continued to delight generations of readers long after the second edition of 'Our Ancestors' (1873) – not only the 'educated readership' for whom they were written, but also young bookworms browsing in their grandparents' libraries. There can be no doubt that many of the older generation of archaeologists gained their earliest impression of prehistory from these writings. Also Isings, the maker of many history school pictures, was very keen on 'Our Ancestors'.[67] The exciting story that the teacher was to tell the children about life in the days of the 'Hunebed Builders', as suggested in the 'Commentary' to Isings' school picture, is no more than an updated and watered-down paraphrase of Hofdijk's story. It is in fact the adventure with the wild pig, which is being retold with relish but without quoting its source:[68] not only a striking instance of plagiarism a century after date, but also a tribute to Hofdijk's narrative talent!

THE GENESIS OF THE 'HUNEBED BUILDERS' BY J.H. ISINGS (1959)

A great 20th-century designer of history school pictures for Dutch schools was Johan Herman Isings (1884–1977). As he was quite unfamiliar with pre-Christian subjects, except those of the Old Testament, it is understandable that he did not get involved with the 'Hunebed Builders' (fig. 11) until he was 75; he carried out this work in 1958–59 at the express request of the Groningen publisher J.B. Wolters. The school picture bears the serial number 0 and is the 32nd of the 44 pictures that Isings designed between 1911 and 1970. After the 'Hunebed Builders' he was to create three new pictures and very thoroughly rework fourteen others to accommodate new insights. If we include the ten repaintings done between 1930 and 1972, the school picture of the 'Hunebed Builders' is the 37th out of 54. Of the 44 pictures that Isings designed from scratch, 24 cover the period AD 1492–1794 (mainly 16th and 17th centuries), and thirteen the Middle Ages; five refer to the 1795–1945 period; one, dating to 1950, concerns the Roman *castellum* at Valkenburg near Leiden, and one the hunebed builders. Of course the choice of subjects was in part determined by those of the few pre-existing pictures in the 'History School Picture' series. Although some of Isings' completely new school pictures replaced earlier ones by him on the publisher's list, these numbers are impressive.

The genesis of Isings' only school picture dealing with Dutch prehistory is well documented by Isings' own 'Commentary to the Picture', in which he painstakingly renders an account of his written sources,[69] by his correspondence with H.T. Waterbolk,[70] by personal information from H. Brunsting,[71] and by what the author remembers from conversations with the late W. Glasbergen.[72]

Isings worked on this watercolour in 1958 and 1959 and the school picture first appeared in the publisher's list of 1960.[73] Although Isings had to take into account the wishes of the publisher and the editors of the school picture series (also authors of many of the Commentaries), Isings always made a point of personally researching the content of his pictures as much as possible. To this end he consulted experts on the subject, and studied the available literature, old pictures, and

66 Janssen 1856, 67–71, pl.x: 1 (shaft either straight or right-angled).
67 Pers. comm. from his daughter, Professor C. Isings, 1992.
68 Isings 1975, 23–9 (reprint of 'Commentary'?). This wild pig episode is not necessarily of Isings' own invention; it may have been written by Wijbenga, Wagenvoort, or De Jongh. Hofdijk is not mentioned in the references of this publication. Isings is unmistakably the author of the Commentary accompanying the school picture '*Hunebedbouwers*' (pp. 19–22) and its bibliography (p. 29; cf Vos 1982, 76).
69 Isings 1975, 19–22, 29.
70 See below.
71 Pers. comm. Professor H. Brunsting, 1990.
72 No correspondence between Isings and Glasbergen has come to light so far.
73 The picture is signed 'Isings '59'. The publisher paid Isings for it on 31.XII.1958 and in 1959 (Vos 1982, 83).

the original objects in museums. A diligent, very serious, and deeply religious man, he was most meticulous about this, as it was his principle that all objects and events should be entirely truthfully portrayed. Yet in preparing the 'Hunebed Builders' he probably no longer visited museums.

Van Giffen lent Isings some Danish literature;[74] indeed it may well have been Van Giffen who prompted the publisher to put hunebed builders on a school picture.[75] Isings then turned to H. Brunsting (curator at the RMO and professor of Archaeology and Prehistory at the Vrije Universiteit in Amsterdam), who earlier had helped him in producing the 'Roman Army Camp' (of Valkenburg).[76] Brunsting drew his attention to H. Reinerth's publication about the village of megalith builders, excavated in 1939 on the waterlogged shore of the river Hunte, south of Oldenburg.

Brunsting soon referred Isings to W. Glasbergen (professor of the Prehistory of Western and Central Europe and Dutch Archaeology and director of the IPP, Amsterdam University). Glasbergen will have recommended to him the publications by Van Giffen (1925; 1927; 1943b), Van Gelder *et al.* (1947), and De Laet (1958), and Holwerda's reconstruction of the original appearance of a hunebed (1913). He may also have told or shown him what would be said on the subject by De Laet & Glasbergen (1959) and Kaelas (1959), whose publication he was preparing. He also will have referred him to works by Reinerth (1937; 1939a; 1939b), Schwantes (1958), and to many other important publications in the foreign literature. Presumably P.J.R. Modderman and A. Bruijn (prehistory researchers at the Rijksdienst voor het Oudheidkundig Bodemonderzoek, ROB) also offered advice, and without doubt Isings obtained information through other channels as well – his daughter, the archaeologist and expert on Roman and medieval glass, Dr C. Isings, brought along the few relevant books in the possession of the Archaeological Institute of Utrecht University, where she worked.[77]

ISINGS' CORRESPONDENCE WITH WATERBOLK

The lively and informative correspondence between Isings and H.T. Waterbolk (professor of Prehistory and Germanic Archaeology and director of the BAI, Groningen University) merits quotation in full. It comprises seven letters, dated 26 November to 27 December 1958, written in fine longhand by Isings and typewritten for Waterbolk.[78] In those days postal delivery was a good deal faster than it is today – at any rate that of university mail!

74 Letter dated 19.XII.1958 from Isings to Waterbolk, see below. This may refer to the Danish and North German publications in Isings' bibliography (1975, 29): Broholm 1943–1944; Brøndsted 1938; Girke 1922; Schlabow 1937. Possibly Lauring 1957 and Schwantes 1958 were also among these.

75 Or was W. Glasbergen its instigator at the firm of Wolters? He often went there as an editor of *Palaeohistoria* and author of *De Voorgeschiedenis der Lage Landen* (De Laet & Glasbergen 1959); the Wolters office was virtually next door to the BAI.

76 Van Giffen had retired in 1958 and probably could spare more time and interest for Isings' work than during his preparation of the school picture 'Roman army camp at the mouth of the Rhine (Valkenburg)' in 1950. This is implied by Isings' rather grumpy remarks in letters to the publisher (Vos 1982, 49, 61).

77 The following references are given in Isings' 'Commentary' and in the bibliography by him and Wijbenga c.s. (Isings 1975, 29): Boeles 1951²; Broholm 1943–1944; Bruijn 1952; Byvanck 1946³; Van Gelder *et al.* 1947; Van Giffen 1925; 1927; 1954 (not 1943b); Girke 1922; Kaelas 1959; De Laet 1958; De Laet & Glasbergen 1959; N.N. 1956; Lauring 1957; *Palaeohistoria* 1–6, 1951–1958; Reinerth (ed.) 1937; 1939a; Reinerth 1939b; Schlabow 1937; Schwantes 1958; Waterbolk 1951. The publications postdating 1959 have been omitted, but even as far as most 1959 publications are concerned it is doubtful whether Isings was able to use them for the picture. He definitely did not use *Einführung in Niedersachsens Urgeschichte* by Jacob-Friesen (1959), which, had it appeared sooner, certainly would have offered him a great deal of information. Nor does an earlier edition of this work appear in the bibliography. Moreover, some titles, mentioned neither in the text of the 'Commentary' nor in Isings' letters, will have been added by Wijbenga, not Isings. The copies of Reinerth (ed.) 1937 and 1939a which passed from Glasbergen's estate to the IPP library bear stamps of 'Forschungsstelle Volk und Raum' and one of them also bears Glasbergen's inscription dated 24.VIII.1945. Presumably they stemmed from a German or Dutch Nazi property and were bought in a second-hand bookshop. Pers. comm. Professor C. Isings (1991) about her assistance to her father.

78 Correspondence archive, BAI. Professor Isings and Professor Waterbolk kindly gave permission to publish these letters.

Professor H.Tj. Waterbolk, 26.XI.58
Groningen

Dear Sir,
Please allow me to approach you with a humble request. For several weeks I have been engaged in the most painstaking research, as J.B. Wolters publishers have asked me to prepare a painting representing the way of life, the work and the dwellings of the 'Hunebed Builders'. I have now proceeded to the point where I can *envisage* the desired composition; which means only that I can give shape to the figures among the dwellings, with their costume and belongings, while the background is dominated by the mound that covers the Hunebed – recognisable by its capstone parts and entrance.
But now I am suddenly at a loss. What is the landscape like? Heath, I am told. Indeed not, another 'expert' tells me: A park landscape. One resembling the great hunting fields of East Africa – but with quite different trees and shrubs? A steppe then? Where the old, tough grass, scorched to hay, is woven through with green saplings of young trees? But what kinds of tree? You perceive my quandary; without a guide I am utterly lost.
Professor Glasbergen informed me that you had found evidence of the cattle having been fed on the foliage of lime trees while they were kept safe in a 'kraal'.[79]
May I – diffidently – ask your opinion?
Am I to set the figures at their various tasks in an open terrain, with residual tree stumps studding the ground? A woman is decorating a leather-dry pot; she sits with the pot on her knees, next to a heap of clay and sand – also some crushed stone beside it. In a small pot she has bone meal, made into a paste. Another woman is busy with her distaff. A man pauses while trimming a log. This enables me to show his stone axe; two other men return from hunting; they drag along a dead wolf.
Behind the women there is a hut with a low wall of erratic boulders. A hut of the megaron type. The house beyond the men is also of the type found at the Hunte. That is, according to the reconstruction proposed by Reinerth[80] – although I find it hard to overcome the unpleasant feelings that I experience while reading his discourse. In the middle distance, a cart, drawn by *red*? oxen, is brought home laden with corn.
Beside the hunebed a small lake – Trees along its edge. Behind the house too – Woods in the background. The nature of the woodland will determine its colour. May I ask you kindly to deliver me from this predicament? I find myself quite unable to proceed.
I am, dear Sir,
Your obedient servant,
Isings

[letter no] 0.897 8th December 1958
[date received] 26.11.58
[subject] landscape contemporary with hunebed builders

J.H. Isings Esq.
Kolonieweg 6,
Soest

Dear Mr Isings,
Your question is not so difficult to answer after all. You should consider the settlement as an 'oasis' in the omnipresent oak forest. The oak predominates, mixed with some lime, elm, birch, etc., but definitely no beech trees. In a natural oak forest, trees of all ages occur together: some quite massive ones, and thickets with saplings where trees have fallen. So instead of forest in the far distance, it should be in the immediate vicinity. There will not have been many lakes in Drenthe during that period, at most a few marshy, boggy depressions with just a little open water. The cultivated fields are small, irregularly-shaped clearings in the forest. In fact, the most massive trees would be left in place; other, less heavy ones would be felled at about knee height, the smallest probably uprooted. Abandoned fields were overgrown with bracken and heather.
In small enclosures close to the huts we would find the cattle, which were fed mainly on foliage, not grass or hay. The gathering of this fodder is likely to have been

79 This use of leafy twigs of pollarded lime and other deciduous trees as fodder had been demonstrated for Thayngen-Weier in Switzerland and for the TRB culture in Denmark by J. Troels-Smith (1953), with whom Waterbolk maintained close contact (cf. Van Zeist 1959; Troels-Smith 1984). Moreover, in 1957 and 1958 Waterbolk had excavated the traces of a palisade interpreted as a cattle enclosure at Anloo. Glasbergen (prehistory lectures 1957–58) initially attributed it to the TRB culture; Waterbolk later (1959; 1960) assigned it to the early EGK.
80 Reinerth 1939b.

the women's work. The men went hunting. On the whole, hunting and fishing in the hunebed period should be regarded as still playing a major role.
I hope that the above will be of use to you.
Wishing you much success,
H.T. Waterbolk

Professor H.Tj. Waterbolk 15.XII.58
Groningen

Dear Sir,
Forgive me for being late in thanking you for your letter of the 8th. Illness kept me from replying immediately, as would have been fitting.
Your first sentence, classifying my question as 'not difficult', surprised me, as two Professors, working in the very field of science that you study, sketched quite different pictures of prehistoric Drenthe. One of them: a heath with a scattering of trees: Beech, Hornbeam, pine.
Your picture is interesting but, unfortunately, sombre. Another Professor suggested to me a 'parklike' landscape: rough grassland with scattered clumps of trees. Interesting and light. I am of course intent on the scene that you propose. There is no lessening of my diffidence as I take my first steps in the field of Dutch prehistory after more than 54 years of sedulously studying the history of our present era or a few centuries earlier (excepting of course Palestine and Egypt). I shall have to proceed most cautiously up till the very last brush stroke. In order to improve my understanding, I shall order your 'Guide to Drenthe'.[81]
I hope that if I am spared to complete this assignment, you will not, when faced with my conception, dismiss it with a shrug.
I beg to remain, dear Sir,
Your obedient servant,
Isings

[letter no] 0.957 17th December 1958
[date received] 15.12.58
[subject] landscape contemporary with hunebed builders in Drenthe

J.H. Isings Esq.,
Kolonieweg 6,
Soest

Dear Mr Isings,
My conscience as a scientist urges me to respond briefly to your letter. I do not know who the colleagues were that you consulted, but the first interpretation that you mention: heathland scattered with beech and hornbeam, is so utterly at variance with all the hard evidence that we possess, that I must urgently advise you to pay no heed whatsoever to this. The beech does not appear until the Bronze Age, and, please note, hornbeam no earlier than the turn of the Christian era. These are undisputable facts. I am convinced that there must be a misunderstanding here: such a painting might reflect historical Drenthe before the great reclamations.
The second view that you mention – directly or indirectly that of Van Giffen – merits more serious consideration: the clearings in the primaeval oak forest are likely to have been 'park'like in character. But in terms of percentage, grassland will have formed a negligible part of the landscape.
You find my picture sombre. That may well be true. May I draw your attention to the many instances of axe worship that are known from this period, especially in Denmark? The axe is the object that serves man in his struggle with the mighty forest, and simultaneously symbolises fertility.
Our views on the landscape are not based on indirect deductions, but on pollen analysis, a scientific method using contemporary fossils. With great accuracy it provides quantitative evidence about the vegetation of the period in general, and even, when we investigate soil samples from the base of the hunebedden, of the immediate surroundings of these monuments.
I wish you much success.
Yours sincerely,
H.T. Waterbolk

81 *Uw 'Handboek voor Drente'*, i.e. vols. 1–2 of Poortman (ed.), *Drenthe: een handboek voor het kennen van het Drentse leven in voorbije eeuwen* (see Van Giffen 1943b and Waterbolk 1951 in the References). Waterbolk 1952[2] cannot have been meant.

Professor H.Tj. Waterbolk 19.XII.58
Groningen

Dear Sir,
I exceedingly appreciated your letter of the 17th in which you urgently advise me not to depart from your judgement. I know a *little* about the wide-ranging investigations that you conduct and direct, and therefore I am amazed and indeed embarrassed at your willingness to give so much attention to my work. Your biological research I regard as highly as your archaeological judgement. It does not occur to me to deviate from your directions, however many problems I might encounter in doing so.
What you write about the veneration of axes had already struck me in the Danish writings that Professor Van Giffen lent me. One of the figures is resting from his work with the axe. I intended this figure in a symbolic sense. In order to create an informal grouping, I add two figures stopping for a chat with the elderly woodcutter. One dragging along a dead wolf, and another carrying home a plough. Would you be so kind as to let me know briefly whether you agree with the plough? I came upon an illustration of a plough found near Berlin. The source from which I take this is somewhat murky; yet the report has the appearance of authenticity.[82]
To the hunter dragging along the wolf I am giving the bow that was illustrated in the *Berichten van de Rijksdienst voor het Oudheidkundig Bodemonderzoek* at Amersfoort of April 1952.[83]
The activities of the women in my tableau are, I presume, well substantiated.
Also the construction of the dwellings. Everything now depends on my retaining sufficient physical strength for its completion.
I am deeply indebted to you.
Your obedient and faithful servant
Isings

82 A footnote in the letter refers to 'a publication of the Werkgemeenschap voor Volkskunde' (could this be the 'Forschungsstelle Volk und Raum'? cf. note 77). To this note Isings added a drawing of the plough of Dabergotz, Kr. Neuruppin (cf. Glob 1951, 23, fig. 16).
83 Bruijn 1952.

[letter no] 0.973 23rd December 1958
[date of receipt] 19.12.58
[subject] prehistoric landscape of Drenthe

J.H. Isings Esq.
Kolonieweg 6,
Soest

Dear Mr Isings,
This plough is quite a tricky matter. The earliest ploughs that we know date to the Bronze Age, i.e. at least 500 years after the hunebedden period. Whether ploughs existed before this date or whether the soil was worked with a simple digging stick or hoe is currently a point of debate; I personally am inclined to consider a plough like the one you depict as far from unlikely, though without the loose tilling wedge at the front [*voorrister*]. Thus I can agree with your including it in the drawing.
Yours sincerely,
H.T. Waterbolk

Professor H.T. Waterbolk 27.XII.58
Groningen

Dear Sir,
Your detailed and encouraging reply to my question concerning the primitive plough increases my gratitude to you.
I sincerely hope that in 1959 – and for many years to come – your research and all your findings may be the cause of equal or even greater satisfaction than that which you have afforded me.
Humbly and respectfully yours,
Isings

THE CONTENT OF ISINGS' PICTURE, HIS SOURCES

Isings created an interesting tableau (fig. 11) with a degree of tension lent to the peaceful, domestic scene by the rising ground in the middle, the vista between the houses on either side, the high ridge of the largest house, the massive trees, and the conversation about the killing of the wolf. The man on the left has stood up from dressing the timber, and listens to the hunting story. The man carrying the plough and the spinning woman also listen and the boy takes a look at the wolf.

Figure 11 School picture 'Hunebed Builders' after a watercolour by J.H. Isings (1959), signed 'Isings '59', published by J.B. Wolters. Picture 96×67.5 cm, with margins 107×77 cm.

Maybe it follows from Isings' high standards of craftsmanship that the sitting woman will not allow herself to be distracted from the meticulous task of engraving decorations on her pot. Deliberately or not, the composition appears to be dominated by a few diagonal lines (not only those of the roofs), some verticals, and the golden section. The central opening between the buildings, shifted somewhat to the left, is balanced by the space between the standing elderly man and woman, positioned a little to the right.

'The scene is bathed in spring light. Young greenery is beginning to sprout from the oaks and the lime tree behind the hut. The Funnel Beaker (TRB) culture, with which this tableau puts us face to face, can be considered the springtime of our civilisation', writes Isings.[84] Of the 'young greenery' of spring the picture offers precious little evidence, at most a green haze of algae on the tree trunks, and in the foreground on the right a twig with swelling buds. The trees are quite leafless, the dead leaves have gone, clouds chase across the sky, of which only a little blue appears among the rack. Yet apparently it is so warm that people are working outside with bare shoulders and arms or even stripped to the waist. There is no question of bright springtime sun-

84 Isings 1975, 19–22.

shine under this overcast sky. A high light casting virtually no shadows, similar to that in most other school pictures, lights up even the interior of the hut in the foreground.

The artist directs our view from the settlement up towards a hunebed in its original condition – that is, according to Holwerda's reconstruction[85] – which lies on a slope of the Hondsrug ridge.[86] Beyond the large house, a red cow looks across the fence of a cattle enclosure like those excavated at Anloo and at the Uddelermeer. Isings' text also refers to sites in Poland and Britain (he meant the enclosure at Biskupin[87] and the British causewayed camps).

To the right of the impressive TRB house 11 from the Hunte village near lake Dümmer (fig. 12),[88] there is a smaller house from Taubried in the Federseemoor (fig. 13),[89] both according to reconstructions by the wetland prehistorian H. Reinerth. Glasbergen recalled being told by Isings that in his garden – at the foot of the hill at Soest – he had rebuilt these houses from beanpoles so as to gauge their spatial effect. In the foreground, left, is a house from Klein Meinsdorf, which Schwantes regarded as a cult house of the Tustrup type.[90] Isings chose to ignore its cultic function, but on a log at the entrance he put a ritual ceramic spoon as found at Tustrup and in many other cult houses. 'For the figures drawn here I followed the type represented by the skull finds at Oldenburg; such people are still found in large numbers in North Germany.'[91] This approach was inspired by the recovery of a skull of 'a 17–18 year old girl of the Phalian race' from the river beside the Hunte village;[92] all the same, it may be noted that the men bear a distinct resemblance to Isings himself, as frequently is the case on his school pictures: he liked to use himself as a model!

Nothing was known about the fabric and cut of clothing during the TRB culture. Because neither Isings nor the firm of Wolters could or would represent naked people in pictures for schools,[93] it was decided to use adaptations of the garments known from Danish Bronze Age burials. In his 'Commentary', Isings elaborately explains, with illustrations, how he simplified the Bronze Age clothing from the oak coffins at Trindhøj and Borum-Eshøj in Jutland to obtain plausible costumes for the Neolithic.[94] The women's hair-net, for instance, has been transformed to a headscarf wound in a similar manner, and the bronze *Gürteldose* has become a large disc of amber on the standing woman's belt. In all sorts of details there is a correspondence with photos of the plaster models of a Bronze Age woman and man in the museum at Halle (fig. 14).[95] This is particularly evident with the standing woman and the man on the left, who in the picture holds a flint axe (the plaster original has a bronze axe). The man in the middle, like the plaster model, carries a dagger. This dagger has a sheath with herringbone incisions like the famous Late Neolithic dagger from Wiepenkathen, Lkr. Stade, its hilt ending in a pommel possibly borrowed from a lake-dwelling find. The man on the left carries a similar dagger, be it rather impractically on his right side. The ploughman's cap and the footwear are again borrowed from the plaster model (fig. 14) and Danish Bronze Age finds.

The spinning woman and the potter, the stone axe, the wooden plough, the oxen's yoke being carried, the cow in the enclosure, and the well-built houses illustrate the achievements of agricultural life in the late Neolithic. Curiously, a quern for grinding corn is lacking in the picture, though Isings did illustrate one in his 'Com-

85 Holwerda 1913.
86 It is not hunebed D27-Borger, which is larger and which in 1959 was not yet thought to have had a peristalith (Bakker 1992, 111).
87 Rajewski 1959.
88 Reinerth 1939b, fig. 8.
89 Reinerth 1939b, fig. 7, cf. Sipplingen, Reinerth (ed.) 1937a, fig. 69.
90 Radig 1937, fig. 50; Schwantes 1958; Lauring 1957.
91 Isings 1975, 20–1.
92 Reinerth 1939b, 241–2, fig. 20.
93 For Isings' attitude to nudity on school pictures, see Vos 1982, 60. Naked pre-Bronze Age folk – all of them young and beautiful – did appear in a film made in the 1940s with advice from the National Museum in Copenhagen. Around 1960 this film was advertised in the daily newspapers and shown in a few special performances at Hotel Krasnapolski in Amsterdam. The hall was packed with young couples without any particular interest in archaeology, who watched in breathless silence. One plate in 'The Epic of Man' (*Life*, int. ed., Dec. 1955–1957, later published as a book) shows a reconstruction by Carroll Jones of a Maglemosian fishing camp now engulfed by the Baltic or the North Sea, and exudes the same, rather unreal atmosphere of a 1930s nudist colony (*Life*, int. ed., April 2, 1956, 40).
94 Isings 1975, 20–1; Broholm 1939; Schulz 1939.
95 Schulz 1939, figs. 15–6.

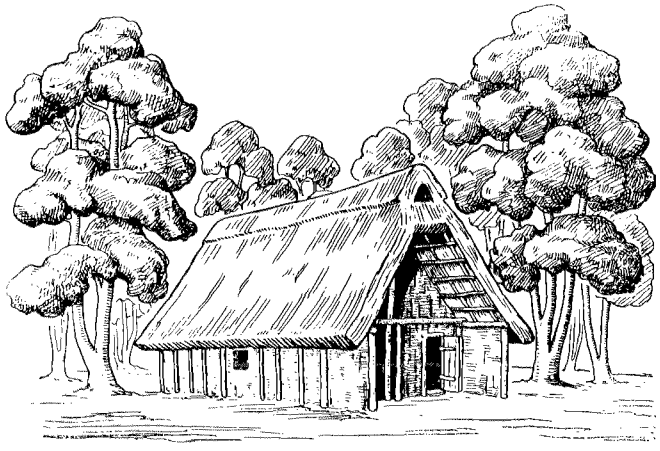

Figure 12 Reconstruction of House 11 in the Hunte village near lake Dümmer (after Reinerth 1939b, fig. 8).

mentary'.[96] The ox-drawn cart that Isings considered including, as he mentioned in one of his letters to Waterbolk, was eventually omitted.
The pots were carefully copied from J.C. Kat-van Hulten's reconstruction drawings of the Drouwen style group.[97] Only the frying pan on the sawn off(!) log is an individual interpretation of the finely decorated, ritual 'spoons' of the North Group of the TRB, which do not occur in the West Group, this side of the river Weser. Isings himself points out this fact.[98] The potter's craft has been correctly represented. In the foreground one sees a heap of clay, being left to mature. The sitting woman is applying *Tiefstich* (stab-and-drag) decoration to the surface of the leather-dry vessels, which seem due to be baked in the hearth on the left.
'A funnel beaker full of the white powder made from burnt and crushed bone reminds us of the white infill with which the incised designs were enlivened. (...) Anyone who examines these forms of decoration and notes how they were applied, in the very simplest manner with grooves and stabmarks engraved into the hardening clay, will come face to face with these people from a far distant era. When one begins to see their sensitively executed handiwork in this light, one will immediately envisage a scene: the tableau springs to life. They were moved by love, a desire for beauty that gladdens the heart. It was not the unrestrained, irrational impulse of an undisciplined child that playfully amuses itself with scribbling and scratching, but the careful, deferential expression of sentiments aroused by flowers and foliage, a bird's wing, or the shapes of shells.'[99] This last remark seems to be in the same vein as the passage quoted earlier about the 'spring light' in the picture, which was meant to symbolise the dawn of civilisation.
The plough and the yoke are Isings' own versions, as Neolithic examples were lacking. The plough (ard) resembles a 19th-century ard from the Bavarian Forest with a yoke beam and a single stilt, with a sheath. On Waterbolk's advice the loose tilling wedge of the Dabergotz ard was dropped. Wisely the share is out of sight.[100]
The man in the middle has shot a wolf with a bow and arrow, and drags it home by a rope around its neck. A dog comes over to sniff at it. The bow is that of De Zilk-Noordwijkerhout.[101] The transverse arrowheads, characteristic of the West Group of the TRB culture, are clearly visible.

WOULD ISINGS' PICTURE NOWADAYS REQUIRE ADJUSTMENT?

Even after thirty years of continued prehistoric research, it is less easy to criticise the content of the picture than one might expect. Admittedly, a few reviews and a large number of detailed studies, had they been available earlier, would have considerably facilitated the research done by Isings and his advisers, and some interpretations have been altered since 1959, but much of the other evidence that Isings used concerning the technology, belongings, and daily life of the hunebed builders has not yet been improved upon.
Whether the horseshoe-shaped foundations of loam and stone, excavated in 1907 at Klein Meinsdorf (Schleswig-Holstein) were actually house plans has lately been a point of discussion. It has been suggested that they are the remains of destroyed dolmens.[102] In my opinion, the many baking-plate remains from this site argue against this view, as they are unusual in megalithic

96 Isings 1975, 20.
97 J.C. Kat-van Hulten's plate is reproduced in Van Giffen 1943b; Van Gelder *et al.* 1947; Bakker 1973.
98 Isings 1975, 21, with a reference to Lauring.
99 Isings 1975, 21, 19.
100 Dosedla 1984, pl. 2, fig. 2; Waterbolk, letter of 23.XII.1958, cited above.
101 Bruijn 1952.
102 Schwantes 1958 (Tustrup houses); Eriksen & Madsen 1984, 77–81 (dolmens).

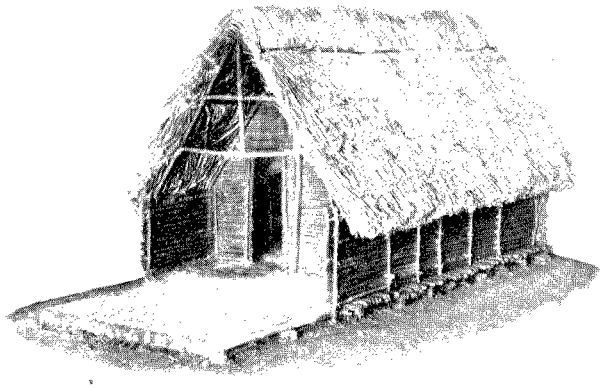

Figure 13 House of Taubried (Federseemoor), period I. Reconstruction by the Modellwerkstatt des Reichsbundes für Deutsche Vorzeit (after Reinerth (ed.) 1937, fig. 7).

tombs, or indeed in the cult houses of Tustrup type, which Schwantes considered to be a variant of the Klein Meinsdorf house. Neither Tustrup cult houses nor any ritual spoons occur west of the Weser. Not a single TRB settlement site of the West Group has produced stone walls like those of the house on the left.

The tall Hunte-village house at the back was given a rather too grandiose reconstruction by Reinerth (fig. 12). The plan of House II measured 4.5 × 2.7 m. Reckoning from these dimensions, Reinerth arrives at a ridge height of 4.5 m in his reconstruction drawing, though if the doorway is 1.5–2.0 m high, his sketch makes it 7–9 m high.[103] In Isings' picture, the house, being set on rising ground, becomes even more impressive, and appears to be as large as an 18th-century Lower Saxon farmhouse (more than twice its width). The smaller house to the right, based upon Reinerth's reconstruction of a house at lake Federsee in southern Germany (fig. 13), more or less by coincidence corresponds with a later, more realistic reconstruction of one of the Hunte-village houses at the museum in Hanover.[104]

Plans of houses of the TRB culture have since been excavated at Flögeln, Lkr. Cuxhaven, Penningbüttel, Lkr. Osterholz near Bremen, and Heek, Lkr. Bocholt, near

Figure 14 Man and woman of the Bronze Age, after models by H. Keiling Sr, Landesamt für Volksheitskunde in Halle am Saale, which are clearly inspired by the Danish reconstruction drawings (after Schulz 1939, figs. 15–6).

Enschede, which nowadays would be preferred for house reconstructions. They are 5 m wide and have a length of 13 m or more. Their entrance is in the gable end, but without an open vestibule, which means that they do not belong to the *megaron* type which formerly was so popular with archaeologists, and which Isings mentions in his letter to Waterbolk.[105]

Anyone who in moonless nights has had to find his way around unlit village streets, like those of us who have excavated in the Near East, will agree that the area between the houses as depicted would have made a proper death-trap.[106] No-one will have left timber lying around to trip over in this manner; and although Iversen's experiments at Draved Skov, Denmark, and ethnographic descriptions indeed show that cutting trees at

103 Reinerth 1939b, figs. 7–8.
104 Jacob-Friesen 1959, fig. 110.
105 Flögeln: Zimmermann 1979; personal information Dr. W.H. Zimmermann (Institut für historischen Küstenforschung, Wilhelmshaven); Penningbüttel: Assendorp 1987; Heek: pers. comm. W. Finke (Das Westfälische Museum für Archäologie, Amt für Bodendenkmalpflege, Münster).
106 Remark by R.W. Brandt, IPP and ROB.

knee level is the simplest method (as Waterbolk pointed out to Isings), people surely would have taken the trouble to remove the potentially lethal pointed stumps between the houses. And although the hunebed builders used large boulders for their hunebedden, there would have been few stones lying about the village apart from querns, whetstones, and cooking stones, which Isings fails to depict.

According to potters it is difficult in our climate to dry pots without their cracking owing to draughts, a reason why the forming and drying of pottery and the application of *Tiefstich* decoration to the leather-hard vessels will have been done mainly in summer.[107]

Recently it has again been proposed that the fine hunebedden ware, of which almost each pot displays a unique combination of the current decorative motifs, was produced by housewives, and not by men in a kind of early industrial production (which would lead to standardisation of products). It was argued that in most of the world's pre-industrial societies it is the housewives who make the pottery, often with particular love and care, and that the rarely found nail imprints are always gracile and never indicate broad men's hands.[108]

The average stature in the Late Neolithic in Denmark was 1.65 m for adult men and for women 1.51 m, while life expectancy must have been way below the average age of the people in Isings' picture. Considering the high rates of birth and child mortality, there should have been quite a number of infants and toddlers in the picture.[109]

Some more is now known about the fabric of the clothes worn by people of the hunebedden period (3400–2850 BC), due to sparse finds outside the Netherlands.[110] Whether garments of linen or wool, or both, were worn in Drenthe is not yet clear. Textile finds from Switzerland show that between 4000 and 3000 BC linen clothes were worn there.[111] On the other hand, predominantly woollen clothes were worn in Bronze Age Denmark, while from Switzerland we know a charred ball of woollen yarn dating to *c.* 2900 BC. Wool production did not spread across Europe until the 'Secondary-Products Revolution', the 'Second Neolithic Revolution'.[112] This meant that not only the carcasses of livestock were used, but also their secondary products, such as tractive power, wool, and milk. Various TRB subgroups are found to have benefited already from these new uses (plough, cart, oxen teams, wool production, dairy production?, horses?). The spreading of these innovations may have taken several centuries. Questions remain as to whether all of these elements were introduced together and whether it may be assumed that they had been adopted also by TRB subgroups which so far lack evidence of them.

Spindle whorls are quite common in TRB culture contexts in Poland and central Germany. Evidence for sheep-rearing, wool production, and woollen clothing is given by the splendid ceramic figurine of a ram from Jordanów (Jordansmühl), whose distinct fleece indicates a strain bred for wool production. Moreover, ram's heads were a popular decorative motif on pottery of the TRB South-East Group, and excavated animal bones point to the economic importance of sheep-rearing in the South and South-east Groups in Poland.[113]

In the TRB North and West Groups, spindle whorls are almost totally absent and sheep bones are far less prominent in the bone inventory, although it must be said that these on the whole are still poorly known. In Denmark very few textile finds are dated before the Bronze Age; all are of vegetable fibres such as bast of lime and willow, and possibly nettle, from the late Mesolithic and the early Neolithic TRB culture. From the period contemporary with our hunebedden, there is as yet no Danish evidence.[114] From the German Elbe-Saale region, woollen textile remains are known since 1881 from the Bernburg TRB Group, which is roughly contemporary with the Dutch hunebedden. This at any rate is how they were identified by Schlabow, but according to a later expertise they are linen![115] The hilt

107 Remark by the potter and ceramics expert Jan Kalsbeek, *c.* 1972.
108 Bakker & Luijten 1990.
109 Bröste 1956 (on stature).
110 Much of the following is based on the survey by Sherratt 1983, 93–4.
111 Vogt 1937, quoted in Clark 1952, 233–9.
112 Sherratt 1981.
113 Bakker 1992, 89–90, no. 51a; Wiślański 1969; Milisauskas & Kruk 1989, 433.
114 Bender Jørgensen 1986.
115 Spitzes Hoch at Latdorf and Kreienkopp at Ditfurt: Schlabow 1959; Behrens 1973a, 104, 195; Schmidt & Schröter 1976, 70–1, fig. 50; Sherratt 1983, 93 (expertise M.L. Ryder, 1964). Isings' leather shoes are also borrowed from Danish Bronze Age finds: they are not those from the Weerdinger Veen in Drenthe (Holwerda 1912, atlas, 11), as these have no straps across the instep.

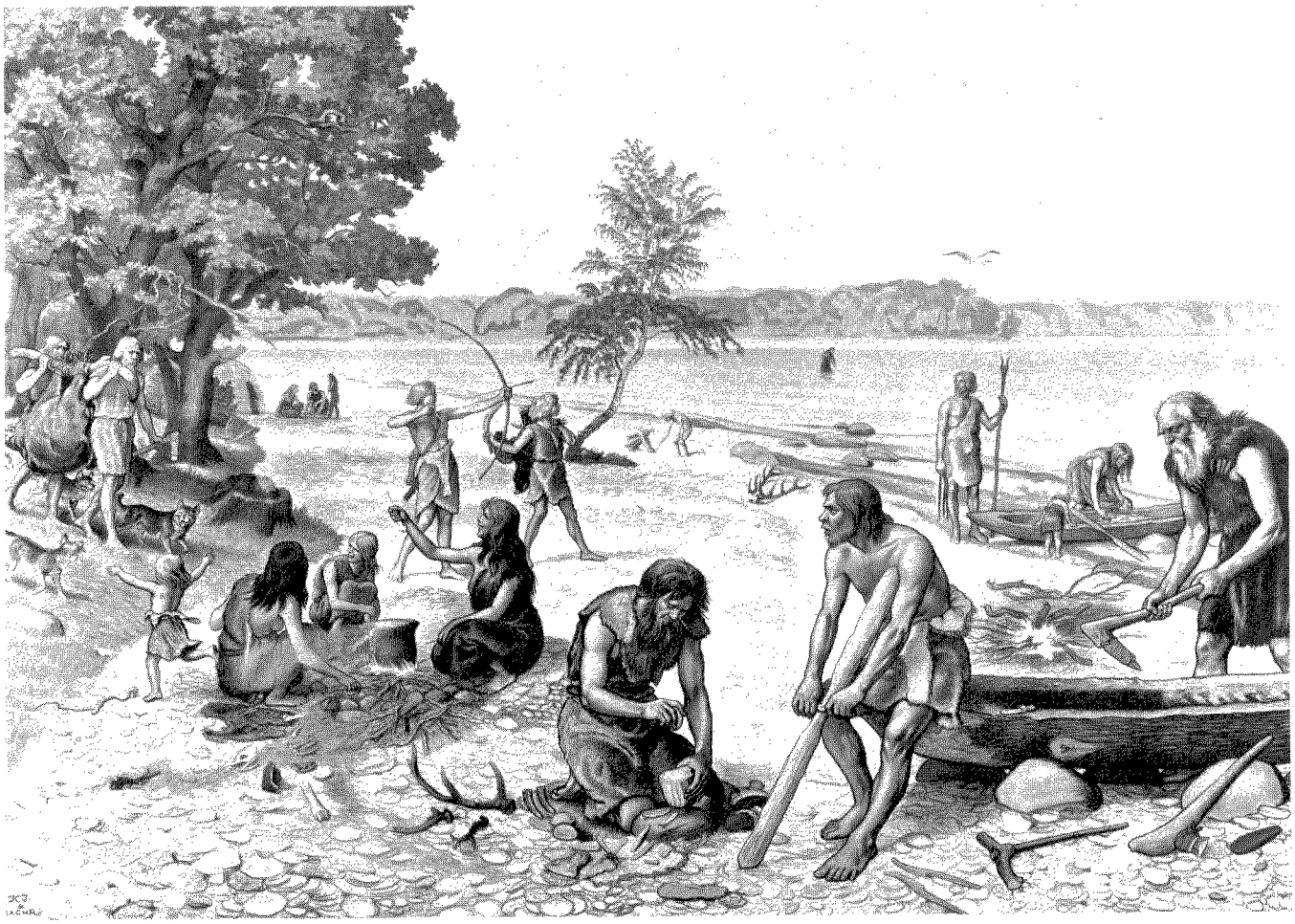

Figure 15 Danish school picture showing a settlement of the *Kjøkkenmøddinger* period, by K.J. and Rasmus Christiansen (*c.* 1907–1919), signed 'K.J. & R X CHR'. Original size 100 × 70 cm (from *Billeder fra Nordens oldtid*, 1982).

of the flint dagger of Wiepenkathen of ca 2300–2100 BC was wrapped in a fabric made from a mix of woollen and now decayed threads, presumably linen. A Swiss textile, of the same age or a little older, consists of linen threads with now decayed, presumably woollen threads.[116]

For the appearance and cut of the garments, seen from a distance, the composition of the material is obviously of little relevance. Yet one should not imagine the clothes to have been particularly uniform or plain. Chequered and triangular patterns are well-known from older Swiss weaves and from the slightly younger stone steles of Petit Chasseur.[117] Also the *Verzierungsfreudigkeit*, i.e. the playful delight in decoration, that is evident from the TRB pottery – the infill of the incised decoration may have had various bright colours! – may sug-

116 Sherratt 1983, 93–4; Cassau 1935; Jacob-Friesen 1959, 96–100.

117 Vogt 1937; Clark 1952, pl. IXb (Irgenhausen, Switzerland); Wyss 1969, figs. 12–3 (Petit Chasseur, Switzerland).

gest a colourful style of dress for special occasions, maybe with an abundance of feather trimmings and fringes, similar to the visual splendour which so many tribal societies display at their religious festivals even nowadays. Workaday garb may of course have been as plain as that in the picture. People are likely to have also worn clothes made of skins (maybe including bird and fish skins) or tree bast.

The Wiepenkathen daggers in the picture date from after the hunebedden period; from the TRB West group no stone daggers are known. Maybe one could provide the village headman with a dolerite battle axe of the Hanover type as an emblem of dignity. Bone daggers will also have been used.

According to his letters to Waterbolk, Isings took as an example the bow made of yew from De Zilk-Noordwijkerhout. This bow has since been radiocarbon-dated to 1900–1800 BC.[118] This is well after the TRB period, but TRB bows of similar design have come to light at lake Dümmer and elsewhere.[119]

That the palisades of Anloo type were cattle enclosures is not certain. The palisade of Anloo itself is nowadays regarded as a fence surrounding the houses of a TRB hamlet,[120] while those of Uddelermeer require further study. The Hunte village was surrounded by an oval fence.[121]

That the TRB West Group practised ploughing is highly probable, although it has not yet been definitively proved by finds of plough scratches. Ploughmarks are known in the Netherlands from the settlements of the EGK (*Enkeltgravskultur* in Danish, Single Grave culture) at Zandwerven and near Aartswoud (Province of Noord-Holland), and some other sites from the EGK/Bell-Beaker period, which immediately follows the TRB period. Ploughmarks from Bornwird (Province of Friesland) date from the early EGK period, possibly even from the final, Late Havelte phase of the TRB period. Ploughmarks at Groningen-Winschoterdiep could also, on the grounds of radiocarbon datings, belong to the hunebedden period.[122] Neither site provides conclusive evidence that the portrayed hunebed builders did use a plough, especially if we realise that the Late Havelte phase postdates the pottery in the picture by several generations. Yet in Denmark, Schleswig-Holstein, and Polish Pomerania, ploughmarks have been found under TRB tombs which were contemporaneous and in part even older than our hunebedden. Moreover, ploughmarks several centuries older have come to light at Kujavia (Sarnowo, TRB context) and in Wessex (South Street Long Barrow).[123]

For the period portrayed on our school picture, the use of four-wheeled wagons and draught oxen is now documented by schematic depictions on a TRB pot from Bronocice in Poland. A trackway underlying a *Langbett* in Schleswig-Holstein[124] proves that the TRB North Group knew wagons as well, at least as far back as the times of the school picture, which makes them more likely for the West Group too. The numerous disc wheels and other parts of such vehicles from the peat bogs of the northern Netherlands, northern Germany, and Denmark so far have not been dated before the Late EGK/AOO Beaker period, well after the TRB culture.

COMPARISON WITH THE DANISH SCHOOL PICTURE BY RASMUS CHRISTIANSEN (*c.* 1907–1919)

It is a refreshing eye-opener to compare Isings' school picture of 1959 with a Danish school picture (*anskuelsesbilled*) designed by Rasmus Christiansen some 40 or 50 years before, which shows a Danish village of the TRB culture (fig. 16).[125] The picture, which bears a marked resemblance to that of Isings, is one of a series of six school pictures about Danish prehistory that were painted from *c.* 1907 onwards. They were probably printed before 1919, as in that year the archaeologist Otto Rydbeck (1872–1954) published a 'Commentary' in Swedish. The series comprised four panoramas,

118 Lanting & Mook 1977, 127.
119 Jacob-Friesen 1959, fig. 132; Clark 1963.
120 Harsema 1982; Waterbolk 1985.
121 Dürr 1960.
122 Zandwerven: Van Iterson Scholten 1988, fig. 234; Aartswoud region: pers. comm. J.W.H. Hogestijn, ROB; Bornwird: Fokkens 1982; Winschoterdiep: pers. comm. J.N. Lanting.
123 Denmark: Thrane 1982; Kujavia and Wessex: refs. in Sherratt 1981; 1983.
124 Zich 1992.
125 *Billeder fra Nordens oldtid*, 1982, with colour reprints of reduced size (35x25 cm) and a brief, anonymous introduction. Karen Frifeit kindly provided additional references about the commentaries and the artists (letter, 1983). The titles of the first two pictures in the reprint, *Boplads fra jæger-stenalderen* (fig. 15) and *Boplads fra bondestenalderen* (fig. 16) seem to have been adapted to modern usage. The left side of figure 15 was slightly trimmed down for the reprint.

illustrating life at the time of the *kjøkkenmøddinger* (fig. 15), the TRB culture (fig. 16), the Bronze Age (fig. 17), and the Germanic tribes around the turn of the Christian era (fig. 18), as well as two pictures of various artefacts from these periods. The initiative towards making these school pictures came from the school teacher T. Sillasen, who turned to several artists for the best possible artistic standards, and to Hans Kjaer (1873–1932), Inspector of the National Museum in Copenhagen, for specialist knowledge. Sillasen's 'Commentary' dates from 1925. The TRB school picture by Rasmus Christiansen (1863–1940) is undated (fig. 16). In 1982 the whole series was reproduced in colour but much reduced in size, and regrettably without Rydbeck's and Sillasen's commentaries.

Isings did not use these pictures or the book illustrations on which they were based. All the same, the costume and posture of the potters and the old men's hairstyles are remarkably similar in the two pictures. Also figures 15 and 17 contain details that could have served as examples for Isings' picture. Still these similarities cannot result from *direct* borrowing. Although Isings clearly based elements of some of his school picture designs on pre-existing pictures,[126] one would expect him to have put to Waterbolk certain questions prompted by the Danish picture, to have borrowed far more elements from it, and to have included it in his references.[127]

It is striking how many of Isings' questions are already expertly answered by the Danish picture and how little it could be improved upon nowadays, three quarters of a century later. The picture in itself illustrates the high standard of prehistoric research in Denmark and the constructive cooperation between the archaeologist, the artist, and the teacher. Also it is evident how much of the costume reconstructions that were made in Germany in the 1930s (many under Reinerth's supervision), later to be used by Isings, originated in earlier Scandinavian reconstructions. The plaster models of the Bronze Age man and woman (fig. 14)[128] are slightly adapted copies, right down to details of posture, dress, and weaponry, of two figures on the 1907 school picture of the Bronze Age (fig. 17) or possibly of older Scandinavian reconstructions on which the latter were based. For the Danish picture, a slightly rolling, flatter landscape was chosen than for the Dutch one. It is midday in high summer, but everyone is still fresh and energetically at work in the open air. The clear-cut, outlined style of painting is characteristic of many other pictures of the early 20th century, and ideal for a school picture because all objects can be easily picked out. In the background is the deciduous virgin forest, at the edge of it, to the left, a dolmen (without a mound), and to the right a passage grave covered by a mound. Even nowadays it is assumed that so-called 'free-standing dolmens', like the one in the picture, were surrounded merely by a low cairn and a kerb of stones. Cattle, sheep, goats, pigs, and their herders, a small cornfield being reaped, a huntsman returning from shooting ducks, a clay pit, and two dwellings fill the middle distance. In the foreground we see pottery being decorated, axes and battle axes being polished, corn being ground, and daub being applied to a wattle wall. The average age of the figures roughly accords with modern ideas on this point. As for the clothes, here too the artist opted for simplified Bronze Age garments, and for some a skirt or blouse made of skins. The standing woman wears the amber necklace with spacer beads from a TRB hoard in the bog at Sortekaer; although it dates from a few centuries earlier, such pretty necklaces may well still have been fashionable in the period represented by the school picture.

The pottery was probably copied from Müller's *Stenalderens Kunst i Danmark* (Stone Age Art in Denmark) of 1918, and almost all of it dates from the middle of the passage-grave period, Middle Neolithic (MN) III–IV. Only the pot from Skarpsalling, which the woman on the left decorates with cardium shells and a spatula, dates from the MN Ia and is a minor anachronism.[129] Two authentic pots are drying under a Scouting-style, wooden sunshade. The woman sits on a log and decorates the pot on a rough, heavy wooden plank lying across her lap. Presumably this job would be much easier without the plank: not causing cramp in the legs, the pot will sit far more snugly in the lap, and not chafe on a hard, uneven surface. Another question is whether a potter would actually choose to sit on a log while at work (as in Christiansen's picture) or on the cold ground (as with Isings) instead of squatting, which simple folk in large parts of the world still prefer to do. The seat is a luxury phenomenon, associated with the

126 Heij 1982, 24.
127 Isings 1975. Professor C. Isings affirms that her father did not borrow from foreign school pictures.
128 Schulz 1939, figs. 15–6.
129 Ebbesen 1978, 80.

Figure 16 Danish school picture showing a TRB village, by Rasmus Christiansen (ca 1907–1919), signed 'R X CHR'. Original size 100×70 cm (from *Billeder fra Nordens oldtid*, 1982).

comforts of a sedentary lifestyle. Seats and thrones were known long before the hunebed builders, but usually in association with temples or palaces, gods, priests, princes, and nobles. Ordinary working people of the time were used to crouching. Since *The Ugly American*[130] we know that our generously donated lavatory seats meet with little appreciation in most rural areas of developing countries, the world's population being fundamentally divided into sitters and squatters. This may even mean that people prefer crouching to standing upright at a workbench. When in 1974 the Dutch archaeological expedition to Hadidi, Syria, had a proper kitchen unit installed for the camp's local cook, Zenob, she would wash the dishes squatting on the draining-board as a compromise to show mutual good intentions.

In our cool and wet regions, however, the seat may have been adopted for household use at an early date. That the TRB had stools, folding seats or chairs in ordinary homes seems not quite impossible, given the prestigious, splendidly worked Bronze Age folding seats from northern Germany and southern Scandinavia (cf. fig. 17), and three earthenware objects from Dutch TRB contexts, thought to be miniature models of wooden stools (fig. 19). One, from hunebed D53-Havelte, has a

130 Lederer & Burdick 1958.

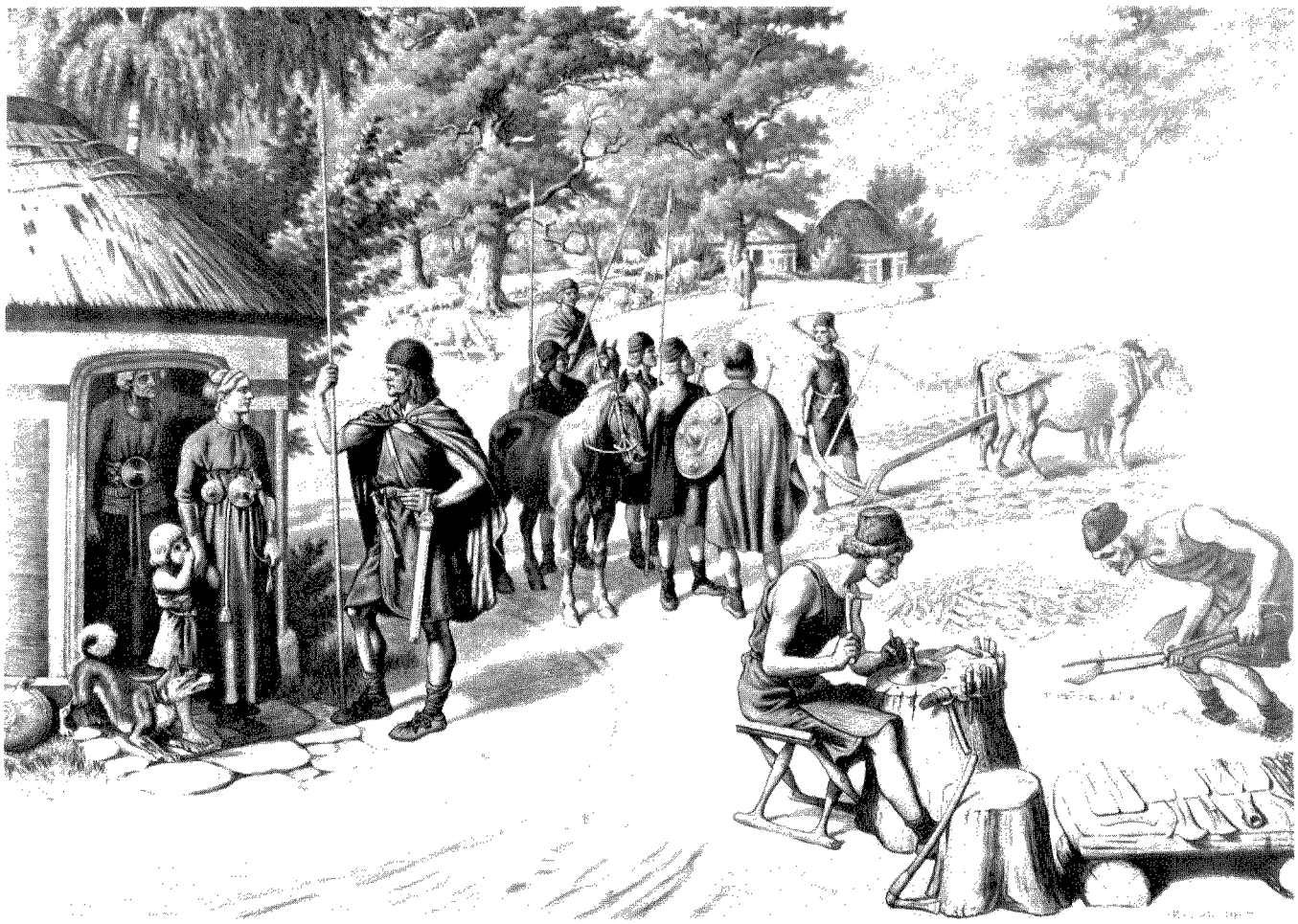

Figure 17 Danish school picture showing life in the Bronze Age, by Rasmus Christiansen (*c.* 1907), signed 'R X CHR 1907'. Original size 100×70 cm (from *Billeder fra Nordens oldtid*, 1982).

seat in the form of a board curving upwards at either end, like the ones made by African and South-American negroes, but differing from these in having a round, cylindrical foot instead of a sledge-shaped one. Two others from the TRB settlement at Anloo, far less convincing, look like hollow molars: stools with three or four legs if one wishes – unless they are models of domestic altars.[131]

The double-edged battle axe of Kjeldstrup type[132] and the thick-butted flint axes belong to the same period as the bulk of the pottery. The wooden handle of the axe in the middle foreground is the one from Sigerslev Mose, albeit that in the picture the broken end of the original would have been better the other way around, curving downwards. The whetstone of the 'fossil bone' type (EGK) is a few centuries younger.

131 Fol & Lichardus 1988, fig. 16 (thrones of Varna); Behrens 1973b (models of 'thrones to the gods' at Bernburg near Halle, Germany, and Jevišovice C1 in Moravia); model in D53-Havelte: Bakker 1979c, 60, fig. 9 (centre) reproducing Van Gelder *et al.* (eds.) 1947, pl. 34 = Van Giffen 1943b, fig. 11; Knöll 1959, pl. 35: 21; models from Anloo: Waterbolk 1960, fig. 41 (cf. Fol & Lichardus 1988, fig. 100, cat. no. 189, p. 257: 'miniature altar').

132 Ebbesen 1975.

Figure 18 Danish school picture showing life in the Germanic Iron Age, by Luplau Janssen (*c.* 1907–1919), signed. Original size 100×70 cm (from *Billeder fra Nordens oldtid*, 1982).

The round houses, remarkably small and low, are simplified versions of those in the Bronze Age picture (fig. 17). The latter are based on the pottery model of an oval house from Stora Hammar in Scania (fig. 20).[133] The Bronze Age school picture was painted in 1907 before an elongated Bronze Age house with four rounded corners was excavated at Boda, in Swedish Uppland, in 1912.[134] The Bronze Age roundhouses in figure 17 have walls of a man's height, but the TRB houses are barely half as high, and the woman with a baby at the doorway, in the centre of the picture, must be sitting on a sunken floor. Evidently these pit dwellings were inspired by the notion that they must have been more primitive than Bronze Age houses and by the *Wohngruben* that Neolithic rubbish pits were believed to be, before the true houses were identified. In the 1930s it was thought that the first ground-level, rectangular, wooden TRB houses in Denmark had come to light.[135]

133 Montelius 1917, fig. 1415.
134 Arbman 1939a.
135 Brøndsted 1938. The rectangular TRB house plans, considered convincing at the time, have recently been replaced by better ones: the houses of Flögeln type, already mentioned, and dozens of others on the island of Bornholm, all elongated rectangular, with a central row of postholes: Eriksen & Madsen 1984; Nielsen & Nielsen 1990; 1991.

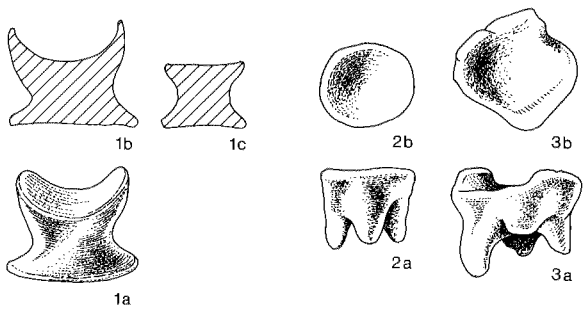

Figure 19 Probable models of wooden seats, Drenthe TRB culture, 1 from hunebed D53-Havelte and 2–3 from the settlement at Anloo. Scale 1 : 2. Redrawn by J.C.A. Hulst, ROB after J.C. Kat-van Hulten (ms. catalogue D53) and B. Kuitert (Waterbolk 1960).

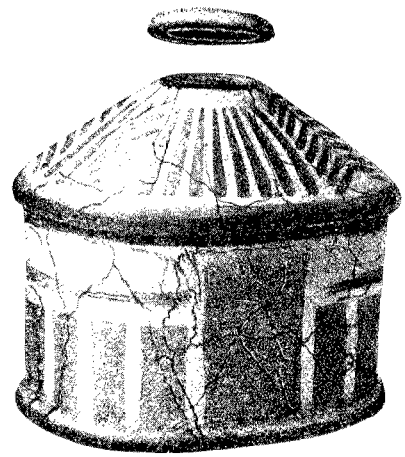

Figure 20 House-shaped urn from Storra Hammar, Scania, which for many years determined the reconstructions of prehistoric (round!) houses in Scandinavia (after Montelius 1917, fig. 1415). Scale *c.* 1 : 6.

Finally one may ask the more personal question: which of the two TRB panoramas is the more successful attempt? Christiansen's (fig. 16) has a blissful, rosy atmosphere in which the animals and figures are arranged without much in the way of interaction, as in a children's farm or a picture in an illustrated encyclopaedia, e.g. Duden's *Bilderlexikon*. The fashion-plate pose of the characters, who almost all seem engrossed in their own activities, and the lack of a central focus of attention that draws the actors together, renders the scene somewhat dreamlike and unreal. This is less the case with the shell-midden picture (fig. 15), where two men carrying home a huge boar are cheered with a modest 'hurray' by some of the figures. Isings too (fig. 11) used the hunter's homecoming as a focal point and source of tension – it engages the attention of all actors, except the potter who dourly presses ahead with her work. Unfortunately, not one of them can afford a smile or a cheerful face; all of the rather old characters – no toddlers, no mothers carrying babies in slings – look dutiful and serious. Yet the author personally prefers Isings' chilly spring day with its rugged, hardy folk to the balmy, uneventful summer's day of Christiansen's scene.[136]

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J.A. BAKKER[1]

Views on the Stone Age, 1848–1931: the Impact of the Hilversum Finds of 1853 on Dutch Prehistoric Archaeology

Keywords: history of Dutch prehistoric archaeology, museums of antiquities, antiquarianism, reconstruction, prehistoric society, Three-Age system, Stone Age, Neolithic, Bronze Age, TRB culture, Funnel Beaker culture, lake dwellings, forgeries, L.J.F. Janssen, Hilversum, Leiden, Copenhagen, 105 references.

The first collection of Dutch antiquities compiled by the national government was that in King Louis Napoleon's Royal Museum in Amsterdam (1808).[2] The national Museum van Oudheden in Leiden was founded in 1818 by King William I, with the brilliant C.J.C. Reuvens (1793–1835) as its first director. For almost a century, the practice of Dutch prehistory remained a virtual monopoly of the curator of the Germanic and Nordic antiquities Department of this museum. He was the only specialist with a full-time post, albeit that he often had other departments to look after as well, since the museum had no more than a director and a single curator. Dutch prehistory for the Leiden museum was managed successively by C.J.C. Reuvens (in office 1818–1835), L.J.F. Janssen (1835–1868), W. Pleyte (1869–1903), J.H. Holwerda (1903–1938), A.E. Remouchamps (1919–1927), F.C. Bursch (1927–1945), and H. Brunsting (1946–1967).

Because of the Dutch government's financial difficulties following the Belgian separatist war in 1830–1839, the museum in the later nineteenth century lacked the funds for carrying out large-scale excavations like those undertaken by Reuvens at the Roman settlement of Arentsburg near the Hague.[3] In contrast to Denmark and Sweden, the Netherlands also lacked a small forum of prehistory experts; until the end of the nineteenth century there was little scope for anything but collecting and arranging archaeological objects according to site and region. It was not until after 1897 that the lawyer and eminent self-taught archaeologist P.C.J.A. Boeles LL.M. (1873–1961), a part-time curator at the Fries Museum in Leeuwarden, was to arrange the prehistoric collection there into Stone, Bronze, and Iron Age sections.[4] Some eighty years after Thomsen had developed the Three-Age system whilst sorting out the collection at Copenhagen, this was the first time it was applied in the Netherlands. Meanwhile it had been adopted by most of the world's leading museums.

Until then, the Leiden archaeologist remained deprived of Dutch-speaking discussion partners of professional calibre. Reuvens and Janssen maintained a fairly close contact with most local collectors and amateur antiquarians, as well as the regional and provincial museums of antiquities. These museums were being established in growing numbers by societies of enthusiasts, for instance at 's Hertogenbosch (1837), Utrecht (1838/40), Nijmegen (1850), Assen (1854) Leeuwarden (1855), Arnhem (1856), Maastricht (1863), Barneveld (1875), Amersfoort (1878), Hoorn (1879), Zwolle (1882), and Groningen (1889).

Obviously this situation was hardly conducive to the

1 Instituut voor Pre- en Protohistorische Archeologie Albert Egges van Giffen (IPP), University of Amsterdam. Many of the literature titles in the text are translations of the original titles. The English translation was prepared by Ms Xandra Bardet, Groningen. Ms Karen Waugh edited the English.

2 Several of the data used in this paper derive from the indispensable study 'Material for a history of Dutch archaeology up to 1922' by J.A. Brongers (1976). Glasbergen (1962) presented an illuminating paper on the state of archaeological research in the Netherlands in the nineteenth century. See also Knol 1991 and below, on the fundamental dispute between Boeles and Holwerda about chronology.

3 It is the author's impression that Janssen's greatest excavations such as those at Wijk bij Duurstede were smaller in scale and extent than those by Reuvens at Arentsburg (*Forum Hadriani*). But so far there has been no investigation into the budgets of the Rijksmuseum van Oudheden at Leiden in the nineteenth and early twentieth centuries.

4 Knol 1991; see below, notes 105 ff.

development of Dutch prehistoric research, even though Leiden could boast the world's first university chair in archaeology (C.J.C. Reuvens, 1818). Until the discovery and the investigation of the flint mines at Rijckholt-Sint Geertruid in 1881 by the Belgian M. De Puydt (1855–1940), the arrival of P.C.J.A. Boeles as honorary curator at Leeuwarden in 1897, and the appointment in 1904 of J.H. Holwerda (1873–1951) as full-time curator of the Dutch antiquities at the Rijksmuseum van Oudheden in Leiden (RMO), there had been no stratigraphic-chronological excavations or studies of Dutch prehistory of truly international importance. Nor was there much in the way of interesting prehistoric discoveries, apart from some Bronze Age hoards and a few stray finds.

However, Janssen's excavations in 1853 of Stone Age remains near Hilversum seemed to be a notable exception. In the Netherlands, these finds were to exert their influence up till about 1930, and Janssen's monograph (1856) shows to what extent his ideas about the Stone Age (inspired among other things by a publication by the Swede S. Nilsson) received new impulses from these discoveries.

JANSSEN'S STONE AGE RESEARCH (1847–1853)

The indefatigable researcher and publicist Leonhardt Johannes Friedrich Janssen (1806–1869),[5] curator of the Museum van Oudheden (1835–1868), managed the – still very scanty – Dutch prehistoric material on his own. He studied it in the context of the older Dutch literature and the work and publications of contemporary archaeologists in neighbouring countries. He read German and French, but English and Scandinavian publications came to him mostly in the form of translations or excerpts in other languages. Janssen had studied divinity at Utrecht University (1823–1831), where he was awarded a gold medal for his treatise on the literary merits of the 29th Psalm (1827). In 1836 he became an Honorary Doctor of Literature. In the field of archaeology, however, he was self-taught.

Janssen kept up an intensive correspondence and personal contact both with his foreign colleagues and with local interested informants and collectors of antiquities. He carried out excavations at various sites in order to expand his knowledge and the museum collection; his promptly published excavation reports, studies, and reviews number at least 250. Still it must be noted that – like his contemporaries – he was unable to interpret soil features or to distinguish loose, recently disturbed soil, and therefore at times recorded chronologically inconsistent assemblages that even he found surprising. Usually his excavations were just small ones, taking little more than one day. Like many of his European colleagues, Janssen was always more of a scholar than a practical digger. Apart from the Hilversum antiquities, to be discussed below, he found no Neolithic assemblages that, in volume and content, might compete with the more interesting ones found abroad.

Some of Janssen's studies, appearing between 1848 and 1856, are detailed accounts of the 'founders of the hunebedden'; they show him continually adjusting his ideas.[6] It should be remembered that C.J. Thomsen's Three-Age system, developed from 1818 onwards, in which the Stone, Bronze, and Iron Age were recognised as distinct, successive prehistoric periods, had been published in 1836 in the *Ledetraad* of the Copenhagen archaeological museum, and had almost immediately been translated into various European languages. Through this and other Danish publications, most of which were also published in French, German or English, this system had become generally known, which is not to say that it was at once universally accepted. In Germany, for instance, the Three-Age system was welcomed by the Mecklenburg field archaeologist G.C.F. Lisch in Schwerin, who himself had reached similar conclusions, but it was vehemently opposed until well into the 1880s by L. Lindenschmit Sr (1809–1893), G.O.C. Freiherr von Estorff (1811–1877), and many others,[7] and the effect of these disputes is clearly evident in Janssen's work. Against Thomsen's theory, Von Estorff argued that in the so-called Bronze Age, stone implements were being used beside bronze ones, and in the Iron Age, bronze and even stone tools and weapons were being used beside those of iron; this demonstrates his failure to grasp the essence of Thomsen's model.[8] Janssen, who called the otherwise quite competent Von

5 On Janssen: Brunsting 1947; Kramer-Clobus 1978 (brief bibliography and a review of his manuscript files on Dutch finds); Brongers 1976. Janssen left the Leiden museum on 31st December 1868, not in 1863 as stated in Brongers 1976.
6 Janssen 1848; 1853a; 1853b; 1856.
7 On the early development of Scandiavian archaeology: Klindt-Jensen 1975; on the heated disputes about the Three-Age system in Germany: Gummel 1938, 164 ff., 263 ff.
8 Gummel 1938, 168, note 3.

Estorff 'my friend', borrowed this unsound argument from him and underpinned it with Dutch examples.

In *Drenthsche oudheden* (1848) Janssen discussed the Dutch *hunebedden*[9] – all of which he had visited and sketched in 1847 – and where necessary revised the older literature about them.[10] E.M. Engelberts had created a great deal of confusion with a poorly-drawn picture of 'Antiquities Found in the Hunebedden' (fig. 1).[11] Objects depicted by Van Lier in his valuable book on hunebed D13-Eext, said to have been found 'at' hunebedden or elsewhere, had been thrown together with other finds in Engelberts' illustration. Janssen remarked that the cow's horn (fig. 1: 15) is unlikely to derive from a hunebed.[12] The *disci* (fig. 1: 12-12*), ceramic discs that Janssen took to be net sinkers, or possibly missiles, had nowhere appeared in such numbers as they had at Wijk bij Duurstede where they were without doubt Carolingian in date.[13] Janssen labelled Westendorp's reference to a bone arrowhead from a hunebed in his internationally influential monograph as an error.[14] Erroneously, Janssen equated the rows of wedge holes cut into the boulders of hunebedden by stone robbers with the prehistoric cupmarks on isolated megaliths that he knew from German publications.[15] It is interesting that several years before 1857, when the Danish king Frederik VII wrote his famous publication about the building technique used for megalithic tombs, Janssen explained that the orthostats of the hunebedden were transported and set upright by means of rollers, ropes, and levers. These were then covered by a mound, after which the capstones were taken up along a ramp.[16] In his later elaboration of this hypothe-

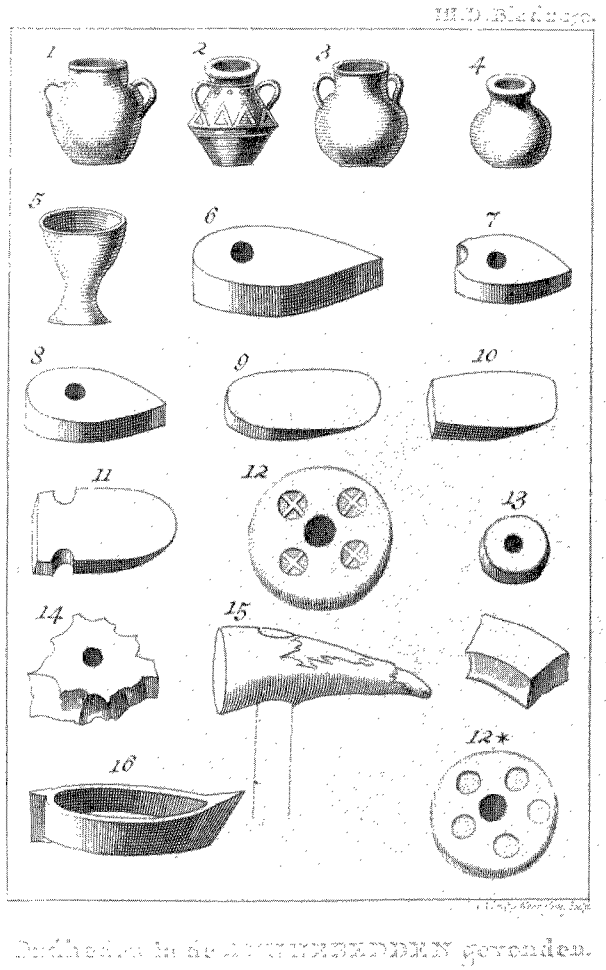

Figure 1 'Antiquities Found in the Hunnebedden' (Engelberts 1790, vol. III, opposite p. 170), print by N. van der Meer Jr (frame 13×8.5 cm).

9 Westendorp 1815; 1822²; Engelberts 1790; Van Lier 1760; Picardt 1660.

10 In view of the high frequency of the use of the word *hunebed*, plural *hunebedden*, in this article it was decided not to italicize the word.

11 Engelberts 1790, 161–82; Janssen 1848, 16. Westendorp 1822², 10, had remarked on the same mix-up. See Bakker 1979b, Appendix B3, with an example from 1808–1810 of the confusion created by Engelberts.

12 Janssen 1848, 16. A cow's horn mounted on a shaft like a hammer (as in fig. 1: 15) was used as a 'silversmithing tool' in the seventeenth–nineteenth centuries. An example of such a tool was seen by the author in the permanent exhibition in Wilberforce House, Hull, England, in 1989.

13 Janssen 1848, 16, 152–3; now they are regarded as loomweights. Janssen had undertaken extensive excavations of early-medieval Dorestad at Wijk bij Duurstede.

14 Westendorp 1815; 1822².

15 Janssen 1848, 13–5; Janssen 1853a, 23. See Bakker 1992, 4 (splitting boulders by means of wedges), 31–2 (prehistoric cupmarks). On Frederik VII's theory, see Bakker 1992, 33–5; Klindt-Jensen 1975, 83.

16 Janssen 1848, 13 (still without mentioning rollers). Further elaborated in 1853a, 11–2 (using levers, rollers, and ropes twined from strips of hide or twigs, erecting orthostats, earthing them up on the outside, raising and positioning capstones via a ramp; originally most of the Drenthe hunebedden seem to have had external mounds up to the capstones). Frederik VII 1857.

sis, he may have been inspired by the studies of S. Nilsson, and through him indirectly by those of J.J.A. Worsaae (who later inspired King Frederik to write his text).[17]

In 1847, Janssen had excavated the largely destroyed hunebed D44a-Zaalhof at Noordbarge-Emmen, situated within a much later earth rampart and dry ditch, known as the 'Zaalhof'.[18] Only two large boulders of the hunebed remained. One boulder (1.37×0.75 m) bore a row of chiselled wedge holes.[19] Above and on the 40 cm-deep floor of stones and crushed granite (5.5×2 m), he had found 'Germanic' (i.e. prehistoric) sherds, including thirteen with various designs and a hollow handle fragment of a biberon, as well as 'a lump of oxidised iron (possibly part of a large knife or a sword)' on the floor. Beside the split boulder, at a depth of 1 m, that is deeper than the floor, two pieces of old and light tuff came to light. As tuff was first imported by the Romans from Andernach-Niedermendig in the Eifel, this assemblage, 'if indeed the whole assemblage consisted of the remains of a disturbed hunebed', was thought to date from Roman times.[20]

In 1760, J. van Lier, supported by foreign literature, had stated that if people had had metals at their disposal, they would no longer have undertaken the time-consuming production of the flint arrowhead (of barbed-and-tanged Bell Beaker type – B.) and polished flint axes he had found in hunebed D13-Eext. In Drenthe, copper and bronze objects were, by contrast, only found in barrows without megalithic chambers.[21] In 1815 and 1822, N. Westendorp had suggested a fairly global dating of the hunebedden (in which only stone tools and pottery had been found) of between 2000 and 1500 BC, as they were on the whole older than the barrows (which, Van Lier had said, contained bronzes) and antedated the Romans by far. He proposed that the Celts were the builders of these funerary monuments.[22]

Janssen, who in earlier days had gone along with this interpretation,[23] distanced himself from it in 1848. Like C.J.C. Reuvens,[24] he no longer believed in Westendorp's attribution of the hunebedden to the (primeval) Celts.[25] The 'pre-historic'[26] 'founders of the hunebedden', the 'earliest inhabitants of our country', were largely pre-Roman, although some of the hunebedden might still have been built in Roman days.[27] Yet Janssen failed to indicate when the oldest hunebedden and the beginning of the (Late) Stone Age should be dated.[28]

In 1850, Janssen had the archaeology of the Netherlands begin with 1. the Hune- or Stone Age, which lasted until the arrival of the Romans, followed by 2. the Germanic-Roman Era, contemporary with the Romans.[29] The hunebedden date from the 'pre-historic Stone Age', in which the stone axes are accompanied by

17 Janssen 1853a repeatedly quotes Nilsson 1843, after a Dutch translation by J. van der Hoeven, 'Bijdrage tot de ontwikkelingsgeschiedenis des menschelijken geslachts' in *Tijdschrift voor Natuurlijke Geschiedenis en Physiologie* 11 (1844), 20 ff. In 1856 he also cites Nilsson 1843–1848 and Worsaae, *Dänemarks Vorzeit, durch Alterthümer beleuchtet* of 1844.

18 Janssen 1848, 118–20.

19 Drawing by Reuvens: Brongers 1973, 23. The wedge holes are already mentioned by Picardt 1660, 80; cf. Bakker 1988. Picardt 1660 and Janssen 1848 did not know the origin of these wedge holes.

20 Presumably the piece of iron was a splinter of one of the wedges with which (before 1659) the boulders were split up. Such wedges are occasionally found in destroyed hunebedden.
Tuff (read: tephrite) from the Mayen region in the Eifel has been exported to the Netherlands presumably from the Late Bronze Age (1050–800 cal. BC) onwards, especially in the form of querns (Kars 1983, 114; Van Heeringen 1989, 236–7). It is interesting how Janssen uses the maximum age of an import horizon – this may yet provide a global dating for the oval earthwork of the Zaalhof.

21 Van Lier 1760.

22 Westendorp 1822², 293–4 (cf. Bakker 1979a, 20, 24). On p. 40 he agrees with H. Dutrochet (1818) that stone axes 'undeniably have an age of three thousand years' (taken literally, this comes down to *c.* 1180 BC).

23 Janssen 1836, 5, citing Westendorp's quotation from Dutro[u]chet.

24 Reuvens archive C1 23–5, RMO, cf. Bakker 1979a, 163.

25 The hunebed builders were neither Celtic nor Germanic, but older: Janssen 1852, 8; more explicitly: 1853a, 7.

26 The term 'pre-historic' is casually used by Janssen 1848, 180 (Van der Woud 1990, 48) and also in Janssen 1853a, 25; and 1856. The term was used as early as 1833 by Tournal (Heizer 1962, 79).

27 Janssen 1848, 17, 120 (on the age of the most recent hunebedden).

28 That is, if the author did not miss it in Janssen 1856. Cohen 1844, 361 attributed 'an age of definitely twenty-five centuries' to the hunebedden (literally *c.* 650 BC). Also Hofdijk (1856b, 34; 1859, 3) gave the hunebed builders an age of about twenty-five centuries, while their origin occurred 'some thirty centuries ago' (i.e. before 1150 BC;

a fine, decorated kind of pottery. 'That era is, as it was also in our country, the Nomadic period of a people that does not yet have permanent settlements, but still lives in huts and caves, feeds itself with hunting and wild herbs of the field, dresses in animal hides, and is given over to a fetish religion. Animal husbandry and agriculture are still unknown; for even the principles of a herding or agrarian life presume a more developed civilisation.'

The year 1853 saw the publication of a lecture 'On the Civilisation of the very Earliest Inhabitants of our Fatherland, Deduced from Recovered Remains'.[30] Under Schlözer's motto *Fange die Geschichte an, wo die Geschichte anfängt* (Start history where history starts), Janssen argued that a nation's past begins – as it also should in historical works – with 'the very earliest cultural stage of our race and specifically our ancestors'. On this point he was at least to find a response in Hofdijk's popularising historical works.[31] Janssen elaborately discussed the material and spiritual culture of the founders of the Stone Age hunebedden on the basis of remains found in the Netherlands, those of the North German and southern Scandinavian Stone Age, and analogies with living primitive peoples. He gave a detailed discussion of objects in ethnographic collections in the Netherlands and abroad. S. Nilsson, G.C.F. Lisch and G.O.C. von Estorff were repeatedly quoted, the archaeological-ethnographic studies by Nilsson (indirectly, J.J.A. Worsaae) being an important source of inspiration. This study in particular must have prompted Hofdijk to devote his first tableaux to the hunebedden period.

Inspired by Nilsson,[32] Janssen attempted to fit the cultural level of the hunebed builders into the then current models of successive developmental stages of human civilisation. In retrospect, he is seen in this and other publications to make curious swerves between a 'nomadic' hunter-fisher-gatherer stage and the (Neolithic) agrarian stage (to which the hunebed builders have since been assigned, and which is marked by certain traits, a few of which – such as pottery and polished stone axes – were known to Janssen). One should, however, remember how little was understood then about ethnology and archaeology, and how badly the 'data set' was contaminated with faulty observations and assumptions. Almost anything was credible, since so little was certain.

Rather reservedly, Janssen mentioned that 'the Nordic archaeologists' assigned all pre-Christian remains to, successively, a Stone Age, a Copper or Bronze Age, and an Iron Age. He considered the distinction between the Stone Age and the Copper or Bronze Age better substantiated than that between the latter and the Iron Age, 'because copper tools have been more frequently found with iron than with stone tools' – in a roundabout manner, he thus said that there was probably first a Stone Age, which was followed by a Metal Age in which iron and copper or bronze were used together for a long while.[33] As Dutch megalithic graves had never yielded any metal objects, and as the earliest reports of Greek and Roman authors were completely silent about the people that founded these tombs, they must therefore have been pre-historic, pre-Celtic, and pre-Germanic. There was no longer any reference to the possible construction of the very last hunebedden in the Roman period. Just like Westendorp and many contemporary

Hofdijk 1859, 19). But in his description (1862, no. 2) of the painting of a hunebed in the historical gallery of the Amsterdam artists' society 'Arti et Amicitiae' he makes it *c.* 3000 BC. Witkamp (1873, 3–15) declares the hunebedden to be at least 2500 years old, possibly even thirty to thirty-five centuries.

See Fischer (1991) on the erratic dates attributed to the Neolithic cultures in the 20th century. Only around 1990 did they begin to stabilise as a result of the dendrochronological calibrations of radiocarbon dates.

29 Janssen 1852 (lecture given in 1850). The term *Huneperiode*, which Janssen borrowed from Von Estorff (Janssen 1848; 1852), he dropped again in 1853a. Janssen (1852, 10) rejected the 'many split flints, in which the excited imagination [of J.C. Boucher de Perthes (1847)] recognised various human and animal figures and mystic symbols, stones thought to be purposely shaped thus, and adduced as arguments for the high cultural level of the Celts in primeval times'. Although later on he referred to Boucher de Perthes as an expert on flint working (Janssen 1856, 48), he nowhere mentioned the 'antediluvian' handaxes found by Boucher at Amiens and Abbeville. Only from 1859 onwards were they generally recognised as such. J. Lubbock (1865) divided the Stone Age into Palaeolithic (with handaxes) and Neolithic (with polished flint and stone axes) (Heizer 1962, 3, 82–115).

30 Janssen 1853a.

31 See Bakker 1990, this volume of *BROB*.

32 On Nilsson's study of the developmental stages of prehistoric cultures, which predates Tylor (1871) and Morgan (1877), see Harsema 1989.

33 See note 7 and the corresponding main text.

archaeologists, Janssen believed in a single great Western European people that built all of the megalithic tombs (although in 1848 he had explicitly rejected this concept).[34]

A discussion of the most likely construction technique of the hunebedden[35] is followed by the observation that these folk inhabited dwellings or houses that were 'small, cramped, and low, [...] to protect them against the worst cold and the most inclement weather, whereas their true abode was out in the open, under the sky, where they spent by far the major part of their lives'.[36] Their principal means of livelihood was hunting, as was evident from ethnographic analogies and especially from the excavated flint points of arrows, lances, and throwing spears. Janssen took the Scandinavian flint daggers to be spearheads, like the one he himself had found together with a stone hammer in a barrow near Emmen. In a Swedish megalithic tomb a human skeleton had been found with its skull still pierced by such an 8-inch spearhead, which indicated that its shaft must have been a heavy one.[37] In the earliest times, our fatherland was completely covered with vast forests, apart from the sea coasts and marshes. In these forests lived the same mammals and birds as nowadays (though with more birds of prey) together with a few others. Janssen mentions hares, rabbits(!), fox, wild boar, deer, and aurochs (whose horns had been found in bogs in Drenthe and Overijssel). It was more than likely that people fished as well. Fishing tackle had not yet been found, but fish hooks and harpoons of stone and bone were known from Scandinavia, and hunebed D15-Loon contained a ceramic model of a surprisingly well-made boat, probably the urn of a sailor or fisherman. Dugouts had been found in Swedish bogs. Janssen's description of how they were made with fire, stone wedges, chisels, and hammers is probably a reflection – via Nilsson and Worsaae – of the description by P.W. Lund (1838–39) of the making of dugouts with stone axes and glowing embers. Acorns, beechnuts(!), and hazelnuts were probably also eaten (hazelnuts had been found in a bog near Gendringen), and beverages would have been prepared from bilberries, sloe, and possibly also wild honey.[38]

Clothing would have been made from the hides of animals, the flaying of which was done with stone tools. 'Some of the wedges were probably simply weapons of honour.' The production and maintenance of the stone tools, and above all the pottery show that 'the people of the megalithic graves [...] despite their simple, rude way of life, were not entirely without artistry'. More than 600 words go to describe the pottery, which on the whole is smaller and finer than that from the Germanic barrows. Hofdijk was to copy this detailed description of the production, the decoration, and the function of the pottery unabridged and almost verbatim, and for his illustration Hofdijk faithfully employed Janssen's detailed references to TRB vessels depicted in the literature.[38] How pottery was made without a wheel was known from the observations by Prince von Wied among the Mandans, Minitari (Hidatsa), and Arikara in the Plains of North and South Dakota (like the TRB potters, they tempered their ware with granite or quartz crushed after being heated in fire, but instead of building their pots from coils they shaped them with the paddle-and-anvil technique, pressing them up from a lump of clay with a round stone held in the hand – B.). 'As they were acquainted with fire, it would not be surprising if they had a rudimentary understanding of the art of cooking' in the way that 'the very slightly developed Eskimos practice a kind of cookery'.[40]

The hunebedden indicate that their makers did not lead a nomadic life but had permanent homes, that they – like all other known peoples – knew family life, appreciated family ties, and upheld property rights. Idols are unknown anywhere during this period, which suggests the absence of polytheism. Janssen goes on to describe the various stages of religious development. The lowest stage is fetishism, in which man views nature as a chao-

34 Janssen 1853a, 9 (the Three-Age system), 7–9 (pre-Celtic and pre-Germanic), 25 (a single people; in contrast to 1848, 181). The attempt to identify a single people as the builders of all Western European megalithic tombs was not universally abandoned until the megalith exhibition at the 2me Congrès International d'Anthropologie et Archéologie Préhistoriques, Paris 1867 (Cartailhac 1889, 198).

35 See note 16.

36 Janssen 1853a, 13.

37 Janssen 1853a, 13–4, quoting Nilsson (on the Swedish skull). Janssen 1848, 31–2; Lanting 1973, 236, fig. 10 (on the burial near Emmen).

38 Janssen 1853a, 13–7, 21. The boat model is probably much later (Van Giffen 1925, 60–4; Bakker 1979a, 60). Klindt-Jensen 1975, 134 and especially 1976 (about P.W. Lund).

39 Bakker 1990, this volume of *BROB*, fig. 8.

40 Janssen 1853a, 17–21.

tic multitude of separate things that particularly stir his imagination. He believes them to be divinely possessed and to exercise a power over him, for which reason he fears and venerates them. At a somewhat more advanced stage, the savage comes to believe in an invisible world of spirits and demoniac natural forces. Then evolves the belief in a great and powerful spirit who rules like a chief over the other spirits. Some peoples identify the sun as such, and indeed the practice of cremation at the hunebedden points to the veneration of fire (the sun?). However, unburnt skeletons had been encountered in many North European megalithic graves, and while Jacob Grimm assumed that these graves were older than those in which cremations were found, Janssen considered this unlikely.[41]

THE HILVERSUM ANTIQUITIES (1853–1856)

The lecture discussed above became the first article (dated 'January 1853') in Volume I (1853) of the *Oudheidkundige Verhandelingen en Mededeelingen* (Antiquarian Treatises and Communications), whose preface is dated July 1853. This issue, written entirely by Janssen, also contains studies about Winckelmann and the new archaeological discoveries in Mesopotamia, and finally a preliminary report, dated July 1853, entitled 'Hilversum Antiquities', about some spectacular Stone Age finds that Janssen had excavated from 2nd February 1853 onwards. Even here the reader can spot newly necessary additions and adjustments to the picture painted in the first article on the Stone Age in this volume.

This is even more markedly the case in the monograph of 1856, entitled 'Hilversum Antiquities' *(Hilversumsche Oudheden)*: 'a Contribution to the Cultural History of the Earliest European Peoples', which includes a virtually verbatim repetition of what was said in the preliminary publication. The book runs to 90 pages of text, over 50 000 words, and contains ten lithographs, some of them coloured. The two publications will be discussed together, with emphasis being placed on the book.[42]

On the south-east slope of the Bosberg hill near Hilversum, in the south-east corner of Gooiland and the Province of Noord-Holland, a stretch of heathland was deeply dug over in the winter of 1852–1853 by the labourer Dirk Westbroek from Maartensdijk,[43] as the landowner wanted it planted with pines. This heath had in the Middle Ages been part of the Gooiersbos (a remnant of virgin forest). In the course of his digging, Westbroek came upon fireplaces containing charcoal, half a metre beneath the surface. These were paved with loose stones and surrounded by horseshoe-shaped walls (fig. 2). In due course, he notified the owner, J.H.C. van Hengst LL.M. from Utrecht, who gave him permission to sell these stones. He also told the burgomaster of Maartensdijk, F.N.M. Eyck van Zuilichem LL.M. (1806–1876), author of 'the first serious study of Dutch medieval architecture',[44] who asked him to look out in future 'whether there might not be tools of stone found in or near the fireplaces, whereby he described [to Westbroek] some characteristics by which he might be able to recognise such tools. Not much later, the son of the aforementioned labourer did indeed find some worked stone tools at such a fireplace; he took them to Mr Eyck, who bought about ten of them (they were wedges and arrowheads).' Eyck informed Janssen in a letter of 25th January 1853. Under the supervision of Janssen and some other gentlemen Westbroek excavated seventeen fireplaces between 2nd February and 2nd August 1853. After a while Janssen's museum obtained the exclusive right to the recovered tools. He acquired over 400 stone tools (fig. 3), and a few dozen were bought by the other gentlemen. These stone tools, from a single site, outnumbered those in all other Dutch

41 Janssen 1853a, 21–5 (compare the concise, clearer passage about religion quoted below, Janssen 1856, 57). Grimm 1850.

42 Janssen 1856; illustrated preliminary publication: Janssen 1853b. In the following, only passages in less obvious places will be given as references. The present author has written earlier about these finds: Bakker 1963–1964; 1979a, 23–5, 64.

43 That Janssen does not mention the initials of the Westbroeks, father and son, was usual in those days. Implicitly, the report also reveals the great social distance between the labourer, who did the digging, and Janssen and the gentlemen who supervised him. The father's Christian name 'Dirk' appears in Eyck van Zuilichem's letter of 28th January 1853 to Janssen (Janssen archive, Universiteitsbibliotheek Leiden BPL 944.III, 'Hilversum'; cf. Kramer-Clobus 1978; all letters from Eyck and Perk to Janssen referred to in the following are in these Janssen files).

44 Eyck tot Zuilichem 1849; this designation is by Van der Woud (1990, 150–1, 168). His name was Eyck van Zuilichem; his signature as an author was 'Eyck tot Zuilichem', or 'Zuylichem'.

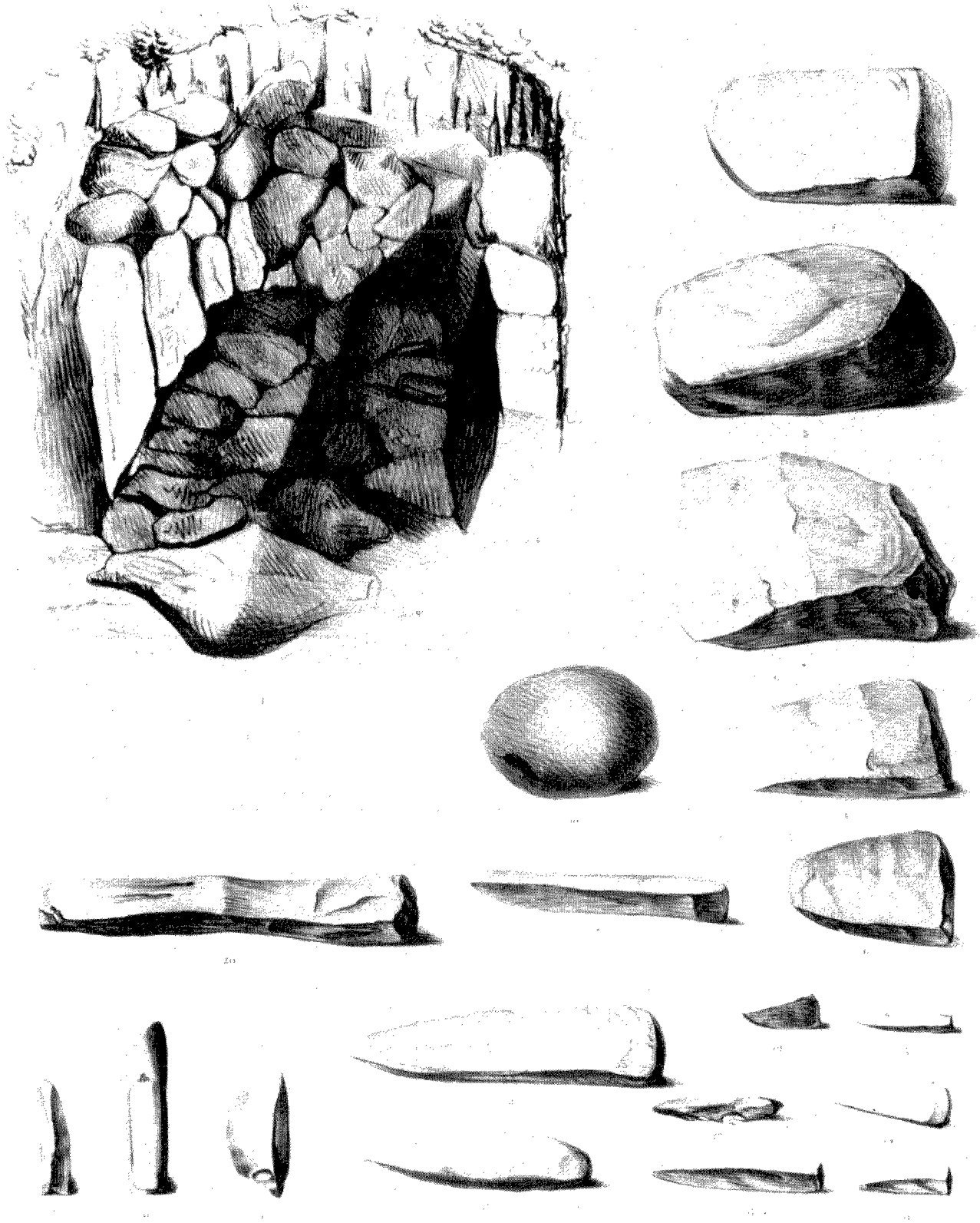

Figure 2 Fireplace 7 near Hilversum, drawing by J.A. de Rijk Jr; stone implements found in this and the other fireplaces in 1853, lithograph by T. Hooiberg, 36×28 cm (Janssen 1853b). Photo Universiteitsbibliotheek Amsterdam.

collections put together! The excavations gained national fame through Janssen's publications in the *Staatscourant* (official gazette) of 19th February and 4th June, which were taken up by other newspapers. Eyck and the other local gentlemen were convinced that they were dealing with the remains of a settlement, but Janssen rejected this interpretation in all his writings.

Westbroek would recognise the sites by 10 cm-deep depressions in the surface of the heath and would often, but not always, warn the gentlemen in advance, so that they could be present at his excavation. Janssen came down from Leiden six times for such occasions, and never in vain. When he could not be present, Eyck van Zuilichem, Van Hengst, the Hilversum notary and antiquarian A. Perk, the Hilversum landscape artists J. and J.A. de Rijk, or even the amateur archaeologist *jonkheer* J.P. Six van Hillegom from Amsterdam, who owned a country residence at Hilversum, took this task upon themselves. Janssen described the circumstances and the contents of the finds in great detail, showing the preoccupation with exact measurements that has beset the discipline ever since. His monograph is an exemplary publication, and the finds at the time seemed no less important than those of Keller among the lake dwellings at Meilen in Lake Zürich in 1854, or those from the *kjøkkenmøddinger*, the shell kitchen middens at Mejlgaard in Jutland, which were excavated by Worsaae, Steenstrup, and Forchhammer from 1848 onwards. The well-known local landscape artist James de Rijk (1806–1882) and particularly his son, the later seminary professor J.A. de Rijk (1831–1897), then still training to be a painter, sketched the situation fairly accurately. T. Hooiberg prepared lithographs not only after such sketches and watercolours by James de Rijk, but also after the original tools (e.g. figs. 2–3); these illustrate the book as well as the preliminary publication. The illustrated objects are excellently rendered: a considerable number of stone axes, chisels, arrowheads, and balls, as well as a bone arrowhead.[45]

Westbroek excavated eight fireplaces under the supervision of Janssen, three under that of the other gentlemen, and six on his own (two or three before Janssen first arrived, the others afterwards). Fireplace 13 excepted, the sixteen others are documented by detailed reports. Fifteen fireplaces were paved with floors of flat stones, 40–110 cm under the surface, 50–105 cm long and 36–62 cm wide (one pavement measured 190×90 cm). Their shapes varied from round to semicircular and rectangular. A wall of loosely-stacked stones, 10–40 cm wide and 20–70 cm high, enclosed the floor on three sides. The 'entrance' openings might face to any point of the compass. Ashes and burnt bone splinters were frequently found in and around the fireplaces. The tools would often lie under a flat stone at the entrance, but sometimes loose or in a little pit, on or beneath the floor, among the wall stones, or higher up in the fill of the fireplaces. Only fireplace 14 contained no stones and was just a flat hearth 1 m long, 'consisting merely of hard sandy soil' (and filled with looser soil – B.). Westbroek declared that before February 1853, he had already dug away about twenty such hearths without taking much notice of them 'and one of his acquaintances had, a few years before, excavated one in the same south-facing slope of the heath, near which there had been a spring or fountain, from which clear water had sprung.'[46]

The excavated charcoal was identified by W.H. de Vriese (1806–1862), professor of botany in Leiden, as deriving from pine, alder, and oak. Dr H. Schlegel (Rijksmuseum voor Natuurlijke Historie, Leiden) identified the bone fragments among it as cattle, sheep or goat, and part of a beaver's incisor. The material included an arrowhead made from the bone of a sheep or goat. Among the stones of a fireplace dug up by Westbroek without supervision, was a vertebra from a dog. Human bones were not encountered.[47] Dr E.M. Beima

45 Janssen compared the stone balls to the *bolas* of the Argentinian Pampas; later Holwerda identified them as percussion stones (Holwerda, Evelein & Krom 1908, p. 29 nos. 490–1).

46 Janssen 1853b, 140.

47 Janssen 1853b, 146; 1856 *passim*. The fragment of a beaver's incisor and the vertebra, probably of a dog, are only briefly touched upon in the book (1856, 30 and 34). The identification of the beaver's incisor is not very plausible. According to Dr L.H. van Wijngaarden-Bakker (IPP, pers. comm.), it is likely to have been confused with a fragment of a pig's incisor.

from the above-mentioned museum identified the rocks.[48]

Only one pot was found, a zigzag beaker which was broken during its recovery while Westbroek was digging unsupervised in the vicinity of fireplace 12. The fine decoration, incised before the clay had been quite dry, seemed typical for the Stone Age, although Janssen did not know the hatched design on the body from any other Stone Age pottery: only from the Metal Age. At roughly the same spot, Westbroek found a polished flint axe, of a kind familiar from the hunebedden and other sites. A scraper, a small blade, and some flakes of flint from the fireplaces were interpreted as knives or saws.[49]

Only with the greatest difficulty could Janssen find parallels for the other stone tools, which at Hilversum turned up by the hundred. They were naturally-shaped stones, occurring locally, of which the softer kinds had been ground partly or all over, but much more superficially than the stone axe, the only piece of polished flint from this site.[50] Perforations were absent, thus also the cylindrical ones of which it was argued at the time that they could only have been bored with a metal cylinder. Although evidently more primitive than the stone and flint axes known from other sites, these objects could not, however, be older, since among the stone balls were two made from tuff from Niedermendig in the Eifel. Janssen was certain that this stone was not imported until the Roman period.[51]

Moreover, immediately at the entrance to fireplace 8, at the same depth, a well-carved piece of stone came to light (identified as probably of Limburg chalk), measuring 14.5×8 cm, which on its flat side had been cut with an axe. On its other side, it displayed carved ridges and moulding. The top and bottom also seemed to have been neatly cut with an axe. 'It is similar to Roman, medieval or even later mouldings.' Yet the topsoil showed no traces of ever having been disturbed, and according to an expert apothecary the black deposit in the grooves of the stone was soot, which proved that it too belonged to the fireplace. It was clear that the builders of these fireplaces could never have worked this stone themselves, but had taken it from a Roman building.[52] This revived Janssen's proposition of 1848, based upon his excavation of hunebed D44a-Zaalhof, that some of the hunebedden might yet date to shortly after the Roman conquest. (As we have seen, he had dropped this view in his lecture of January 1853.) Thus it could not be ruled out that stone tools were still being used in Roman times by certain sections of the population, especially for ritual purposes; though they were definitely absent in fifth- to eighth-century contexts.[53]

After an extensive discussion of the finds in the light of the ethnographic and archaeological literature – splendidly documenting the state of the art – Janssen fits the assemblage into his picture of the successive stages of development as follows.

'But the Hilversum fireplaces tell us something about the cultural level of their founders, and hence about those of the hunebedden, that was as yet unknown to us, namely, that the people from which they stem already had passed out of its initial, crude stage of development, that they no longer lived only in the age of hunting but had already entered the era of herding, the stage that is the closest predecessor to that of agriculture. This is what the recovered bones of cattle, goats or sheep, and dogs tell us.'

Tacitus described only one people, the *Fenni* in the far north, the ancestral Finns, which did bear some similarity to this, even though the cultural evolution of the Hilversum Stone Age people was somewhat more advanced, since apart from hunting they also practised animal husbandry. Their religion had probably not yet transcended the level of nature worship (centring on personifications of the elementary forces, such as sun, moon, and fire) and was halfway between fetishism (in which the divine is thought to reside in any mysterious object that stirs the imagination) and polytheism (in which the gods have acquired an ethical nature). The fireplaces, estimated to have numbered *c.* 40 originally, were sacrificial hearths, where this nomadic people in the first century AD burnt animal offerings to the heavenly bodies and to Fire. Janssen is inclined to think of

48 The author does not consider Beima's identifications particularly reliable.

49 See note 130.

50 This is what Janssen (1856, 44) noted about the arrowheads. Their shape differed so much from prehistoric arrowheads found in many countries of the world, and especially in Europe, 'that at first sight one may even consider it doubtful whether those from Hilversum indeed served as lance- or arrowheads'.

51 See note 20.

52 Janssen 1856, 12, 59. This piece of stone is not discussed in the preliminary publication, Janssen 1853b.

53 Janssen 1856, 51.

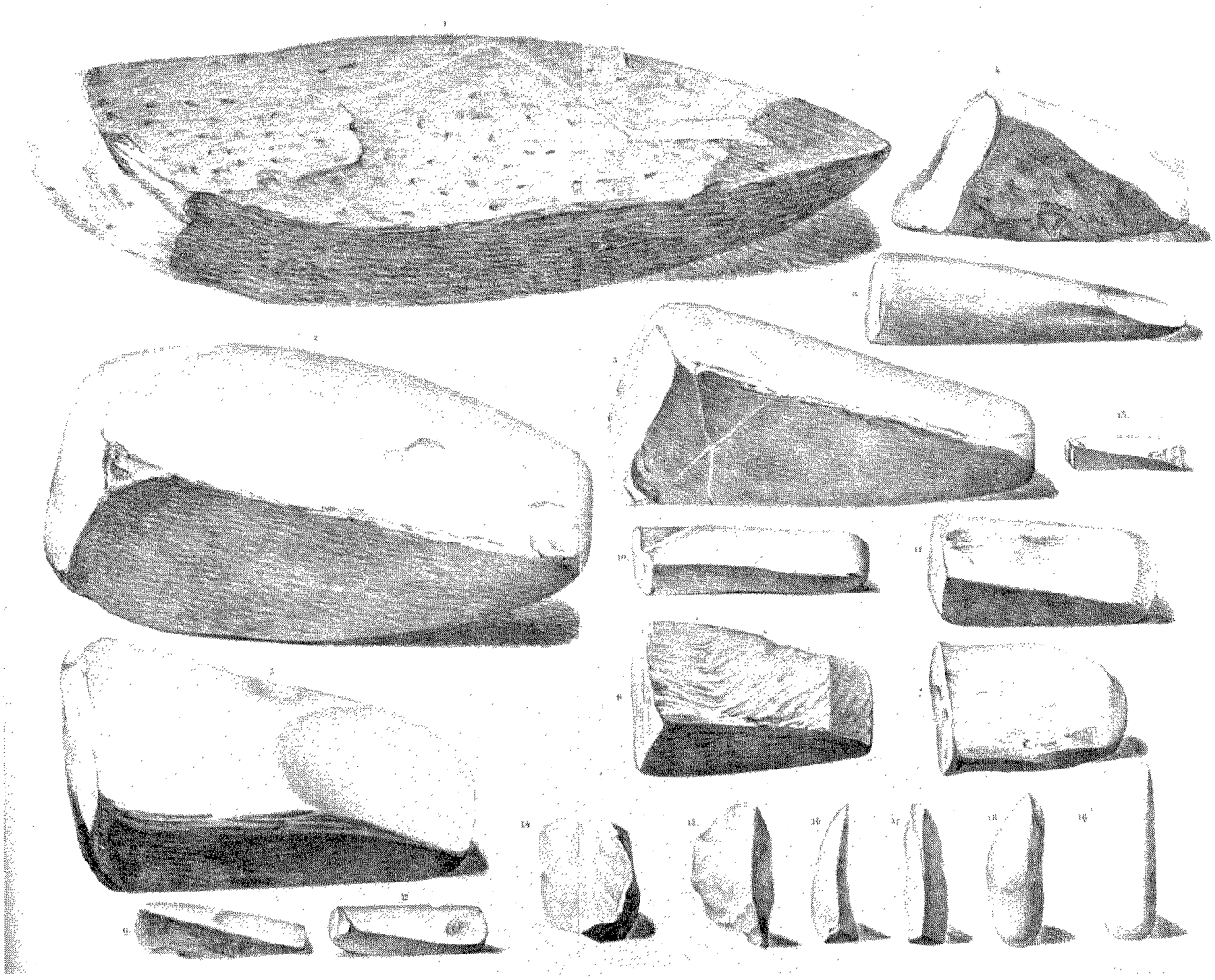

Figure 3 Stone and flint artefacts from the Hilversum fireplaces. Drawing and lithograph by T. Hooiberg (29×25 cm, Janssen 1856, pl. VII).
1 'heavy axe of diorite', 2 'wedge of quartz', 3–5 and 8–12 'wedges of quartzite', 6 'wedge of quartz-schist', 7 'wedge of schist', 13 'wedge of flint', 13–17 'small knives of flint' (15 and 17 identical to fig. 2: 11 and 9), 18 'small knife of quartzite', 19 'wedge-shaped small knife of quartzite'.

a kind of fire worship that may be linked with the bonfires at Easter and the feast of St John (24th June), popular locally even in modern times.[54] Both in the preliminary publication and the book, Janssen maintains that the fireplaces definitely cannot be settlement remains, for which he puts forward arguments – which in general will no longer convince us, now that we know the conservation properties of podsolised sand. No traces of huts were found around the fireplaces and the latter were far too small to be shelters. Also one would expect a settlement to leave more traces of human occupation, 'but all around there was only sand, no humus.' Presumably the users of these sacrificial sites were

54 Janssen 1856, 57.

ancient Frisians. This happened to fit in neatly with the idea that before the Zuiderzee came into being the hills of Gooiland had been connected up with the Rode Klif on the Gaasterland coast of Friesland.[55] Janssen rejected the idea that the fireplace builders had been the *Fenni*.[56] To Worsaae and Nilsson,[57] both quoted by Janssen, the Stone Age remains in Scandinavia represented those of the nomadic *Fenni*, who later moved north when a different, agricultural population with a Bronze Age culture drove them away.

Now that these Frisians with their Stone Age civilisation in the Roman period had been equated with the last of the hunebed builders, a large part of Janssen's arguments of January 1853 against the identification of the hunebed builders as Celtic or Germanic tribes had in fact become invalid. Evidently the Metal Age elsewhere in the country began shortly before or even on the arrival of the Romans, while in poorer regions the Stone Age lingered on. As far as the author knows, Janssen never put this clear-cut conclusion into any of his later publications; yet it is implicit in his text of 1856, be it in the cautious wording of a vacillating scientist with an 'open mind'.

At the end of the book, Janssen discusses the other known prehistoric relics in Gooiland and around Lage Vuursche – a valuable document, mainly the fruit of Janssen's cooperation with Perk, who for many years had studied the local archaeological remains.

In 1851, Janssen had visited a buried 'colossal stone' at another spot near Hilversum; this had been uncovered by digging a few years previously. The largest lump of this rock bore a vague resemblance to the Hercules torso of Belvédère and another chunk somewhat resembled the pelvis of a human colossus. Grooves and holes in the stone possibly pointed to its use in polishing stone tools. In 1851 Janssen had not wished to commit himself as to whether this was a natural or a man-made product, but now his eyes had been opened. In 1853 he declared that if indeed this was human work, it must have been a fetish from the Stone Age that was venerated as well as being used for grinding stone tools.[58] By 1856, he had been informed by Beima that it was a piece of limestone, and since such huge limestones did not naturally occur in diluvia, this massive rock must have been carried here and at least partially worked by humans. Janssen now suspected that the Romans had brought the rocks along for a building (since engulfed by the Zuiderzee!) and that non-Roman natives of the area later discovered them, brought them to this site, touched them up, and possibly venerated them.[59]

THE HILVERSUM HOAX

Although nowadays it is immediately clear to anyone that the Hilversum finds were fakes, it was not until Dutch pre-Neolithic flint research flourished in the 1930s that this was generally realised.

Janssen's description of the excavation history is so detailed that one can quite easily reconstruct how the hoax was perpetrated. The culprits were obviously Dirk Westbroek and his son, who sold their finds by the piece(?) to Janssen and the other gentlemen. Eyck van Zuilichem's directions regarding the kind of tools that might appear thus bore unintended fruits! Westbroek 'recognised' the sites of fireplaces by depressions in the surface and 'in the excavation, the topsoil was so loose that they do not seem to have been filled in purposely.'[60] The scarp of compact, undisturbed soil around the back of fireplace 7 in the sketch by J.A. de Rijk and the plate (fig. 2) thus acquires a special significance![61] During the very first excavation on 2nd February 1853,

55 Perk 1853; Janssen 1856, 60.
56 Janssen 1856, 60, 55.
57 Worsaae 1843; Nilsson 1843–1848.
58 Janssen 1853b, 155–7.
59 Janssen 1856, 61–4, pl. IX. At the time the glacial origin of the sandy hills of Gooiland was not yet known. Nowadays this kind of rock formation is regarded as sandstone, cemented locally by lime infiltration from an earlier lime-rich till during the Eemian interglacial. Janssen mentions two other occurrences at a few hundred metres' distance from the first. In the woods of Bikbergerbos near Huizen a similar formation was found in or before 1952, which is now badly weathered (photo and description: Ruegg 1963–1964, 62). See below how warily Pleyte (1902 or 1903) explained the first stone colossus. The careful interpretations of Eyck tot Zuylichem and the Hilversum doctor Dr J.F. van Hengel, who assumed it to have been naturally and locally formed, are much closer to the mark (*Nieuwsblad voor het Gooi en omstreken* 9th and 20th November 1850, in the Janssen archive).
60 Janssen 1853b, 154.
61 Fig. 2, after a much smaller, fairly precise sketch by J.A. de Rijk Jr (Janssen 1853b, sketch in the Janssen archive). Three lithos by T. Hooiberg after pastel drawings by James de Rijk Sr (Janssen 1856, pls. I, III, V) incorrectly show vegetation above the top of the stone walls, despite the fact

Janssen himself found among the ashes on the stone floor 'a white bone button with a pierced toggle by which it could be attached to some garment, entirely identical to the modern buttons used by rural folk nowadays, except that through lying in the ashes for a considerable length of time it had turned a little grey. Clearly turned on a lathe and polished smooth, it must be of a much later date than the stone tools, and although the fireplace was intact, one must assume that the button, which I was first to discover among the ashes, ended up there by chance, at a later date.' Not in the least discomfited by this small artefact, Janssen appended to his report of 1856 a list of objects encountered in his other excavations that utterly failed to fit the chronological context – it should be remembered that concepts such as compact undisturbed soil, soil profile, soil discolorations, and settling of the soil were at that time quite unknown.

A notable fact is that Perk in 1854, when he tried to find out how the zigzag beaker had broken, expressed doubts regarding Westbroek's character, quoting Den Hengst's huntsman, A. van de Geer (whom Westbroek accused of having broken the beaker). But these doubts concerning such a minor point were not seen to reflect on the entire archaeological assemblage.[62]

Janssen elaborately quotes the written reactions of his fellow prehistorians in Scandinavia, Germany, Switzerland, France, and Britain to the preliminary publication he sent them (which does mention the loose soil, but not yet the worked block of chalk, the button or the decorated beaker fragments – its being written in Dutch anyway will have prevented close reading). Expressing himself in neutral terms, Lisch is extremely sceptical, which Janssen fails to notice: 'I thank you for sending me the article featuring the investigations of dwellings of the Stone Age, which indeed are important if their discovery actually took place as you state. In such circumstances one is forced to rely on the circumspection and the insight of the researcher. In this country [Mecklenburg] such settlements, consisting of stone dwellings, have never been discovered; nor have I ever heard of such.'[63] Most of the others are very interested and congratulate the author on his finds, but they do remark that such stone tools are unknown to them. However, in those days new discoveries concerning the Neolithic were being made in many places; the concept of *Tiefstichkeramik* (stab-and-drag decorated ware), later associated with the Funnel Beaker (TRB) culture was not to take shape until 1890 and estimated dates still varied widely.

Westbroek was so successful because these finds seemed to answer people's expectations. In this decade prehistoric archaeology had reached the point where researchers like Janssen were becoming interested in daily life and settlements, not only graves. In the same way, Han van Meegeren's forgeries offered the experts the 'finder's luck' of discovering the unknown 'religious paintings of Vermeer', about which there had been hopeful speculations in certain publications. At Hilversum too the finds were of a spectacular nature, and any suspicion was swept away by the first flush of discovery. However, Westbroek was not a brilliant forger like Van Meegeren, but – the author imagines – a clever, hard-working and underpaid labourer, who knew which side his bread was buttered on and had no scruples about diddling those rich and pompous gents a little, in the same way that – if he had lived at the east end of Hollandsche Rading[64] – some poaching may have gone on around the heath, woods, and pasture of that isolated hamlet. His forgeries were extremely crude and certainly no better than those the unwary tourist may buy in the Middle East today, but his construction of the fireplaces and the *mise en scène* of the finds were quite ingenious. The all but anonymous labourer must have been an astute pupil of the gentlemen, noting very carefully what they told him and each other about their expec-

that the heath surface must have been several decimetres higher (as indeed is indicated in most sketches) – which illustrates how little attention Janssen gave to his vertical sections, and also suggests that James de Rijk did not draw them on site but worked at home after fairly rough sketches.

62 Letters from Perk, dated 13th December 1853 and 28th April 1854: Bakker 1963–1964, 57.

63 Extensive quotations (pp. IV–VII) from letters by J.J.A. Worsaae, Copenhagen (1853); G.C.F. Lisch, Schwerin; G.O.C. Baron von Estorff, Hanover; an article by J.W. Wolf, *Zeitschrift für Deutsche Mythologie und Sittenkunde*, I (3), Göttingen 1854, 365. Letter and article by K. Wilhelmi, Sinsheim, *Heidelberger Jahrbuch* 37, 1854, 582–5 (VI–VII); letters from Roach Smith, London (p. 20) and Joly, Belgium (p. 51).

64 Westbroek cropped a field which contained the only remaining stone of the Hoek der Drie Stenen (Three Stone Corner; Janssen 1853b, 157), which suggests that he lived in De Streek, the east end of Hollandsche Rading, opposite the site of the fireplaces or some hundred metres further east. The hamlet consisted of a few dingy cottages. Eyck referred to 'huts' in De Streek (letter 28th January 1853).

tations, what roused their excitement, what they ignored as irrelevant, etc. We would like to know what it was exactly that burgomaster Eyck van Zuilichem said when he instructed Westbroek to look out for 'tools of stone [...], whereby he described to him some characteristics'. Did he show him any genuine stone tools or pictures, and if so, which? Eyck was familiar with stone axes from the surrounding area and from the Dutch East Indies.[65]

Some questions of detail remain for future research. Possibly the correspondence can shed light on earlier finds of hearths in digging work around Hilversum, Lage Vuursche, Laren, and Maartensdijk (and, in the case of Janssen, anywhere in the country) that may have played a part in determining expectations.[66] Can an improvement or deterioration be noted in the technique of manufacturing the artefacts, starting with the pieces acquired by Eyck in January 1853, now in the collection of the Provinciaal Utrechts Genootschap? Does the proportion of wind-abraded and other naturally-formed stones rise or fall in the course of 1853? What price did the stones fetch? What can be found out about the lives of Westbroek and his son?

We have seen that Janssen himself was ignorant of what genuine stone artefacts should look like and that the very loose soil never aroused his suspicion. Westbroek was lucky in that his errors (the button, the worked building stone) did not lead to his exposure but to an adaptation of the theory.

THE AFTERMATH OF THE HILVERSUM AFFAIR (1856–1869)

It was to be another 80 years before every prehistorian recognised these finds as forgeries and revised the flawed theory. So let us take up the story in 1856 and put on as serious a face as did the gentlemen of those days who never smelt a rat. Janssen henceforth was to regard European prehistory in the light of his scepticism, corroborated at Hilversum, about the existence of mutually exclusive Stone, Bronze, and Iron Ages before the arrival of the Romans. On 12th February 1859, he gave a lecture 'About ancient lake dwellings in Switzerland' before the literary department of the Koninklijke Akademie der Wetenschappen.[67] It was a good and comprehensive survey, in about 3800 words, of the sensational discoveries at the extremely low water levels of 1854 and of the material found since in many lake settlements; he based himself on the 'First Report' by Ferdinand Keller,[68] expanded with data from 'a brilliant essay' by F. Troyon[69] and some press reports. Knowledge about these finds 'is also important with regard to our earliest Dutch antiquities, because many tools and remains from those Swiss lake dwellings correspond with ones discovered in the Netherlands, and because the Dutch *terpen* [dwelling mounds] offer points of comparison.'[70]

Keller's reconstruction of rectangular house plans was important because earlier evidence had shown that the dwellings of the ancient Celts and Germanic tribes were round. But in the Bieler See, round house plans had been encountered.[71] If the cat bones found in the lake dwellings were indeed those of the domestic cat, which is 'more attached to a house than to people', this proved that the lake dwellers no longer led a nomadic life.[72]

Janssen doubted whether the Swiss archaeologists, and notably Troyon, were right when they put the foundation, and even the destruction of these lake dwellings many centuries before the Christian era, partly on geological grounds, partly because of the lack of Celtic coinage or even ring currency. 'It is imaginable that some coins that have sunk deeply into the mud will be found at a future date, and also that most of the money was taken along by the occupants.'[73] The recovered bronze sickles of pre-Roman form, the querns, the grain remnants, and the bones of domestic animals indicated pre-Roman, non-nomadic occupants.

At seventeen sites on the Bodensee (Lake Constance) and at Moosseedorf near Bern, lake dwellings had

65 Eyck drew Janssen's attention to the collection of Indonesian stone axes of Mr De Wilde (of Pijnenburg), which subsequently was acquired by the RMO (letter by Eyck, 13th June 1853).

66 Letters received, Janssen archive (see Kramer-Clobus 1978, 471–3, 482, 485, 520–1), and Janssen 1856, about similar finds elsewhere; letters received by Perk are kept in the Gooisch Museum, Hilversum.

67 Janssen 1859.

68 Keller 1853–1856.

69 Troyon, in *Le Bon Messager* 1858.

70 Janssen 1859, 170.

71 Janssen 1859, 173.

72 Janssen 1859, 174.

73 Janssen 1859, 178.

yielded remains of domestic animals, grain, stone, and bone tools from a Stone Age predating knowledge of metals. That domestic animals were known among some ancient European tribes still ignorant of metal, had been demonstrated at Hilversum, but that they cultivated cereals was a novelty. 'However curious this may be, however at variance with everything that so far has been assumed regarding the so-called Stone Age of the European peoples (on the grounds of which we reasoned that this grain must have been taken from the Romans through barter or robbery), it is as yet impossible to deny the fact.'[74] One or more chisels from Meilen had been made 'from a kind of rock that is reportedly not found in Switzerland, but belongs in Asia'.[75]

The study concludes with an 'Appendix' of *c.* 2100 words about lake settlements on Lake Prasias[76] (later Lake Butkowa, now Lake Kerkini) on the Strimon in northern Greece, as described in detail by Herodotus, those of the Don Cossacks in modern times, and among others those on the south coast of Java in the Dutch East Indies.[77]

In this appendix, his disbelief regarding the above-mentioned assumptions of the Swiss researchers seems to prevail over the benefit of the doubt that he had accorded them in his lecture.

In the early summer of 1859, Janssen spent several weeks travelling to Berlin, Dresden, Prague, Vienna, Pest, Constance, Bern, Zürich, and Mannheim, to study the archaeological collections there, especially those with finds from the lake dwellings. On 12th September 1859, he delivered a second lecture on this subject at the Akademie.[78]

His text of roughly 4400 words contains a detailed description of the finds and the timber structures of the lake village at Wangen am Bodensee (Lake Constance).[79] According to Keller[80] this was a Celtic village of the Stone Age, from which agriculture was practised and where livestock were kept.

'But although this conclusion is fairly obvious, it will not seem very plausible to many people, because it is entirely novel, at variance with all historical experience, and no less borders on the incredible than, for instance, the notion that the neatly worked flint arrowheads, found among the earliest European relics, were made without the benefit of metal tools. Hitherto not a single antiquarian would have had the Stone Age of a people (and this is what the remains at Wangen seem to indicate) coincide with one in which agriculture was practiced, division of labour occurred, and life centred on permanent settlements.'[81]

In this context he referred to Jacob Grimm's *Geschichte der deutschen Sprache*.[82] The local researcher Casper Löhle had had to admit to Janssen that not everything had been excavated, though he considered it unlikely that a few metal items had remained hidden in the ground.

'But whether or not there were still any metal objects in that lake bottom at Wangen, it appears to me, and here I differ from the opinion of the Swiss archaeologists, that the people from whom the objects found at Wangen derive, lived at a time when metal was already in use in those parts, even if the lake dwellers at Wangen should have possessed none of it.'[83]

After all, objects identical to those from Wangen had been found together with bronze or iron items at several sites in the Netherlands.[84] Moreover, at the Stone Age site at Hilversum the sandstone[85] moulding had been worked with metal tools.

74 Janssen 1859, 179, 181.
75 Janssen 1859, 179-80.
76 Herodotus, *History* v, 16; Damsté 1974, 266, 560 'Prasias'.
77 Earlier, Janssen had referred to similar 'water dwellings' at the village of Doreï in New Guinea (1859, 171).
78 Janssen 1860.
79 Nowadays this settlement is considered to belong to the Neolithic Horgen culture (Itten 1969).
80 Keller 1858–1860, part 8 (which evidently had appeared by 1859).
81 Janssen 1860, 44.
82 Grimm 1848.
83 Janssen 1860, 45.
84 At Wijk bij Duurstede: a stone ball (percussion stone – B.), a stone hammer with a shafthole, bone awls and pins, perforated ceramic spindle whorl discs, all similar to those from Wangen, but the pierced earthenware 'discs' (loomweights – B.) were decorated with impressions of Frankish iron keys. In a *woerd* (dwelling mound) at Hervelt: similar stone balls and hammers, bone awls and pins, perforated ceramic spindle-whorl discs, coarse pottery like that from Wangen, and beside it bronze and iron items that in part were Frankish, as well as fragments of a tuff quern, either Roman or Frankish. From a *terp* at Oosterend: a stone hammer, bone artefacts, perforated ceramic discs and spindle whorls, and a bronze spur. From other *terpen* in Groningen and Friesland: ditto.
85 Here Janssen deviates from Beima's identification of it as limestone.

'Great poverty, isolation, or who knows what? may have been the reason why the Wangen lake dwellers possessed no metal tools. If it is true what some mineralogists declare, that the nephrite rock occurs nowhere in Europe, but only in Egypt and China, America and New Holland, and, as Keller believes, that the nephrite chisels of Meilen were imported through barter, would it then not be equally – if not more – plausible that the excellent cereals found at Wangen were not cultivated locally but had arrived through barter with the Romans or post-Roman occupants?'[86]

The lecture continued with a report on the lake dwellings newly discovered by peat-cutters in a bog at Wauwil.[87] Janssen had not been able to visit the site, because the committee of the Zürich antiquarian society had had to postpone the beginning of the campaign owing to heavy rains and high water levels. However, after Janssen's return home his friend Meyer sent him a report dated 20th July 1859. Wooden floors had come to light that still rested on the timber uprights, joined by three different methods. One above the other, three floors had appeared, separated by layers of pine timber, sludge (in German, *Mies*), and clay. Also an access jetty had been found. The finds included flint tools, stone hammers, and chisels, sherds of decorated pottery, a glass bead, bone implements, and skulls of elk, badger, wolf, boar, aurochs, and smaller animals.

Finally, Janssen discussed a polished stone axe from the island of Saba in the Dutch West Indies in the Leiden museum. A fine design had been engraved 'very forcefully' half a millimetre into its surface, which in his view betrayed the use of metal tools.[88]

Janssen seems never to have returned to this theme of the Three-Age system. In the period 1855–1869, both Janssen and C. Leemans gave several lectures at the Koninklijke Akademie van Wetenschappen about the authenticity of newly discovered texts.[89] The texts that Leemans identified as fakes he rejected on epigraphic grounds, not because of dubious archaeological contexts. Janssen rarely went by his own judgement, but preferred to follow the opinion of specialists with whom he corresponded, as in the case of the forged Potamoc runic inscription, showing himself to be somewhat more gullible than Leemans. An example of this was a pair of ceramic tiles which surfaced in Leiden, one with a Latin inscription, the other with runes. Leemans condemned the former as a forgery on linguistic grounds, and thus the latter as well, but Janssen remained noncommittal about the runic inscription, on which neither was an expert.

Towards the end of 1868, Janssen left the Rijksmuseum van Oudheden, when he took the post of Director of the Kabinet van Munt- en Penningkunde (Coin and Medal Collection) in Leiden, and early in 1869 the Egyptologist W. Pleyte (1836–1903) succeeded him as the curator of the Dutch department at the Rijksmuseum van Oudheden. Still fully engaged in archaeological studies, Janssen died suddenly in June 1869.

BETWEEN JANSSEN AND HOLWERDA (1869–1903)

On 1st September 1869, at the 4th session of the Congrès International d' Archéologie Préhistorique at Copenhagen, the Hilversum finds of 1853 were the subject of a lecture by R. Baron van Breugel Douglas.[90] An eighteenth fireplace had been excavated in 1853 under the supervision of Van Breugel Douglas, who in Maartensdijk had his country residence 'Rusthoven' next door to burgomaster Eyck van Zuilichem's 'Eyckestein'. From his fairly detailed description of this fireplace it is clear that this too was filled with loose soil.

86 Janssen 1860, 47, cf. 45 (these statements on the authority of Dr E. Beima, geologist at Leiden). See also note 75.

87 Janssen 1860, 49–52.

88 Janssen 1860, 52–4 with an illustration of the decoration.

89 *Verslagen en Mededeelingen der Koninklijke Akademie van Wetenschappen, Afdeeling Letterkunde* 1–12 (covering 1855–1869), issued 1856–1869.

90 Van Breugel Douglas 1875. Robert Baron van Breugel Douglas LL.M. (1791–1873) member of the Council of State, is otherwise unknown as an archaeologist (Bijleveld *et al.* 1912, 427).

According to the *Compte-rendu*, the only other Dutch participants in Copenhagen were W. Eekhoff (1809–1880), bookseller and archivist at Leeuwarden, and *Jonkheer* J.E.H. Hooft van Iddekinge LL.M. from Leiden (cf. Bakker 1990, this volume of *BROB*, note 28). There is a modest representation of well-to-do Dutch amateur archaeologists at these International Congresses of Prehistoric Archaeology, while the only professional Dutch prehistorian from 1869 to 1901, the curator – later director – of the RMO, W. Pleyte, rarely if ever put in an appearance. From 1866 to 1935 sixteen conferences took place: every other year until 1876, up till 1912 every three to nine years, then two more in 1931 and 1935 (no research has yet been done regarding Dutch participation and any influence on Dutch archaeological thinking).

Apart from a schematic ground plan, no illustrations are given in the proceedings. The recovered tools were 'implements such as axes, wedges, chisels, knives, arrow- or spearheads, mostly of stone, a few of flint, and also balls of granite the size of a small apple, suitable for being thrown with a sling. This may suggest that people placed there, accompanied by their weaponry, the remains of deceased heads of the family; this was a method of conservation and consecration of which the [Copenhagen] Museum offers several examples. Nowadays some primitive peoples still bury their dead in their huts. The absence of objects of bronze and iron and of any pottery in this prehistoric kitchen is indicative of the great antiquity of these deposits; especially since not a single object can be related to the Age of Polished Stone. Among these fireplaces, uncovered under supervision, only a single bone object was found, an arrowhead, which indicates that they date to the end of the Bone Age, or the first phase of the Stone Age. [...] We only have to imagine this fireplace covered by a tent of hides like those of the Greenlanders, or by some other kind of cover; and you will be able to envisage these dwellings.' Instead of Janssen's 'sacrificial hearths' theory, Van Breugel Douglas opted for the settlement theory of Eyck van Zuilichem and others.

Van Breugel Douglas had definitely studied the writings of Janssen (1853b and possibly also 1856), but it is doubtful whether he mentioned or showed them at his lecture. At any rate it is remarkable, not to say disgraceful, that the published text entirely fails to mention the name and publications of Janssen (as well as the name of D. Westbroek, which is less surprising). The reason is unclear: was it editorial abridgement, plain amateurism, or disappointment in Maartensdijk about the outcome of the excavations?[91]

Unfortunately, the lecture was not followed by a discussion that was deemed sufficiently meaningful to be recorded. Worsaae and Lisch, who in 1853 had corresponded with Janssen about this find, were the president of the congress and a much-esteemed participant, respectively. In the 1850s they had both written and told Janssen that the stone tools from Hilversum did not resemble those from Denmark or Mecklenburg. Possibly they did not recognise Janssen's work in this rather peculiar lecture, or now preferred to keep silent on the subject. The lecture was the last of an afternoon session with lively discussions, including one between Worsaae and Steenstrup about the significance and relative age of the *kjøkkenmøddinger*. Moreover, Van Breugel Douglas was clearly an utter ignoramus, who started his lecture with expositions about the Free Frisians and Frisian as a Scandinavian dialect, and concluded it by recommending that the Late Medieval bone skates in the Nationalmuseet be placed in a showcase devoted to the Bone Age.

The Hilversum finds were exhibited at the Rijksmuseum van Oudheden in Leiden from 1853 till 1946 or 47 as one of the few major find assemblages from a prehistoric, non-funerary context, and as proof of the continuation of the Stone Age into the Roman period around Hilversum. No catalogue of the Dutch department appeared between 1840 and 1908, nor is it known what kind of written explanation was given in or beside the showcase. However, there is an eyewitness account by the famous Heinrich Schliemann, who in 1875, on the invitation of Queen Sophie, paid a second visit to the

91 Eyck van Zuilichem in his letters to Janssen of 8th and 13th June 1853 complained about the facts that in the *Staatscourant* of 4th June 1853 Janssen did not have it mentioned that Eyck had notified him of the finds, that Janssen had entrusted the supervision of the excavations to Perk when he himself could not be present, that Janssen had taken off the tools from the first fireplaces which had been in Eyck's possession to the RMO, while it had been he who had drawn Janssen's attention to the Indonesian stone axes of De Wilde, which Janssen had subsequently bought for the RMO (see note 65). Janssen had known the antiquarians Eyck and Perk for some years through correspondence and communal excursions to the embanked enclosures and *tumuli* that they discovered. Eyck wrote to Janssen very cordially and enthusiasically at his discovery of the fireplaces, and invited him to stay at his home. For the day-to-day management of the excavation, however, Janssen gave preference to Perk, who already had carried out archaeological excavations near Hilversum and De Vuursche, at which Eyck felt aggrieved. Such disappointment among discoverers and enthusiastic assistants after the professional archaeologist has gone off with the finds seems all too familiar even nowadays. However, Janssen liberally mentioned Eyck van Zuilichem in his publications of 1853 and 1856, and by 1864 was again corresponding with him, about the church of Ellekom. Had the bystander Van Breugel Douglas also wanted to be mentioned by Janssen? Maybe correspondence at Copenhagen about the congress and the editing of the *Compte-rendu* can clarify what, if any, editorial abridgements were made in Van Breugel Douglas's text.

Netherlands (where he had laid the basis of his career in Amsterdam in 1842–1846).[92] On 4th August he wrote to the English archaeologist C.T. Newman about his visit, the day before, to the Leiden museum, 'in which of course the findings in the "Hunebedden" [...] attracted my particular attention'. But most of all he was interested in 'the objects discovered near the Dutch village Hilversum, under vast large masses of huge stones', stone axes, and mainly arrowheads. A bronze axe, marked 'Hi.' like the rest, led him to conclude 'that there has never been a real stone age'. The next day he said the same, in French, in a letter to Louis Ravaisson, curator of the Louvre.

Whether director C. Leemans and curator Pleyte were able to explain to Schliemann the details of the Hilversum assemblage is doubtful. The bronze palstave comes from a barrow near Hilversum, 8 km further north[93] and hence has nothing to do with the fireplaces. At best it might suggest to the visitor that even in the Stone Age, which at Hilversum continued right into the Roman period, a real bronze axe had been in circulation. The 'masses of stones' are also incorrect, resulting maybe from misinterpretation of De Rijk's plates or poor explanation of the archaeological context. Yet it is clear that the Hilversum finds were discussed, as well as their implications for the Stone Age.[94]

In 1853, J.P. Six (1823–1899) had had fireplace 9 excavated and transferred to his farm 'Kievitsdal' near Hilversum. This Amsterdam patrician, a direct descendant of the Jan Six portrayed by Rembrandt, and like his ancestor 'a passionate collector of old books, drawings, prints and seals, glass and furniture, and especially coins', was an initiator of the Nederlandsche Oudheidkundige Bond (Dutch Antiquarian Society); the classical archaeologist Professor A.E.J. Holwerda, J.H. Holwerda's father, was among those who wrote his obituary.[95] His son, Professor Jan Six (1857–1926), born four years after the excavations, became a classical archaeologist and art historian.[96] The penultimate thesis to his doctoral thesis (1885) ran:

Foci, qui aculeos sagittarum et glandes e lapide secto celabant, annis huius seculi LII et LIII prope Hilversum reperti, Trenscotae, pagi seculo XI, XII, XIII in actis Ultrajectinis memorati, vestigia sunt, i.e.: 'The fireplaces found in 1852 and 1853 near Hilversum, which concealed arrowheads and balls of cut stone, are the remains of Trenschoten, a village that is mentioned in charters of Utrecht of the eleventh, twelfth, and thirteenth centuries.'[97]

J.A. de Rijk, who in 1853 had drawn the Hilversum fireplaces for Janssen, described, in 1882–1887, a series of walks through the Gooi- and Eemland countryside in a Hilversum newspaper. In one of these articles he briefly referred to the excavations – without mentioning his own involvement. He too was of the opinion that the remains were of a village, the forty hearths pointing to a population of 200 to 250.[98]

Janssen's successor as prehistorian at Leiden was W. Pleyte, an Egyptologist with a theological background. He worked here from 1869 until 1903, first as curator, later as director. Pleyte published fairly little apart from a description of all Dutch archaeological material older than AD 800, useful as a near-exhaustive find survey. It appeared in many instalments between 1877 and 1902 or 1903. Pleyte did not get round to the Provinces of Noord-Brabant and Limburg. Most of the 197 lithographic illustrations were drawn by Pleyte himself; these are often inaccurate and occasionally printed in reverse. The text is in narrative style, and, apart from a few inspired passages, shoddily written and burdened with amateurish place name etymologies. Pleyte's argu-

92 Bastet 1978, 76–89, where the letters are also quoted. Cf. Bakker 1979a, 164.

93 Janssen 1856, 67–8, pl. x:1. The axe, whose cutting edge is now broken off, is in reality a little more slender than in Hooiberg's drawing.

94 The director, Leemans, did not think very highly of curator Pleyte as an Egyptologist (pers. comm. Professor H. Brunsting), and it is not certain that the more cosmopolitan director would have let his curator speak on a subject the details of which he himself might not have been sure of. Neither had taken part in Janssen's investigations of 1853. Linguistic barriers can hardly have presented a problem, as both Leiden archaeologists spoke French and German, and Schliemann himself commanded twenty languages, including some quite reasonable (written) Dutch.

95 Van Lennep 1918.

96 Haspels 1979.

97 Six 1885, 104.

98 De Rijk *et al.* 1905, 31–3. The author has not consulted the original version, a serial of 1882–1883 (Pleyte 1902, 12, cuttings in the Pleyte archive, RMO), so that this passage may have been altered in the text of 1905, which was elaborated by others.

mentation is muddled, his factual statements are inaccurate and may contain the very opposite of what a quoted author actually said. He does apply the concepts of Stone, Bronze, and Iron Age,[99] but only very superficially and unsystematically, and shows no evidence of being thoroughly acquainted with and working with the foreign, mainly Scandinavian and North German studies of relative chronology. Pleyte's book has nothing in common with Janssen's rather laboured, but definitely scholarly writings, with their precise argumentation and full share of quotations from the Dutch and foreign literature.[100]

In an 'Open letter to the Custodians of the Collections of Antiquities in the Netherlands',[101] Pleyte in 1878 wrote: 'Which catalogue must we follow? Among the foreign ones, I know none that is in every respect commendable except the Danish, but this is only of limited applicability to our country. [...] Even if the historical arrangement is to be preferred over all others, one must not forget the demands of art and should comply with them as much as possible. Every find should be kept together, one object often disclosing the age of the other; and as in an archive, distinctions should be made between the relics of ancient history, the Middle Ages, and later times.'

Whereas in 1878 he had acquainted himself with 'almost all collections at home and many abroad, such as Brussels, Oldenburg, Hanover, Kiel, Sylt, Hildesheim, Dresden, Mannheim, Turin, Milan, Venice, Paris, and Lyon', these did not include those of Schwerin, Denmark, and Sweden, where the Three-Age system was clearly presented in the displays and guidebooks (though it may have been in Kiel). Whether he went to these museums at a later date seems doubtful.

This omission may in part be to blame for his unsystematic application of the typochronology of prehistory, but apart from matters of personality the main cause seems to be the lack of a thorough archaeological training in his theological studies.[102]

The Hilversum finds feature only in one of the last fascicles of Pleyte's book,[103] when he had lost much of his vitality. He turns out to be remarkably sceptical about these finds: '[They do not seem to be remains of sod huts or tombs] and for a religious function there seems to be no ground whatsoever. Worked stone tools of this kind and the way they were manufactured are exclusively encountered in association with these fireplaces. Their age would then be determined entirely by a single piece of sandstone, which J.A. de Rijk [...] holds to be definitely Roman. To me, this seems debatable. I would sooner believe it to be part of a Gothic or Romanesque lintel. Since not a single coin, nor anything of particular singularity or any pottery was found with these fireplaces, their purpose and origin remain an open question, which is strange, considering that 525 objects were found.' Curiously, he doesn't even seem to have bothered to consult Janssen's book (so that, for instance, he forgets about the beaker sherd and flint axe found near fireplace 12, in his own museum), contenting himself with the short, superficial article by De Rijk. He considered the colossal stone near Hilversum as 'probably [...] nothing but [...] erratic boulders of chalk which came from the region of Bentheim with the Weser diluvium.'[104]

After Pleyte's death, Boeles praised his constructive cooperation with the local museums, but called his book 'quite unsuitable as a handbook of Dutch archaeology, which purpose this book has served for many years for lack of anything better'.[105] He continued: 'For a good development of this science, independent practice [of Dutch archaeology] also outside Leiden, is of

99 Pleyte (1877, 135–41) describes a chronological scheme of Stone, Bronze, and Iron Ages, which each divide into two parts, but unfortunately this does not go beyond a narrative presentation, without showing a chronological diagram. In later fascicles this scheme is now and then referred to, but never very explicitly.

100 Criticism of Pleyte's book: Gratama 1901–2; Boeles 1905; Holwerda 1906a; De Wilde 1907.

101 Pleyte 1878, 10–1.

102 Janssen too had started his career as a theologian. Reuvens' chair in archaeology at Leiden University had remained vacant from his death in 1835 until the appointment of the classical archaeologist A.E.J. Holwerda in 1896. Holwerda in 1903 succeeded Pleyte as director of the Rijksmuseum van Oudheden; he was the father of J.H. Holwerda.

103 Pleyte 1902 or 1903.

104 Pleyte 1902 or 1903, 12.

105 Boeles 1904, 204.

paramount necessity. The field is quite wide and friction within the discipline so wholesome; didn't the eminently talented Dr Pleyte, and with him the whole of Dutch archaeology, miserably doze off owing to a total lack of friction and criticism?'[106]

Furnishing concrete evidence, Boeles argued that in the Netherlands too, a Stone, Bronze, and Iron Age could be distinguished.[107] Prehistoric collections should be displayed exclusively according to this principle, in contrast to the topographical arrangement advocated by Pleyte. Boeles had organised the collection of the Fries Museum according to the chronological principle by the turn of the century, and in an article presented a disconcerting picture of the unsatisfactory topographical disposal of the Dutch collection at Leiden, dispersed over various nooks and crannies in the Rijksmuseum van Oudheden – some of the showcases even draped with the caretaker's laundry![108]

In a discussion about errors in the captions of a school picture showing archaeological objects, intended for use in secondary schools, their author, the Leiden curator R. Jesse, impulsively wrote to Boeles: 'Your argumentation about the division of the various eras is mathematically correct, but I had not worked out those periods so precisely.'[109] Boeles never deigned to mention the Hilversum antiquities.

THE IMPACT OF THE HILVERSUM FINDS ON HOLWERDA'S VIEW OF THE STONE AGE (1903–1931)

J.H. Holwerda (1873–1951), who from 1904 to 1938 managed the Dutch department of the Rijks Museum van Oudheden and in the first quarter of this century was the best-known Dutch prehistorian, always accepted the Hilversum finds as genuine. He was acquainted with them from the start of his studies at Leiden, in 1892. In 1906, by way of 'Introduction to an Archaeology of the Netherlands',[110] he developed a typochronological system in which he began by rejecting the Three-Age system for the Netherlands, in far more definite terms than Janssen had done fifty years before. He was to conduct this crusade for almost thirty years.

One of Holwerda's major arguments, probably even the starting-point of his views, was that of the Hilversum fireplaces. After drawing attention to the button and the worked building stone, he continued: 'there is no other solution; the floor in which this stone was used must therefore have been constructed as late as the Early Middle Ages and the contents of the fireplace, those stone instruments that people were so keen to ascribe to an early Stone Age, thus also belong in the Early Middle Ages. We possess irrefutable evidence that a people who lived here, say, around AD 1000 still had a stone culture. [A note refers to Six's thesis of 1885.] We therefore may conclude that in our country the so-called "Stone Age" by no means refers to a particular chronological period; in other words, that this name for distinguishing a period is utterly useless to us. If one finds an isolated stone tool in these parts, it is quite impossible to say anything about its age even by approximation; the piece may equally have served the ancient builder of the hunebedden or the Germanic tribesman in the early Christian era, all the more so since no differences can be indicated between the objects from the various periods.'[111] With slight rethorical variations, he repeated this denunciation unabridged in the successive versions of his popularising book on the earliest history of the Netherlands.[112]

According to the 1908 catalogue of the RMO, the Hilver-

106 Boeles 1906, 142, in reply to a preponderantly negative and pedantic review by Holwerda of Boeles' publication *De Friesche Terpen*. J.H. Holwerda was to receive the necessary friction and criticism not only from Boeles himself, but, within ten years, amply and deservedly also from A.E. van Giffen! The dispute about the quality of Boeles' research on the *terp* of Hoogebeintum and Iron Age chronology (Boeles 1906, 132–5; see also Knol 1991) offers a foretaste of the conflict between Van Giffen and the Holwerda's Sr and Jr. In fact, Boeles in his exemplary study was right about the chronology of the Iron Age brooches, and not Holwerda – despite his supercilious attitude of the professional towards the dilettante.

107 Boeles 1904; 1920.

108 Boeles 1904, 203–5 (situation of 1899).

109 Jesse 1904. From his text it also appears that the necessary up-to-date professional literature had been available at the Fries Museum, but, until recently, not at the RMO

110 Holwerda 1906a, 243–5 (quotation).

111 Other arguments centred on the stone double-edged battle axe (*bipenne*) with an iron pin at its shafthole found at Nijmegen (cf. Modderman 1964, fig. 3), the similarity between still unpolished Campignien flint axes and older core axes, and the occurrence in various places of stone tools even in Roman period contexts.

112 Holwerda 1907, 11–2; 1918, 6; 1925, 12.

sum finds were in a showcase with the inscription 'Very late stone finds'. They were accompanied by some pieces from other places for comparison, such as an 'axe shaped like a Frankish axe, without doubt made after that example and therefore also late' and 'stone axes etc. of similar finish from Borger (falsification not ruled out in these cases). [...] A large number of such stones (probably including some counterfeits) are kept in the depot.'[113] Suspicion about the stones of Borger had been aroused by the discovery in 1901–05 of a large-scale hoax, mainly concerning 'prehistoric' pottery and stone implements in south-east Drenthe, which took place in 1899–1901.[114] Yet the authenticity of the Hilversum finds still remained above all suspicion. The catalogue of 1930 briefly repeated the information of 1908 about the Hilversum finds; meanwhile, the suspected forgeries from the other sites seem to have been moved to the depot.[115]

In 1931 Holwerda briefly referred to the Hilversum antiquities in a survey of the archaeology of Overijssel,[116] but in 1935 he did not mention them in a splendidly published survey of the 'Prehistory and Ancient History of our Country', Holwerda's last study dealing with the Stone Age.[117] Maybe it is no coincidence that here we find a first reference to the 'Palaeolithic' finds of H.J. Popping, J. Bezaan, and W. Beyerinck: in the 1920s and 1930s amateur archaeologists were everywhere finding Late Palaeolithic, Mesolithic, and Neolithic artefacts in drift sands, introducing into Dutch prehistory a new field of study and greater expertise in worked flint.[118]

In his *Gedenkboek Hilversum 1423–1924* (Hilversum Chronicle 1423–1924), P.J. van Ravesteijn briefly echoed the opinions of Janssen and Holwerda (with the only published photos, showing some implements and the moulded building block) and added that the two fireplaces moved elsewhere by Perk and Six were quite untraceable.[119] Holwerda's interpretation of the Hilversum antiquities is also reflected in D.T. Enklaar's standard work about the medieval history of Gooiland, in 1939.[120]

Abroad, Holwerda's interpretation of the Hilversum antiquities went unnoticed, probably because he never mentioned them in his German publications.[121] It is far more significant that the modern, down-to-earth Swedish archaeologist N. Åberg who very thoroughly studied the Dutch material in 1915 and in 1916 discussed it in an international context in *Die Steinzeit in den Niederlanden* (The Stone Age in the Netherlands), never mentioned the Hilversum finds.[122] It is almost inevitable that he vainly tried to discuss them with Holwerda. As we saw in the previous section, Boeles, with his positive opinion of the Three-Age system, left the Hilversum antiquities entirely out of consideration.

A.E. van Giffen, Holwerda's opponent from 1916 on, who in 1915 at the RMO had struck up an acquaintance with Åberg, does not mention the fireplaces either, although 'so-called stone vaults' without further explanation appear on one of his maps of 1930.[123] Nor, to the author's knowledge, did Holwerda's students A.E. Remouchamps (1892–1927) and F.C. Bursch mention the Hilversum finds in writing. Whether in the 1930s or '40s anyone explicitly demonstrated the spuriousness of this material, the author does not know; but by then the forgery must have been quite obvious to anyone with even a slight knowledge of Neolithic stone artefacts. In his comprehensive survey of 1941, A.W. Byvanck duly ignored these finds.[124]

113 Holwerda, Evelein & Krom 1908, 29–30.
114 De Leeuw 1979.
115 RMO 1930.
116 Holwerda 1931.
117 Holwerda 1935.
118 Bursch 1939 enthusiastically presents a survey of the many recent flint finds by amateur archaeologists. Yet these – once again – included various forgeries. Bohmers 1947 lists the screened, reliable finds.
119 Van Ravesteijn 1924.
120 Enklaar 1939; also Enklaar 1944.
121 For instance Holwerda 1915, 53–47, where he argues against the basic assumptions of the Three-Age system, but leaves the Hilversum finds unmentioned.
122 Åberg 1916.
123 Van Giffen 1925; 1927 (the Hilversum antiquities are not discussed; they were not typologically relevant to the TRB culture); Van Giffen 1930, vol. II, pl. 51 (the fireplaces are shown on the map, though too far to the west).
124 Byvanck 1941. Professor P.J.R. Modderman pointed out to the author that this up-to-date and influential survey of Dutch prehistory left the Hilversum fireplaces unmentioned.

CONCLUSION

Holwerda retired as director of the RMO at the end of 1938 and moved to Nijmegen. Later he visited the museum only incidentally, and 'the sacrosanctity of his opinions began to wane'.[125] After H. Brunsting became curator of the prehistoric department (18th March 1946), he consulted with the then director W.D. van Wijngaarden and his fellow curator W.C. Braat, and 'very soon removed the Hilversum junk from the exhibition, and quietly slipped it into the depot and the "study collection". It all went smoothly; I silently assisted the oblivion into which the whole affair had already fallen. I have never regarded it as an "exposure": after all, it was so obvious you could sense it "with your clogs on" (and kick it out)!' Clearly the hoax had outlived itself.

The Hilversum hoax did not appear in the literature until 1964 and 1979,[126] but even in 1990 the historian A. van der Woud was to treat the Hilversum fireplaces as genuine.[127]

Yet Van der Woud rightly praises Janssen as a 'detective-like investigator', and for involving ancillary disciplines.[128] To him, *Hilversumsche Oudheden* is a milestone in mid-nineteenthth-century archaeology. With approval he quotes Worsaae's letter to Janssen of 1854: 'By sending me your treatise on the Hilversum antiquities you have done me great pleasure. Formerly, as is well known, almost only *tumuli* and burial chambers of the Stone Age were brought to light; now, however, we are fortunately beginning to find evidence of the domestic and social life of Europe's earliest inhabitants. It truly cannot be doubted that you have found such evidence on the Hilversum heath.'[129]

If these finds had been genuine, they would without doubt have formed a magnificent triad with the Danish shell middens and the Swiss and South German lake dwellings, on which all attention was focussed in the 1850s, because here for the first time settlement research so successfully complemented that of merely graves alone.

The only true prehistoric artefacts from this site are the zigzag beaker, the first ever to be found in the Netherlands and probably dug out of an unrecognised grave, the flint adze (which apparently was picked up months later and may well have come from the wider surroundings) and the unpolished flint artefacts, which in Gooiland can be picked up from almost any patch of heath.[130] Further, there are some subrecent, elongated hones of micaceous, green-grey stone (2×2 cm in section), which are also regularly found throughout the sandy area of Gooiland.

The moulded building stone (find no. Hi.260a), crucial to the theories of Janssen, Six, and Holwerda, is a rectangular block, 15 cm long, 7.5 cm high and still 9 cm wide (a piece having broken off the side). All original surfaces are chiselled. Its upper face is moulded with a rectangular ridge and a ridge with a square and a round side. This stone may have been part of the mouldings around a niche, window or doorway in a Romanesque, Gothic or Renaissance building. The shortness of the block suggests the earlier two styles. The stone was

125 This and the following are condensed quotations from a letter by Professor H. Brunsting (27th January 1992). He writes that as an assistant of Van Giffen at Groningen, before leaving for Leiden, he had decided on the implausibility of this find assemblage on the basis of Janssen's writings. He does not remember discussing the matter with his colleagues.

126 Bakker 1963–1964, 56–7; 1979a, 23–5, 164.

127 Van der Woud 1990, 50, 55.

128 Cf. note 127.

129 Janssen 1856, IV.

130 According to the letters by Perk (25th February and 28th April 1854), the zigzag beaker had been found by Westbroek when he dug over the heath 'at less than a pace' (later amended to 'eight to ten paces') from fireplace 12. Westbroek had set it on the ground to dry, and A. van de Geer, the huntsman of *Jonkheer* Den Hengst, picked it up, at which it broke. The labourers Lodder and Van der Heijden then broke it up further and rubbed it to crumbs. A body fragment, 3 cm high, 8.5 cm wide and 4 mm thick is all that survives (RMO Hi.479/III.540). The zigzag beaker somewhat resembled the one from Eext (Van der Waals & Glasbergen 1959, fig. 25), but had a less pronounced carination. Above this there was a horizontal zone, 0.5 cm high, of fine diagonal grooves, and above this a threefold zigzag line, 1 cm high. The diameter of the body was 9–11 cm. Westbroek recalled that 'the jug' had had a foot 'the size of a three guilder piece' (a coin emitted by William I, measuring 4 cm across). Westbroek did not show Janssen the flint axe Hi.483 until July 1855, at his home. It had been found, Westbroek believed, at the spot where fireplace 12 earlier had been excavated (Janssen 1856, 19). It is made of pale grey, white mottled Belgian or South Limburg flint. The different thicknesses of the polished upper and underside make it an adze.

Among the flint artefacts, Hi.275 is a scraper, Hi.273 a small blade. The others are flakes or naturally-shaped pieces.

reused as a whetstone to sharpen knives, and it probably had been brought to Hollandsche Rading for this purpose from a demolition site.

What remains after the evaporation of the prehistoric study object is an interesting intellectual excercise by Janssen, who from the highly inconsistent evidence very cleverly extracted the marginally permissable conclusions. Exactly because he had to adduce so many arguments to make things tie up at the very limit of what at the time was plausible, his book has become a valuable document of what to him, in Leiden, was known about the state of Neolithic research. They are the last deliberations about the hunebed builders' technological, economic, social, and religious level of civilisation to be heard in the Netherlands for a full century. Besides, Janssen included in his book reports on other archaeological finds in the Hilversum area and De Vuursche, which are still much appreciated. However, because Janssen was rather gullible and no great excavator in the modern sense, the Dutch chronological system went down the wrong track for 75 years.
Holwerda after *c.* 1925 no longer undertook Neolithic research – therefore the long period before the hoax was recognised had no further restraining effect on Dutch prehistoric research, whose course then was mainly determined by A.E. van Giffen at Groningen. Outside Leiden, the Hilversum finds had simply been forgotten.[131]

131 The author would like to thank Professor H. Brunsting (Leiden) and Professor P.J.R. Modderman (Arnhem) for their valuable information about opinions on the Hilversum finds in the 1940s. Dr W.J. de Boone (Boeschoten) and Dr W.C. Braat (Leiden) told the author in 1992 that they had no particular recollections of the Hilversum stones from the time of their employment at the RMO. H. Brunsting and L. Verhart showed him the Hilversum antiquities at the RMO in 1957 and 1992. J.N. Lanting (BAI, Groningen) kindly confirmed that the zigzag beaker of Hollandsche Rading was the first to have been found in the Netherlands.

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ERNST TAAYKE

Die einheimische Keramik der nördlichen Niederlande 600 v.Chr. bis 300 n.Chr.: Vorbericht

Keywords: publication of group of objects, introduction, hand-made pottery, typo-chronology, Iron Age, Roman Period, Provinces of Groningen, Friesland and Drenthe, the Netherlands, no references.

Archäologen glauben immer noch an Alchimie. Wenn man nur genügend triviale Daten sammelt, lassen sich diese eines Tages zu hochwertigen Folgerungen umschmelzen – glauben sie, bewußt oder unbewußt. Grabungsliteratur strotzt daher oft von anscheinend sinnlosen Beobachtungen. Die Hoffnung, daß diese irgendwann ihren Nutzen abwerfen werden, ist schwach fundiert, denn neue Fragestellungen erfordern eben eine spezifische Art der Datensammlung.[1]
Die Veröffentlichung von Grabungsmobilia ist in geringerem Maße für derartige Kritik anfällig. Abbildungen von Keramik zum Beispiel, oft in Form standardisierter Profilzeichnungen, verlieren selten ihre Brauchbarkeit. Freilich, aus einheimischer Keramik lassen sich keine aufschlußreichen Folgerungen ziehen – es sei denn, daß das Interesse in erster Stelle deren Anfertigung gilt. Wer aber nicht nur über Sozialstrukturen und Kalorienbedürfnisse informiert werden, sondern auch gerne wissen möchte, wer dort gewohnt hat, und wie lange und mit wem die Leute Umgang hatten, der ist meistens auf eine derartige Quelle angewiesen.
Leider wird Ausgrabungsmaterial meistens selektiv oder gar nicht veröffentlicht, und von Zufallsfunden wird nur hin und wieder ein auffallendes Exemplar in einem Jahresbericht abgebildet. Allmählich ist bei der Veröffentlichung von Mobilia ein Patt entstanden: der Publikationsrückstand erschwert die Anfertigung von Übersichtsartikeln, der Mangel an solchen Publikationen schreckt wiederum Forscher ab, ihr Grabungsmaterial zu veröffentlichen, und so weiter.
Zum Glück ändert sich das Bild in den letzten Jahren zum Guten. Van Heeringen bearbeitet die eisenzeitliche Keramik im westlichen Küstengebiet.[2] Bei der Ausgrabung Oss-Ussen widmet Van den Broeke sich ausschließlich der Keramikforschung[3] und beim Forschungsprojekt Assendelft wird der einheimischen Keramikproduktion ebenfalls große Aufmerksamkeit geschenkt.[4]
Als ich während meines Archäologiestudiums in Groningen einen Teil des Grabungsmaterials aus der Wurt Tritsum bearbeiten wollte, wurde ich mit einer pessimistisch stimmenden Sachlage konfrontiert. Seit dem Grabungsende im Jahre 1961 war ich schon der vierte, der versuchte, dieses Material zeitlich und typologisch einzustufen. Meine Vorgänger waren an erster Stelle am Fehlen einer Richtschnur in Form publizierter Keramiktypologien gescheitert. Seitdem war jedoch Grabungsmaterial aus Wurten in Groningen und Leeuwarden veröffentlicht worden.[5] Meine Arbeit wurde hierdurch gewiß erleichtert, aber die beschränkte Ähnlichkeit zwischen den Funden der unterschiedlichen Wurten zwang mich dennoch zur aufwendigen – und nicht besonders erfolgreichen – Arbeit an einer neuen Typologie.[6] Dabei befand ich mich eigentlich in einer recht günstigen Position. Als zum Beispiel Bloemers die einheimische Keramik der Siedlung Rijswijk-De Bult, in einer Entfernung von 200 Kilometern, beschreiben mußte,[7] war er auf das gleiche Vergleichsmaterial angewiesen!

1 Tilley 1989, 277. N.B. Für das Literaturverzeichnis: siehe Teil 1, den Westergo-Aufsatz.
2 Van Heeringen & Van Trierum 1981; Van Heeringen 1987.
3 Van den Broeke 1987.
4 Van der Leeuw *et al.* 1987.
5 Van Es 1968; Van Es & Miedema 1970–71.
6 Taayke n.p.
7 Bloemers 1978.

Nach der Absolvierung des Studiums bildete sich allmählich die Idee, jedenfalls für den Bereich der Eisen- und Kaiserzeit in den nördlichen Provinzen dieses vorher erwähnte Patt mittels gezielter Materialstudien zu durchbrechen. Mein Vorschlag fand bei Prof. Dr. Van Es (ROB) und bei Prof. Dr. Waterbolk (BAI), die beide viel über die Keramik dieser Perioden publiziert haben, viel Anklang. Leider wurde ein bei der Stiftung Archon (NWO) eingereichter Zuschußantrag nicht honoriert.
Nach kurzer Erwägung faßte ich den Entschluß, das beabsichtigte Forschungsprojekt selber in Angriff zu nehmen. Das BAI und der ROB gewährten mir materielle und geistige Unterstützung. Anfang 1987 zog ich im Depot des Friesischen Museums die erste Schublade voller Scherben heraus.

EINLEITUNG

Dieser Aufsatz stellt den Auftakt zu einer Studie über die Entwicklung der nordniederländischen einheimischen Keramik in der Periode 600 v.Chr. bis ungefähr 300 n.Chr., anhand von Stichproben dar. Für jedes Stichprobengebiet, etwa 150–250 km², wird eine Typochronologie der wichtigsten Keramikgruppen (Koch- und Vorratstöpfe, Becher) aufgestellt. Die Funde stammen hauptsächlich aus den Museen in Leeuwarden, Groningen, Assen und Leiden. Neben unveröffentlichtem Material werden schon beschriebene Fundkomplexe (z.B. Paddepoel, Wijster) aufs neue durchgesehen. Die Stichprobengebiete liegen in Westergo und Oostergo (Friesland), Groningen und Drenthe.
Die Zielsetzungen sind:
– Bestimmung der Keramikentwicklung innerhalb jedes Stichprobengebiete.
– Vergleich der diesbezüglichen Entwicklungslinien; nähere Abgrenzung von »Keramikprovinzen«. Diese sind nicht mit kulturellen Einheiten gleichzusetzen. Zwar darf man annehmen, daß in einem Gebiet mit der gleichen Keramik die inneren Beziehungen (sozial, wirtschaftlich) größer sind als die Kontakte mit anderen Gegenden, aber Übereinstimmung der Keramikformen ist doch wohl eine zu beschränkte Basis für die Annahme einer »Kultur«.
– Verfeinerung der Siedlungschronologie innerhalb der Teilgebiete und im gesamten Forschungsgebiet. Die Ergebnisse können in beschränktem Maße ebenfalls zur Beantwortung von Fragen nach dem Bevölkerungszuwachs oder -wechsel benutzt werden.
– Praktischer Führer für die zukünftige Bearbeitung von Fundkomplexen in den nördlichen Provinzen.
– Beitrag zur Siedlungs-Bestandsaufnahme (ROB, BAI und Archis).
Die angewandte Methode ist einfach, aber vielleicht nicht sehr einsichtig. Während der Anlaufzeit dieser Studie habe ich versucht, mir ein Bild von den Möglichkeiten einer nicht-subjektiven typologischen Gliederung anhand statistischer Techniken zu verschaffen. Freilich gibt es solche, auch für Daten wie die meinigen, die teils nominaler (Merkmale), teils numerischer Art (Maße) sind. Was mich zurückhielt, mich dieser Techniken zu bedienen, war die geringe Transparenz des Verfahrens. Diese Unzulänglichkeit läßt sich einerseits auf meine schwache methodologische Ausbildung, andererseits aber auch auf die Kompliziertheit der Datentransformation zurückführen. Für eine Auswertung der Ergebnisse wären Interpretationen unvermeidlich. Deshalb habe ich mich für die halbautomatisierte Handarbeit entschlossen. Zwar wird ein Computer benutzt, aber nur für das Sortieren von Beständen und für Kreuztabellen, nicht für »multivariate« Analysen oder dergleichen. Für die Beschreibung der von mir angewandten Verfahrensweisen verweise ich auf den Westergo-Aufsatz.[8]

STAND DER KERAMIKFORSCHUNG IN DEN NÖRDLICHEN NIEDERLANDEN

In den vergangenen Jahrzehnten sind bei der Erforschung nordniederländischer eisenzeitlicher und kaiserzeitlicher Siedlungen erhebliche Fortschritte erzielt worden. Aufgrund vieler Grabungsergebnisse z.B. aus Ezinge,[9] Fochteloo,[10] Wijster,[11] Middelstum,[12] Peelo[13] und aus Heveskesklooster,[14] hat man – jedenfalls im Planum – ein einleuchtendes Bild von der Entwicklung der Hauskonstruktionen und Siedlungsanlagen bekommen.

8 Par. 1.7 und 2.1.
9 Van Giffen 1936; De Langen & Waterbolk 1989.
10 Van Giffen 1958.
11 Van Es 1967.
12 Boersma 1983; Van Gijn & Waterbolk 1984.
13 Bardet *et al.* 1983; Kooi & De Langen 1987; Kooi *et al.* 1987.
14 Boersma 1988b.

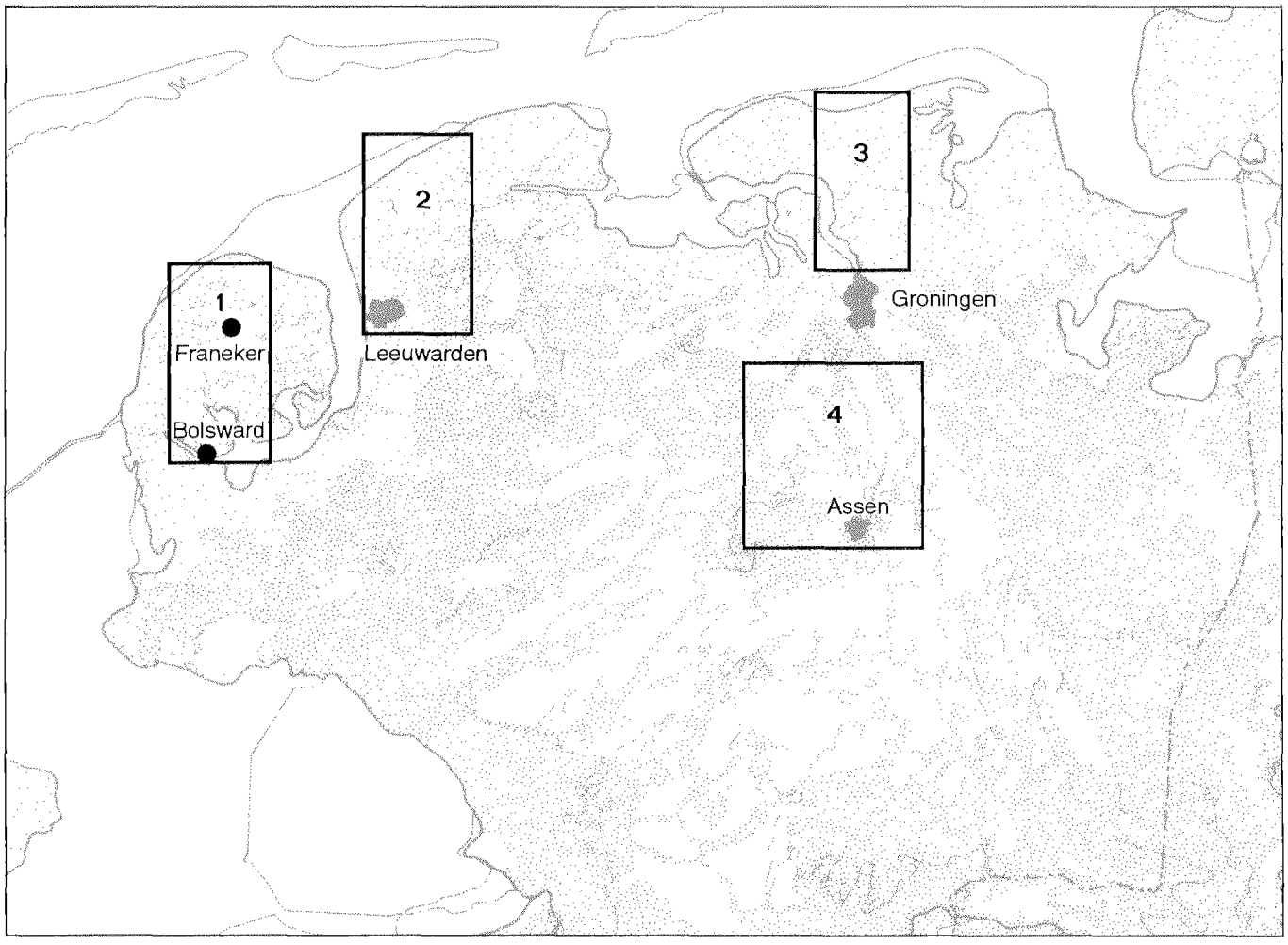

Abbildung 1 Nördliche Niederlande: Übersichtskarte mit den vier Stichprobengebieten.

Weit weniger Energie wurde und wird für das Studium – und für die Veröffentlichung! – der Funde aufgewendet. Seit den '60er Jahren[15] sind auf dem Gebiet der Keramikforschung kaum Fortschritte gemacht worden. Diese Beobachtung gilt ziemlich generell, und nicht nur für die nördlichen Niederlande. Das hat damit zu tun, daß Funde, besonders Keramik, häufig ziemlich schäbige Bulkware bilden, die oft schon wegen ihrer Masse nicht zu genauerer Betrachtung auffordern. Hinzu kommt, daß nur wenig veröffentlichte Fundkomplexe eine »innere« Chronologie besitzen. Dies hat zur Folge, daß bei der zeitlichen Einstufung der Funde immer wieder dieselbe, durch und durch ergraute Literatur zitiert wird.

Unsere heutigen Kenntnisse der Keramikentwicklung in den drei nördlichen Provinzen während der Eisenzeit und Kaiserzeit verdanken wir hauptsächlich Waterbolk und Van Es. Der Erstgenannte hat mit seiner Ruinen-Wommels-Typologie in einem – vielleicht etwas zu mächtigen – Schwung nicht nur der Keramikentwicklung, sondern zugleich der eisenzeitlichen Geschichte

15 Waterbolk 1962; Van Es 1967; 1968.

des ganzen Gebietes Gestalt gegeben. Schon Boeles und Van Giffen war es aufgefallen, daß sich in den Gefäßformen der Marsch- und Sandböden eine gewisse Ähnlichkeit erkennen ließ, aber das Bild wurde erst von Waterbolk[16] zusammengeschmiedet.
Van Es hat drei Siedlungsgrabungen aus allen drei Provinzen, und zwar Wijster (Drenthe), Paddepoel (Groningen) und – mit Miedema – Oldehove (Friesland) vorzüglich publiziert, einschließlich ausführlicher Keramikbeschreibungen.[17] Der Wijster-Typologie hat er eine überlokale Bedeutung zu geben versucht: einige Typen fehlen in Wijster selbst, sie wurden dafür auf Funden in den Provinzialmuseen in Assen, Leeuwarden und Groningen basiert.
Die Wijster- und Paddepoel-Typologien haben sich als von sehr großer, vielleicht von zu großer Bedeutung erwiesen: das Fehlen derartiger Beschreibungen von Keramik aus anderen Teilen des holländischen Küstengebietes hatte zur Folge, daß sie auch dort angewendet wurden, wo sich ihre Aussagekraft dem Nullpunkt nähert.
Autoren, die sich schon früh mit der Keramik der Marschensiedlungen beschäftigt haben, waren Boeles und Van Giffen. Boeles schuf im Laufe der Zeit eine praktische Gliederung der friesischen Ware (*streepband*, Wellenrand, Henkelgefäße), die immer noch ihren Wert hat.[18] Sein Hauptunterschied in Tupfenrandgefäße und Gefäße mit glatten Rändern wird von mir im Westergo-Aufsatz mehr oder weniger beibehalten.[19]
Van Giffens Einteilung[20] war überwiegend chronologisch gedacht: »nicht-friesische« Keramik nannte er die geometrisch verzierte Ware, die er übrigens nur knapp vor Anfang der römischen Kaiserzeit datierte, *Friesch-Bataafsch* alle spätere Keramik bis zur Völkerwanderungszeit.
Vor einigen Jahren Jahren hat Miedema die Vorgeschichte der Wurten in NW-Groningen beschrieben. Einen nicht unwichtigen Bestandteil bildete die Gliederung der einheimischen Keramik.[21] In einzelnen Details ist diese recht aufschlußreich (z.B. Beachtung der Magerung), im Ganzen aber stützt sich die Einteilung etwas zu sehr auf die vorher erwähnten Typologien Waterbolks und Van Es', einschließlich deren unvermeidlichen Schwächen.
Waterbolk hat in einem Aufsatz über die Befestigungen in Nord-Drenthe seine eigene Ruinen-Wommels-Typologie mit der von Van Es kombiniert. Die Bestandteile sind jedoch derart heterogen, daß die skizzierte Entwicklungslinie[22] eigentlich nur theoretischen Wert besitzt.

ÜBERBLICK ÜBER DIE UNTERSUCHUNGSGEBIETE UND HEUTIGES BILD DER KERAMIKENTWICKLUNG

Die Niederlande bilden die sumpfige Nordwest-Ecke des europäischen Tieflandes. Flüsse, offenes Wasser, Meeresablagerungen und Moore haben Jahrtausende hindurch das Bild bestimmt. Erstaunlich, daß es überhaupt eine holländische Vorgeschichte gibt! Die menschliche Anpassungsfähigkeit ist etwas Seltsames.
Die vier Stichprobengebiete verteilen sich über die Provinzen Friesland (Westergo und Oostergo), Groningen und Drenthe. Die Wahl und Begrenzung dieser Gebiete is an erster Stelle praktischer Art, das heißt, sie wurde durch die Fundzahlen und die Zahl der Fundstellen bestimmt. Außerdem spielte eine gewisse Streuung der Stichproben eine Rolle.
Von einem inneren geographischen Zusammenhang der drei nördlichen Provinzen kann damals kaum die Rede gewesen sein. Das friesische Marschengebiet war vermutlich mit Noord-Holland,[23] Groningen mit dem damaligen Emsgebiet verbunden. Drenthe war von Overijssel, Niedersachsen und Westfalen durch Moore und sumpfiges Gebiet getrennt, aber über Landrücken, vielleicht auch über Bohlenwege durch das Moor, war Verkehr trotzdem möglich. Weil der nördliche Teil dieser Provinz wie ein Keil zwischen den Marschengebieten steckt, liegt es auf der Hand, daß es ebenfalls Kontakte in dieser Richtung, bald intimer, bald oberflächlicher, gegeben hat.
Unsere heutige Kenntnisse zeigen, daß während der späten Bronzezeit in Drenthe und Overijssel Ost-West-Verkehr vorherrschte.[24] Archäologisch gesehen heißt

16 Waterbolk 1959; 1962; 1965.
17 Van Es 1967 und 1968; Van Es & Miedema 1970–71.
18 Boeles 1951, 96 ff. und 177 ff.
19 Par. 2.1.
20 Van Giffen 1913, 27ff. Laut den Ziffern und Buchstaben an Keramik in seiner Sammlung hatte er sich übrigens irgendeine Typologie ausgedacht.
21 Miedema 1984.
22 Waterbolk 1977, 102–7.
23 Zagwijn 1986, Karten 7 und 8.
24 Verlinde 1985, 368 ff.

das, daß die hierzulande angetroffene Keramik (Doppelkoni) und Grabformen (Schlüssellochgräber) stark von dem, was bei unseren östlichen Nachbarn üblich war, beeinflußt zu sein scheinen.[25]

Betrachtet man die Gefäßformen der frühen und mittleren Eisenzeit, dann wird dieses Bild bestätigt. Die Typen Ruinen-Wommels (RW) I und II sind den von Schwantes definierten Jastorf a- und b-Formen ziemlich ähnlich, obgleich die Entfernung zwischen dem Elbegebiet und Drenthe ungefähr 200 km beträgt. Physische Barrieren wie Flüsse spielten offensichtlich keine Rolle. Mit den im Zwischenraum angetroffenen Keramikformen, den Gefäßen der Nienburger Gruppe,[26] den Typen Dötlingen und Gristede,[27] ist eine Verwandtschaft sonnenklar.

Trägt man mit einem Zirkel die gleiche Entfernung nach Südosten und Süden ab, dann trifft man – abgesehen von Rauhtöpfen, die sehr allgemein sind – ein ganz anderes Formenrepertoire (Schrägrandurnen, Marnekeramik) an. Schon in Overijssel fehlt Ruinen-Wommels Keramik![28]

Angesichts der Zahl der Urnenfelder und der Siedlungsfunde von RW I-Keramik kannte Drenthe während der späten Bronzezeit und der frühen Eisenzeit eine ausgedehnte Besiedlung. Schon wenig später muß von einem recht dramatischen Rückgang die Rede gewesen sein: aus der Periode 400–200 v.Chr. lassen sich kaum Siedlungen nachweisen, und auch die Zahl der Bestattungen, damals in Form von Brandhügeln, ist weitaus geringer als vorher.[29]

Die Ursachen dieses Bevölkerungsrückgangs lassen sich schwer gegeneinander abwägen. Einige sind archäologisch oder paläobotanisch erforschbar (Ausdehnung des Moorareals, Erschöpfung der Felder, Sandverwehungen), andere gründen sich bloß auf Vermutungen: Probleme der Bevölkerungsdichte, sozialpolitische Spannungen.[30] Eins ist jedoch klar: das Küstengebiet bot eine gute Alternative.

Der pleistozäne Untergrund im Norden und Westen Frieslands und in Nord-Groningen wurde, wegen des Anstiegs des Meeresspiegels und demzufolge des Grundwasserspiegels, im Laufe des Holozäns allmählich gänzlich mit eutrophem, später auch oligotrophem, Torf im Wechsel mit Meeresablagerungen bedeckt. Gegen Ende des Subboreals, als das Wasserniveau nur noch in geringem Maße anstieg, fand Marschbildung statt. Im Verlauf einer weiteren Regressionsphase wurden vermutlich um 600 v.Chr. Teile dieser Marsch zum ersten Mal besiedelt.

Nach einer kurzfristigen Transgressionsphase im 5. und 4.Jahrhundert – Dünkirchen (D) IB – dehnte sich das bewohnbare Areal allmählich aus. Periodische Überschwemmungen und ein Himmelwassersurplus erforderten die Errichtung von Podien (die sich später zu Wurten oder *terpen* auswuchsen). Ackerbau war nur in beschränktem Maße möglich, aber im übrigen waren die Lebensbedingungen vermutlich nicht übel. In den ersten Jahrhunderten unserer Zeitrechnung hat es in Friesland und Groningen vermutlich über 1500 Marschsiedlungen (von Einzelhöfen bis zu Dorfwurten) gegeben. Eine unbekannte Zahl Torfsiedlungen kommt noch hinzu.

Die ersten Siedler benutzten die gleiche Ware wie ihre Nachbarn auf den pleistozänen Böden: glattrandige, hochhalsige, geschulterte Gefäße (RW I, Hatzum-Boomborg 1a und 1b, Typ Gristede), Rauhtöpfe, flache Schalen, einhenklige Tassen. Im Verlauf der Eisenzeit entwickelte sich eine Art Wurtenkeramik, offensichtlich von Westergo ausgehend. Typische Vertreter dieser Art sind geometrisch verzierte Keramik (RW III) und Gefäße mit einem *streepband*-Muster. Letztgenannte Gattung trifft man bisweilen auch in Nord-Drenthe an.

Zu Anfang der Kaiserzeit drehte der Wind in Groningen und Drenthe nach Osten: halslose Keramik mit verdickten, facettierten Rändern deutet auf engere Kontakte mit dem nordwestdeutschen Küstengebiet. In Oostergo, dem Marschengebiet östlich der Mittelsee, blieb zunächst das friesische Element überlegen.[31] In dem friesischen Stil, mit Westergo und Noord-Holland als Kerngebieten, sind übrigens in späterer Zeit die östlichen Neuerungen nicht zu übersehen.

Die Römer blieben außer Sicht. Nach einigen Feldzügen begnügten sie sich seit 47 n.Chr. mit dem Rhein als Nordgrenze. Funde von Drehscheibenkeramik,

25 Kooi 1979, 4; Nortmann 1983a, 19 ff.
26 Tuitjer 1987.
27 Nortmann 1983a.
28 Verlinde 1985, 377.
29 Kooi 1979, 153–6, Fig. 152: in der späten Phase der Urnenfelder gab es 65 Bestattungsplätze, während in der folgenden Periode nur 10 Brandhügelgruppen gezählt werden.
30 Van Gijn & Waterbolk 1984.
31 Zu einem feineren Unterschied vgl.: Halbertsma 1953, 250, Anm. 1.

Münzen und Bronzen, vor allem auf der friesischen Marsch, bestätigen wirtschaftliche(?) Beziehungen. Die friesische Viehzucht war den Römern vermutlich nicht unangenehm.
Infolge einer neuen Transgressionsphase (D II) verschlimmerten sich im Laufe der mittleren Kaiserzeit die Lebensbedingungen im Marschgebiet. Weitere Erhöhung der Wohnplätze nützte nur wenig, denn vermutlich trafen die Überschwemmungen vor allem die Wiesen und Äcker. Nur auf hoch aufgeschlämmten Marschwällen konnte man sich behaupten. Im 3. und 4.Jahrhundert ist die friesische Keramik allmählich unsichtbar geworden. Die Keramik der Völkerwanderungszeit zeigt ganz andere Merkmale.
Archäologisch konnte bisher kein Exodus ins Hinterland festgestellt werden. Die Siedlungszahl in Drenthe stieg zwar im Laufe der mittleren Kaiserzeit leicht an, aber die Fundstellen weisen namentlich Keramik mit Zickzackprofilen – eine in Friesland untergeordnete Fundgruppe. Van Es sah die Gründung der Siedlung Wijster denn auch im Licht der östlichen Expansion.[32]
Zum ersten Male ist an der Siedlungsstruktur, in diesem Fall umzäunten Komplexen von Haupt- und Nebengebäuden,[33] die soziale Rangordnung innerhalb einer Gemeinschaft abzulesen. Einige »reiche« Grabausstattungen und der Goldschatz von Beilen, übrigens erst in die späte Kaiserzeit zu datieren, dürften diesen Antiegalitarismus bestätigen.[34]
Die hier geschilderten Konturen der eisen- und kaiserzeitlichen Vorgeschichte des Arbeitsgebietes sind sehr blaß. Ich hoffe, daß diese Keramikstudien dazu beitragen werden, daß die Vorgänge in den nördlichen Provinzen, insbesondere das Verhältnis zwischen Marsch und Hinterland, schärfer dargestellt werden können.

ZEITABSCHNITT DER UNTERSUCHUNG; DATIERUNGSFRAGEN

Weil ein Vergleich zwischen den Entwicklungen in den Marsch- und Sandgebieten in meiner Untersuchung eine wichtige Rolle spielen wird, ist die Periode der ersten kontinuierlichen Marschbesiedlung, mit einer erkennbaren Töpfertradition vom 6.Jahrhundert v.Chr. bis wenigstens ins 3.Jahrhundert n.Chr. als Zeitabschnitt gewählt worden. Die Stunde Null wird also von den frühesten Funden im Küstengebiet bestimmt. In Drenthe wird diese Phase von RW I Gefäßen und Rauhtöpfen repräsentiert. Formal bildet der Anfang der Völkerwanderungszeit die Obergrenze, das heißt etwa Ende des 4.Jahrhunderts n.Chr. Praktisch ist die Grenze sehr diffus. Die Besiedlung der Marsch läßt sich im Augenblick anhand einheimischer Keramikfunde nicht weiter als bis zur Mitte des 3.Jahrhunderts verfolgen, aber wir dürfen annehmen, daß eine sorgfältige Untersuchung von Fundkomplexen aus vermutlich ununterbrochen bewohnten Siedlungen (Ezinge in Groningen, vielleicht Ferwerd in Oostergo) einen »natürlichen« Übergang zum angelsächsischen Töpferstil ans Licht bringen wird. Zu diesem Zweck soll die Keramik der Siedlung Wijster von neuem unter die Lupe genommen werden.
Die archäologische Periodisierung des gewählten Zeitabschnitts, insbesondere die der Eisenzeit, kennt für den Bereich der nördlichen Provinzen bis heute keine Standardform. Dies führt oft zu Verwirrung: RW I Keramik heißt zum Beispiel älter-, früh-, oder mitteleisenzeitlich, wird in Eisenzeit Ib (nach Harck), Latène A, Hallstatt D, sogar Hallstatt C gestellt, ist zeitgleich mit dem Typ Jastorf a, soll später sein als der Typ Gristede. In historischen Jahren wird an die süddeutsche Chronologie oder an unkalibrierte (!) ^{14}C-Datierungen angeknüpft. In unserem Beispiel variieren die Zahlen für RW I von 700–500, 600–400, bis 550–400 v.Chr.
In den Verbreitungskarten von Van Es *et al.*,[35] die auf Angaben der provinzialen Museen basieren, wird der ganzen friesischen Marsch nur eine einzige »früheisenzeitliche« Siedlung zugedacht, Drenthe etwa 2–3, während Groningen nicht weniger als 19 Siedlungen dieser Datierung in den Schoß geworfen bekam. Im Text wird der Anfang der Periode nicht erwähnt; das Ende soll bei 600 v.Chr. liegen. Auf den tatsächlichen Wert dieser Zahlen werde ich später zurückkommen; hier möchte ich nur hervorheben, daß in den drei Provinzen sehr unterschiedliche Kriterien benutzt worden sind.
In meiner Untersuchung werde ich folgende, etwas lokkere Einteilung, die auf Verwers[36] und der üblichen Dreiteilung der römischen Kaiserzeit basiert, benutzen:

32 Van Es 1967, 531 ff.
33 Vorgefunden in Fochteloo, Wijster und Peelo.
34 Van Es 1990, 191.
35 Van Es *et al.* 1988, 81–2.
36 Verwers 1972, 123–42.

Frühe Eisenzeit	700–550/500 v.Chr.
Mittlere Eisenzeit	550/500–250/200 v.Chr.
Späte Eisenzeit	250/200–12 v.Chr.
Frühe Kaiserzeit	12 v.Chr.–50 n.Chr.
Mittlere Kaiserzeit	50–270 n.Chr.
Späte Kaiserzeit	270–400 n.Chr.

Relativchronologische Schemata, die auf typologischen Kriterien (Hallstatt, Latène, Jastorf, oder Harcks Eisenzeiteinteilung) basieren, haben für das Arbeitsgebiet wenig Zweck, denn andere Fundkategorien als Keramik gibt es kaum. Weil Erforscher der Nachbargebiete jedoch fast ausschließlich derartige Bezeichnungen benutzen, werde ich, wenn die Situation sich ergibt, versuchen, zu einer Konkordanz zu gelangen.

Persönlich bevorzuge ich ^{14}C-Datierungen. Diese unabhängige Datierungsmethode hat in den letzten Jahrzehnten das Bild der Vorgeschichte tiefgreifend beeinflußt und auch geändert. Die Übersicht von Lanting und Mook[37] über die niederländischen Daten fehlt in keinem Literaturverzeichnis. Die heutige Keramiktypochronologie der nordniederländischen Eisenzeit stützt sich in erheblichem Maße auf ^{14}C-Daten. Die Methode kennt leider einige Tücken.[38] Von menschlichen Fehlern (Probenentnahme, Probebehandlung oder Messungen) abgesehen tragen Faktoren wie Schwankungen in der ^{14}C-Produktion und eine ungewisse Assoziation zwischen dem Alter einer Probe und dem zu datierenden Ereignis dazu bei, daß Lieferanten von Proben die Ergebnisse oft kopfschüttelnd entgegennehmen. Man sollte sich aber nie in die Daten verrennen. Sie sind bloß Zahlen, keine Gottesurteile.

Bis vor einigen Jahren wurde mehr oder weniger vorgetäuscht, daß es eine lineare Beziehung zwischen der gemessenen Aktivität und dem tatsächlichen Alter einer Probe gäbe, obwohl schon seit den 50er Jahren bekannt war, daß das nicht ganz stimmte.[39] Erst die Entwicklung der Dendrochronologie hat eine Eichung der Daten mittels Präzisionsmessungen ermöglicht.[40] Für die Bereiche 2400–2500 BP und 2150–2250 BP, sehr wichtig für die Chronologie der Eisenzeit, sieht die »offizielle« Kurve[41] übel aus: derartige Datierungen lassen sich nicht genauer als zwischen 800 und 400 cal. BC, beziehungsweise 400–200 cal. BC liegend einordnen.[42] Ein Datum um 2550 BP, kalibriert etwa 600 cal. BC, kann also ein jüngeres Phänomen andeuten als ein Datum um 2450 BP. Dennoch ist die Methode auch für diese Strecken brauchbar.

37 Lanting & Mook 1977.
38 Waterbolk 1971.
39 De Vries 1958.
40 Siehe Spezialheft *Radiocarbon* 28, 2B, 1986.
41 Pearson & Stuiver 1986.
42 Cal. AD und cal. BC sind standardisierte Andeutungen kalibrierter Daten.

ERNST TAAYKE

Die einheimische Keramik der nördlichen Niederlande, 600 v.Chr. bis 300 n.Chr., Teil 1: Westergo (Friesland)

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Bei den Unterschriften der Abbildungen 8–51 beziehen sich die Nummern *vor* dem »:« auf die Fundstellen nach Tabelle 13, die Nummern *nach* dem »:« auf die Funde.

Keywords: publication of a group of objects, hand-made pottery, typo-chronology, marsh area, *terps*, Iron Age, Roman period, Westergo, Province of Friesland, the Netherlands, 155 references.

1 EINLEITUNG

1.1 Vorwort

Diese Seiten enthalten die erste Teilstudie über die Keramikentwicklung in den nördlichen Provinzen während der Eisenzeit und der Kaiserzeit. Für die allgemeine Einleitung verweise ich auf den vorhergehenden Aufsatz.[1]

Ich möchte Evert Kramer, Konservator der archäologischen Abteilung des »Fries Museum« (FM) in Leeuwarden, und den anderen Mitarbeitern des Museums, Dick Visser, Jan Boschker und Klaas Bekkema herzlich danken für ihre Gastfreundschaft und die Hilfe, die sie bei der Beschaffung von Funden oder der zugehörigen Information geleistet haben. Außerdem bedanke ich mich für Auskünfte jeder Art bei Flip Woltering (ROB), Jaap Boersma (BAI), M.W. ter Wee (RGD), Leo Verhart (RMO), Bert Groenewoudt (IPP), Robert van Heeringen (ROB) und bei Tineke Volkers. Mein Deutsch ist auf eine nette Weise gebändigt und korrigiert worden von Dr. M.A. van den Broek (VU) und Annette Wagner. Den Fachleuten des ROB danke ich für ihre Mühe, meinem Aufsatz ein anständiges Aussehen zu besorgen.
Ohne die Begeisterung von Wim van Es würde diese Studie niemals geschrieben. Ohne seine kritischen Bemerkungen wäre sie eine völlig unnütze Abhandlung geworden.

1.2 Das Gebiet und seine Siedlungen (Abb. 0–2)

Schon seit den Zeiten Boeles' und Van Giffens gilt Westergo, zwischen der ehemaligen Mittelsee und dem Wattenmeer, als ein Kerngebiet der Wurtenkultur. Hier hat es viele Wurten (*terpen*) gegeben, und aufgrund der Keramik mit geometrischen Verzierungsmustern war schon in der Periode der kommerziellen Abtragungen klar, daß die unteren Wohnschichten mehrerer Wurten vorrömischen Alters sein müßten.
Ganz Westergo war für eine vollständige Aufnahme des Fundmaterials zu umfangreich. Die Stichprobe umfaßt

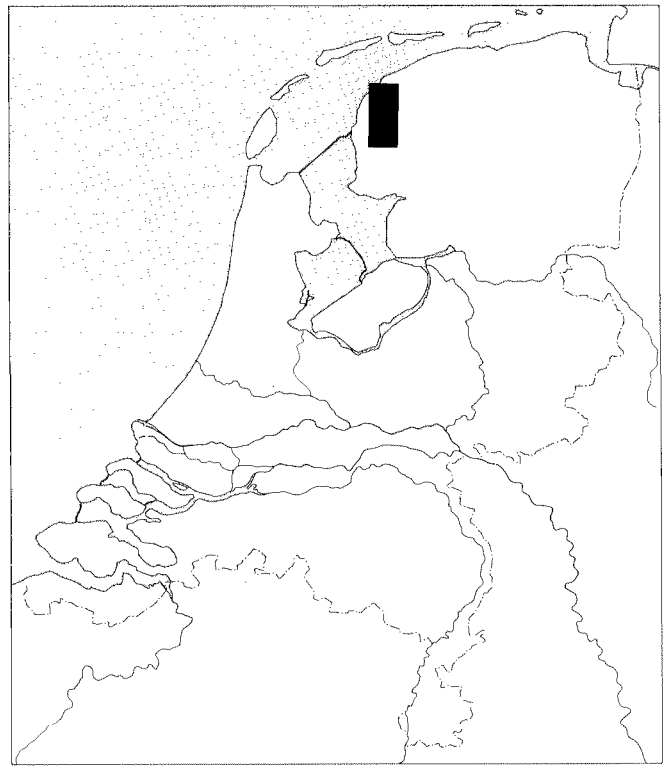


Abbildung 0 Die Niederlande: Lokalisierung des Stichprobengebietes.

ein Gebiet von 10 km in Ost-West-Richtung (X-Koordinaten 160–170) und 20 km Nord-Süd (Y-Koordinaten 563–583, d.h. von Bolsward bis einschließlich des Marschrückens Wijnaldum–Boer[2]). Die längliche Form des Gebietes wurde aufgrund der Vermutung, daß im Laufe der Zeit eine Ausdehnung oder Verschiebung der Besiedlung in nördlicher Richtung stattgefunden haben könnte, ausgewählt.
In den Jahren 1943–44, als den kommerziellen Abtragungen formell ein Ende gemacht wurde, hat Halbertsma eine Bestandsaufnahme aller damaligen Wurten in Friesland und Groningen durchgeführt.[3] Auf seiner später veröffentlichten Karte[4] bezeichnete er in dem Stichprobengebiet ungefähr 275 existierende und verschwundene *terpen*.

1 In diesem Band.
2 Nördlich dieser Marschrücken sind bis heute keine eisen- oder kaiserzeitlichen Spuren angetroffen worden.
3 Halbertsma 1963, 6–10; ungedr.
4 Halbertsma 1963.

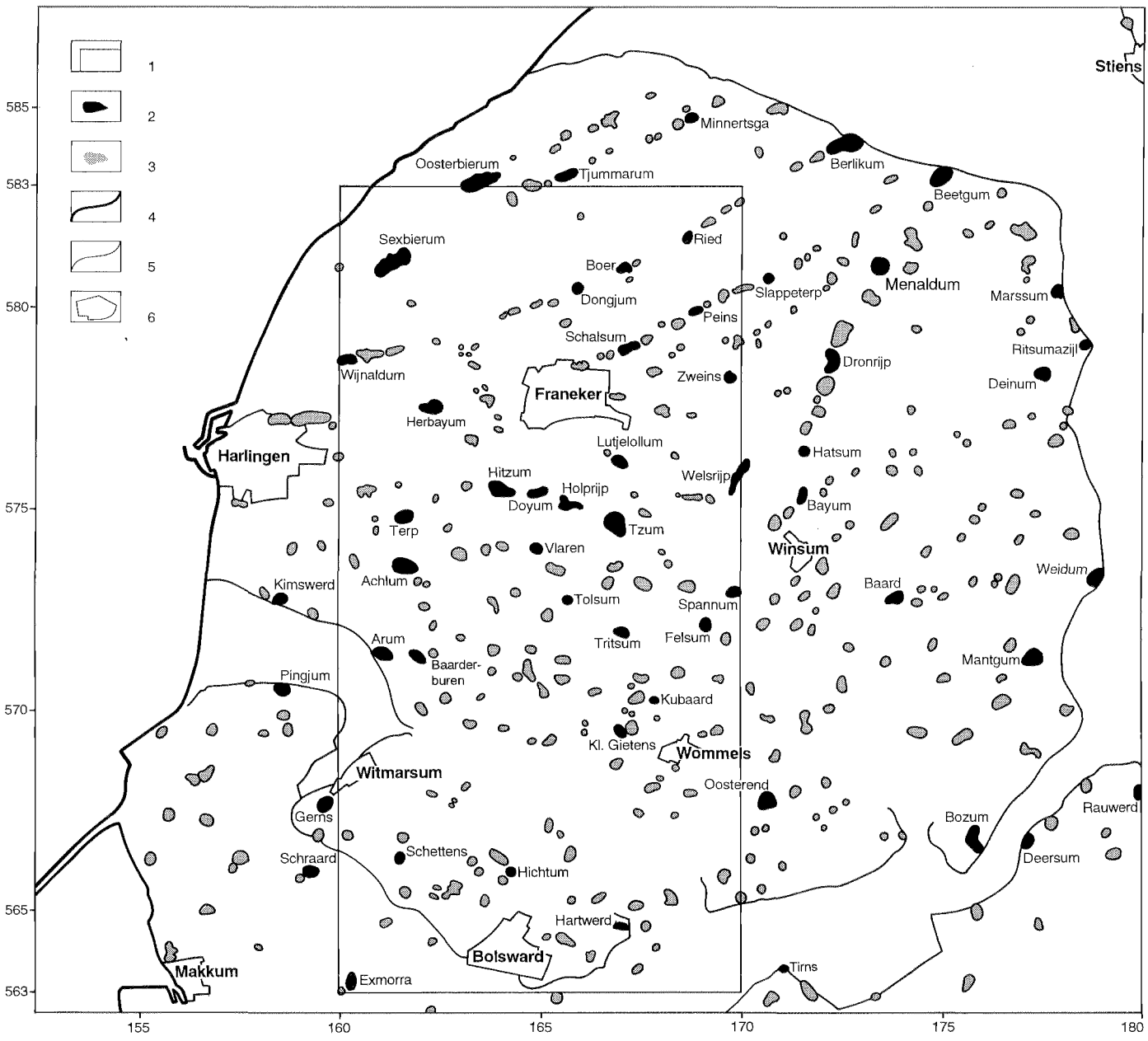


Abbildung 1 Westergo: Lokalisierung des Stichprobengebietes. Teilweise nach den Bodenkarten 5 West und Ost und 10 West und Ost (Bodemkaart van Nederland 1974; 1976). Legende: 1 Umrißlinie des Stichprobengebietes; 2 bedeutende Wurt mit Namen; 3 bedeutende Wurt, Name nicht angegeben; 4 heutiger Seedeich; 5 Deich der ehemaligen Middelzee bzw. der ehemaligen Marne; 6 Grenzlinie einer Stadt oder eines bedeutenden Dorfes.

Etwa 50 Siedlungen können hinzugefügt werden.[5] Zum Teil sind diese von Bodenforschern[6] angebohrt worden oder bei Straßenbau oder Flurbereinigung ans Licht gekommen. Auch sind einige von Halbertsma übersehen worden. Nicht alle Siedlungen dieses Nachtrags sind Wurten im Sinne von sichtbarem Wohnhügel. Oft ist von überschwemmten Flachsiedlungen oder niedrigen Wohnplattformen die Rede.[7]
Einige Wurten sind bestimmt frühmittelalterlich oder jünger. Das trifft besonders auf die Wurten im nördlichen Teil des Stichprobengebiets, dem ehemaligen Barradeel, zu. Neuzeitliche Bauernhöfe, oft ebenfalls leicht erhöht,[8] sind womöglich ignoriert worden.
Die Karte der archäologischen Denkmalpflege[9] zeigt, daß heutzutage im Stichprobengebiet etwa 130 bis 140, oft dürftige Wurtreste übriggeblieben sind. Unbeschädigte Wurten sind sehr selten.

1.3 Geologische Entwicklung ab der Dünkirchen o-Transgressionsphase[10]

Anders als Groningen[11] und Oostergo[12] ist Westergo geologisch und physisch-geographisch nicht intensiv erforscht. Vom südlichen Teil ist eine geologische Karte angefertigt worden,[13] aber während in den oben erwähnten Studien ^{14}C-Daten eine zentrale Position einnehmen, ist die Chronologie der in Westergo angetroffenen Sedimentations- und Ruhephasen ziemlich schwach unterbaut. Dazu ist zu bemerken, daß die Ablagerung eines Sediments mit Dünkirchen (D) 1-Fazies (nach Ter Wee)[14] zeitlich nicht mit der von Roeleveld und Griede definierten Transgressionsphase D Ib übereinzustimmen braucht. Es wäre deshalb falsch, die

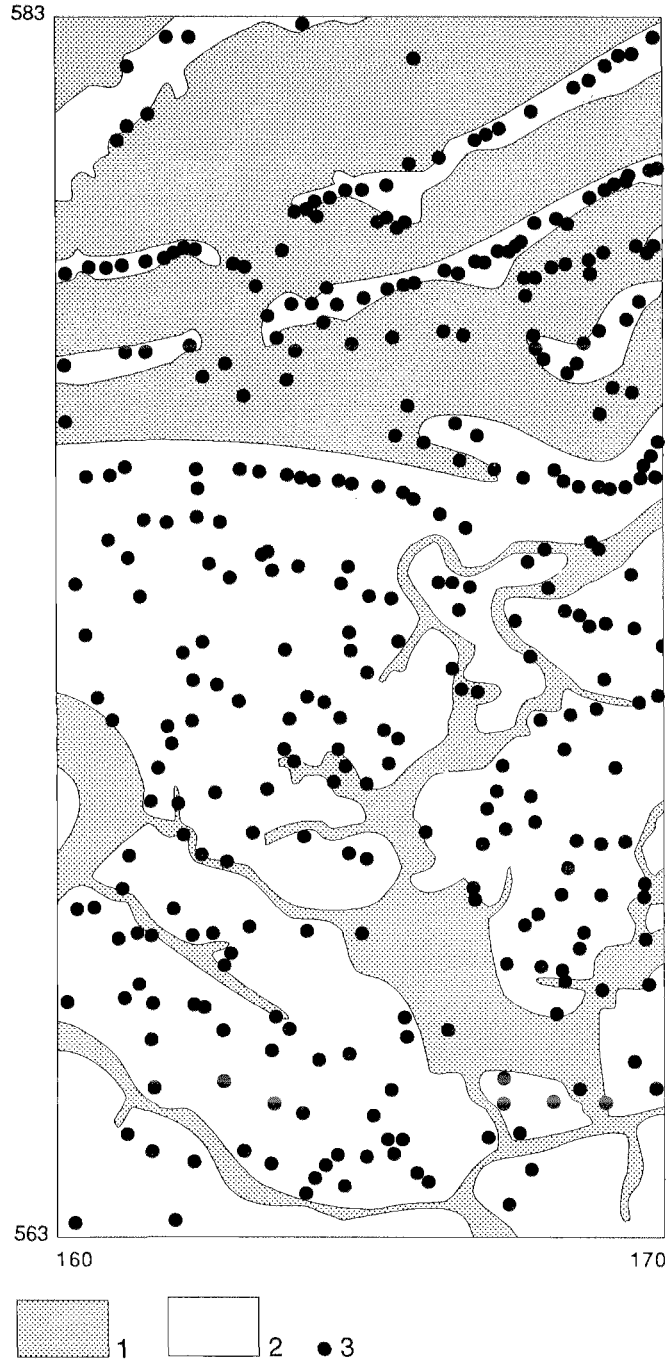


Abbildung 2 Westergo, Stichprobengebiet: alle (vermutlichen) Wurten und anderen Siedlungen (n = 332). Legende: 1 Wasser oder Niederung; 2 Marsch; 3 (vermutliche) Wurt oder andere Siedlung.

5 Eine niedrige Schätzung. Eine rezente Bestandsaufnahme im Norden Westergos (Dijkstra 1991) zählte auf 85 km² schon fünf Wurten mehr als meine Liste.
6 Bodemkaart van Nederland 1974; 1976.
7 Vgl. Par. 4.1.
8 Vgl. *Geomorfologische Kaart van Nederland* 1:50 000, [Blatt] 10, Sneek (gedeeltelijk), 1982.
9 *Inventarisatie archeologische monumenten in Friesland* 1984.
10 Die ^{14}C-Datierungen werden in Tab. 15 näher beschrieben.
11 Roeleveld 1974; Schoute 1984.
12 Griede 1978.
13 Ter Wee 1976.
14 Ter Wee (1976) hat bei der Kartierung die Phasen D 0 und D Ia zusammengefaßt, weil sie sich lithologisch sehr schwer trennen ließen. Das gleiche gilt für seine Datierung der Phasen D Ib und D II.

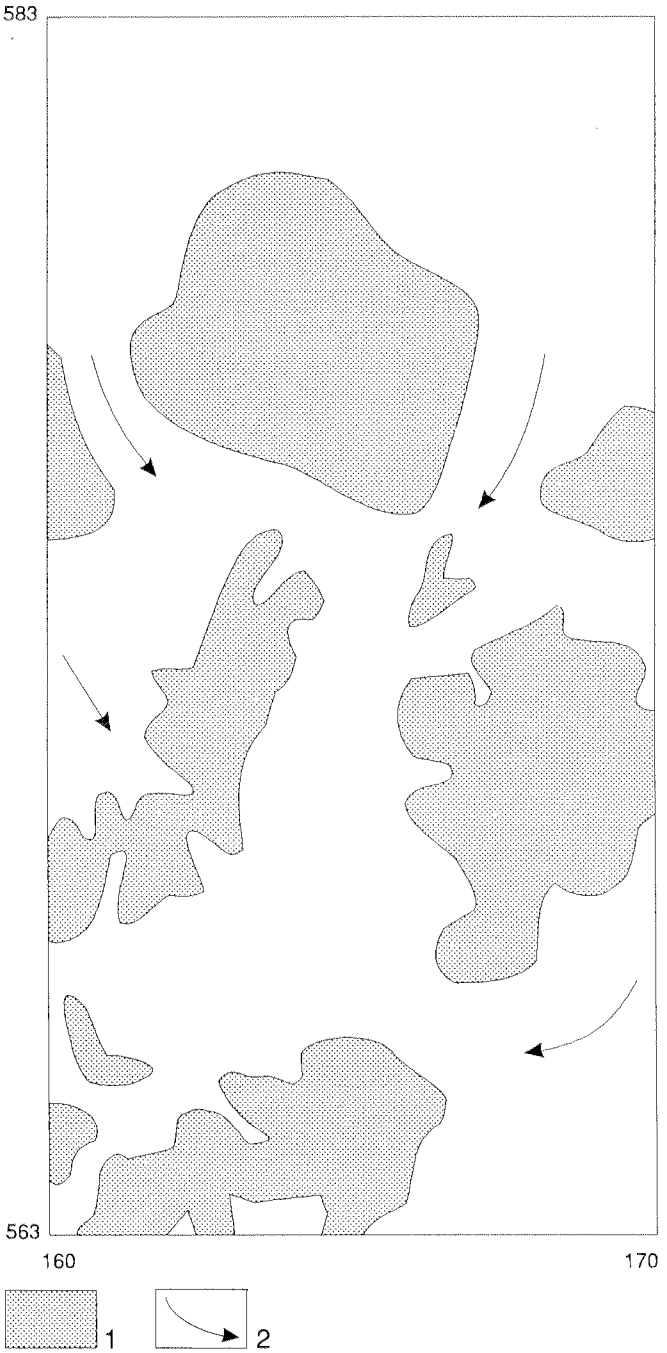


Abbildung 3 Westergo, Stichprobengebiet: Auswirkung der Dünkirchen 0-Transgressionsphase. Teilweise nach Ter Wee 1976, bijkaart 2 (zuidelijk deel) und teilweise nach unveröffentlichten Daten des RGD. Legende: 1 Oberfläche pleistozäner Ablagerungen über 5m –NAP; 2 Richtung der D 0-Rinnen.

letztlich von Griede ausgearbeitete Chronologie ohne weiteres auf Westergo zu übertragen, zumal sich immer wieder herausstellt, daß Unterschiede in der Landschaftsbildung, gerade auch in Zeiten mit einem sehr geringen Anstieg des Meeresspiegels, schon in geringer Distanz sehr groß sein können.

Zu Anfang der D 0-Transgressionsphase, um 3800–3700 BP,[15] war ganz Westergo von Moor bedeckt. In der folgenden Überschwemmungsphase erfuhr das Gebiet nördlich von Sneek eine Art Transformation. Vom Norden aus wurden die unterliegenden Ablagerungen (Moor, Meeressediment, pleistozäner Untergrund) über vier breite Rinnen[16] bis in 15–20 m Tiefe weggeräumt (Abb. 3). Das verschonte Moor ertrank nach und nach und wurde am Ende mit schwerem Ton überdeckt.

Im Laufe der Zeit wurden die breiten Rinnen und Priele zum größten Teil aufgefüllt, aber erst gegen 2600–2500 BP – die Holland V-Regressionsphase ist in Westergo nicht gut erkennbar – war der Einfluß des Meeres derart gering geworden, daß Verlandung stattfand. Übrigens gibt es nur zwei Datierungen, 2590±55 BP (Makkum) und 2520±70 BP (Greonterp), leider nicht genauer zu datieren als 800–400 cal. BC, die dieses Bild bestätigen. Heutzutage ist diese Verlandung noch durch Reifung und Entkalkung der obersten Schicht oder durch einen Vegetationshorizont, den fossilen Überrest einer Pflanzendecke, erkennbar. Im Gegensatz zum Gebiet südlich des Stichprobenareals fand Moorbildung nur noch an einzelnen Stellen, u.a. in verlandeten Rinnen, statt. Die ersten Siedler machten es sich auf hoch aufgeschlämmten, gut entwässernden Uferrücken am Rande der ehemaligen »Moorinseln« (Abb. 4) bequem.[17]

Die Transgressionsphase D 1b hat in Westergo wenig Spuren hinterlassen. An relativ niedrigen Stellen wurde nach Angaben des RGD eine 10 bis 60 cm dicke Schicht Ton (*stugge klei*) deponiert, aber archäologisch gesehen (siehe Kap. 4) gibt es keine Hinweise auf einen Abbruch der Besiedlung, wie er offensichtlich in anderen Gegenden stattgefunden hat.[18] Die Ansiedlung in Fel-

15 Die Oberseite des Moores unterhalb D 0 ist bei Kubaard datiert 3830±105 BP (GrN-4323) und bei Makkum 3710±55 BP (GrN-6194). Siehe Ter Wee 1976, 76–7.

16 Ter Wee 1976, Fig. 36.

17 Ter Wee 1976, 78.

18 Zeeland, Zuid-Holland und Noord-Holland: Van Heeringen 1988; Oostergo: Griede 1978; Emsufer: Löbert 1982.

sum soll auf dieser Schicht angefangen haben.[19] Die Überschwemmungen sind wahrscheinlich der Anlaß zum ersten Wurtenbau gewesen. Umgekehrt waren die alten D o-Wasserläufe im zentralen Teils Westergos so weit verlandet, daß auf ihren Uferrücken – nach den Angaben der geomorphologischen Karte gibt es hier keine Inversionsrücken – neue Siedlungen gegründet wurden. Einige der Rinnen, Vorgänger der Marne im Westen und der Mittelsee im Osten, blieben offene Verbindungen zum Meer. Vermutlich trafen sich beide Systeme in der Gegend von Bolsward. Ter Wee spricht von einer Wasserscheide.[20] Der nördliche Teil von Westergo bildete also mehr oder weniger eine Insel.

An drei Stellen außerhalb des Stichprobengebietes wurde das Ende des Torfwachtums datiert: Schraard, 2380±70 BP, Warga, 2330±75 BP und Rauwerd 2440±65 BP. Augenscheinlich sind diese Datierungen jünger als die oben erwähnten, aber kalibriert erweisen sie sich als fast gleichaltrig, etwa im Bereich 800–400/200 cal. BC. Einen klaren Anfang der D 1b-Transgressionsphase gibt es also nicht.

Die nördliche Küstenlinie wurde in der mittleren Eisenzeit von einem Marschrücken zwischen Achlum, Tzum und Winsum gebildet, der von dort in nordöstlicher Richtung in einen breiten Uferrücken, längs einer ehemaligen D o-Rinne,[21] von Baaijum über Dronrijp zu Menaldum überging.

Über die westliche Küstenlinie ist wenig bekannt. Nach Zagwijn[22] gab es zwischen dem Südufer der Ur-Marne und der heutigen Insel Texel eine Verbindung, aber das Meer hat im Mittelalter nahezu jeden Beweis fortgeschafft. Einige Scherben von der kleinen Insel Griend, nordwestlich von Harlingen,[23] lassen vermuten, daß die Friesen damals über mehr Lebensraum verfügten als heute.

Die größte Ausdehnung des bewohnbaren Marschenareals fand in den ersten zwei Jahrhunderten unserer Zeitrechnung statt. Die schon in einem früheren Stadium gebildeten Marschrücken Herbaijum–Peins und Wijnaldum–Berlikum, die durch eine Erosionsrinne voneinander getrennt wurden, waren jetzt derart hoch aufgeschlämmt, daß ständige Besiedlung ermöglicht

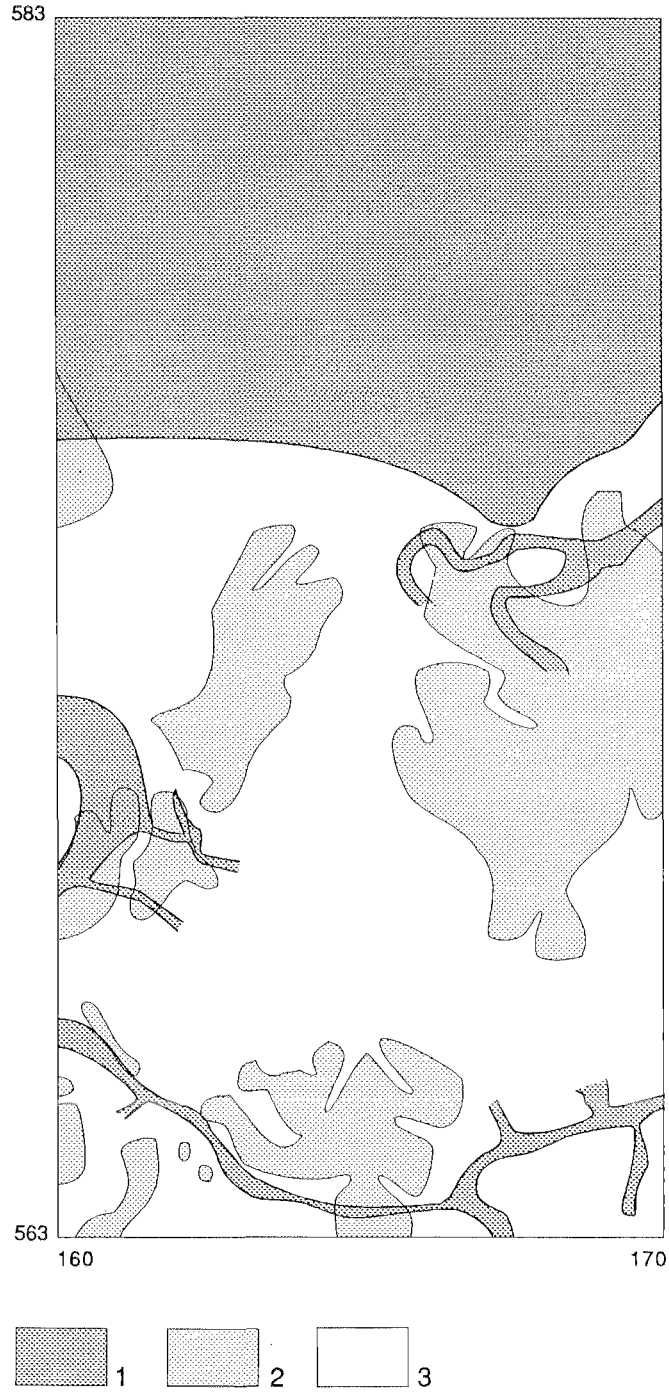


Abbildung 4 Westergo, Stichprobengebiet: paläogeographische Skizze des Gebietes in der frühen bis mittleren Eisenzeit. Legende: 1 Wasser; 2 'Moorinseln' (Marsch mit Moorablagerung im Untergrund); 3 Marsch ohne Moorablagerung im Untergrund.

19 Cnossen 1958, 32. Die früheste Keramik aus dieser Wurt ist unverzierte G3a des 3.Jahrhunderts v.Chr.
20 Ter Wee 1976, 90.
21 Bodemkaart van Nederland 1976, 30.
22 Zagwijn 1986, 40, Karten 7 und 8.
23 Flonk 1986.

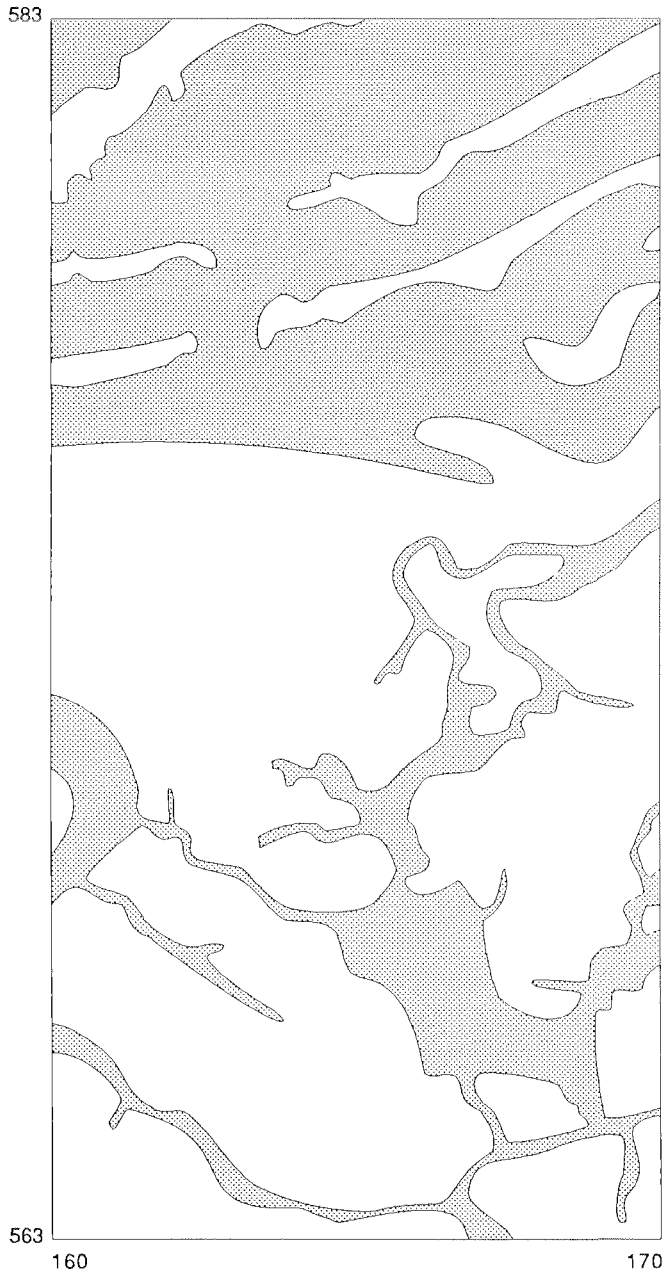


Abbildung 5 Westergo, Stichprobengebiet: paläogeographische Skizze des Gebietes in der späten Eisenzeit bis Kaiserzeit. Legende: 1 Wasser oder Niederung; 2 Marsch.

wurde. Der letztgenannte Rücken bildete die neue Küstenlinie (Abb. 5).

Die D II-Transgressionsphase, obwohl keineswegs erosiven Charakters, verwischte das Landschaftsbild vollkommen. Das Binnenland der »Insel« Westergo wurde, vermutlich während langer Winterinundationen, von einer Schicht schweren Tons (*knipklei*) bedeckt.[24] In diesen Gegenden wurde für längere Zeit jede menschliche Aktivität unmöglich (Abb. 6).

^{14}C-Daten von Vegetationshorizonten auf Ablagerungen dieser Phase in Groningen lassen auf einen Beginn der D II-Transgressionsphase im Laufe des 2.Jahrhunderts und vermutlich schwere Überschwemmungen im 3.Jahrhundert schließen.[25] An sich ist beim Übertragen von geologischen Daten auf andere Gegenden Vorsicht geboten. Weil aber die landschaftliche Situation im Zentrum Westergos vermutlich der der nördlich und westlich der Stadt Groningen gebildeten Marsch ziemlich ähnlich sah – niedriges Niveau im Vergleich zum jüngeren, höher aufgeschlämmten Küstengebiet, (deshalb) schlechte Entwässerungsmöglichkeiten –, erscheint mir eine zeitliche Übereinstimmung der Ereignisse in beiden Gegenden akzeptabel.

Eigentlich wäre ich berechtigt, die Skizze an dieser Stelle zu beenden, denn die zeitliche Obergrenze meiner Studie ist hiermit erreicht. Das archäologische Bild der Besiedlung zwischen etwa 600 vor und 400 n.Chr. zeigt jedoch einige »blinde Flecken« (siehe die Verbreitungskarte 63). Diese sind zum Teil auf die siedlungsfeindlichen Umweltbedingungen, die damals dort herrschten, zum Teil vermutlich auch auf eine spätere Erosion zurückzuführen. Hauptschuldiger ist die D IIIa-Transgressionsphase. Von der Marne und der Mittelsee aus wurde die »Insel« Westergo schwer beschädigt. Vermutlich sind mehrere alte Siedlungsplätze spurlos weggeräumt worden.

Die Siedlung Jellum bietet ein gutes Beispiel.[26] Das heutige Dörfchen, eine Wurt, liegt am alten Mittelseedeich. Östlich des Deiches sind vor einigen Jahren bei Dränierungsarbeiten in einer Wiese (Gelände der ehemaligen Tammema State), über eine größere Strecke verstreut, Funde aus der Eisenzeit, der Kaiserzeit und der Merowingerzeit zum Vorschein gekommen. Ein

24 Ter Wee 1976, 83. Die Ablagerung dieser Schicht wurde in den Wurten Klein Gietens (Modderman 1952), Feins und Felsum (Van Giffen ungedr.) nachgewiesen.
25 Streurman & Taayke 1989.
26 Auskunft E. Kramer (FM).

kleiner Teil der Funde war abgerundet, das heißt mit Wasser in Kontakt gewesen. Wir dürfen annehmen, daß an dieser Stelle die Wurt während der D IIIa-Transgressionsphase völlig rasiert worden ist.

1.4 Stand der archäologischen Forschung

Die Wurtenforschung in den Niederlanden war lange Zeit der exklusive Bereich zweier Personen, des Archäologen Prof. Dr. A.E. van Giffen und des Juristen Mr. P.C.J.A. Boeles. Sie ergänzten sich gewissermaßen. Boeles, in seiner Freizeit Konservator des Fries Museum, war mit der Feder, nicht jedoch mit dem Spaten vertraut. Er bemühte sich vor allem, den Funden aus den Wurten einen sinnvollen Hintergrund zu besorgen. Van Giffen dagegen wurde von naturwissenschaftlichen und siedlungstechnischen Fragestellungen wie Bodenbeschaffenheit, Wurtaufbau und Siedlungsstruktur angezogen.

Van Giffens zwischen 1910 und 1920 erschiene Publikationen zeigen ein großes Interesse für die Frage der »Bodensenkung«.[27] Die absolute Tiefe oder Höhe der Wurtsohlen, die Merkmale der unterliegenden Meeresablagerungen und das angebliche Alter der untersten Wohnschichten benutzte er zum Feststellen des relativen Anstiegs des Meeresspiegels[28] seit dem Anfang unserer Zeitrechnung. In den Wurtaufbau als solchen vertiefte er sich schon, aber zum ernsthaften Studium kam es erst später (Grabung Wierhuizen). Die Funde interessierten ihn anscheinend nicht; sie wurden in seinen Aufsätzen stiefmütterlich (Maßstab der Zeichnungen 1:10!) behandelt, obwohl er der Keramik in seiner Dissertation über die Fauna der Wurten noch mehrere Seiten gewidmet[29] und im Laufe der Jahre eine beträchtliche Sammlung aufgebaut hatte.[30]

In den 20er und 30er Jahren erwähnte Van Giffen in den *Jaarverslagen van de Vereeniging voor Terpenonderzoek* hin und wieder den Stande der Dinge bei kommerziellen Abtragungen, übrigens meistens außerhalb

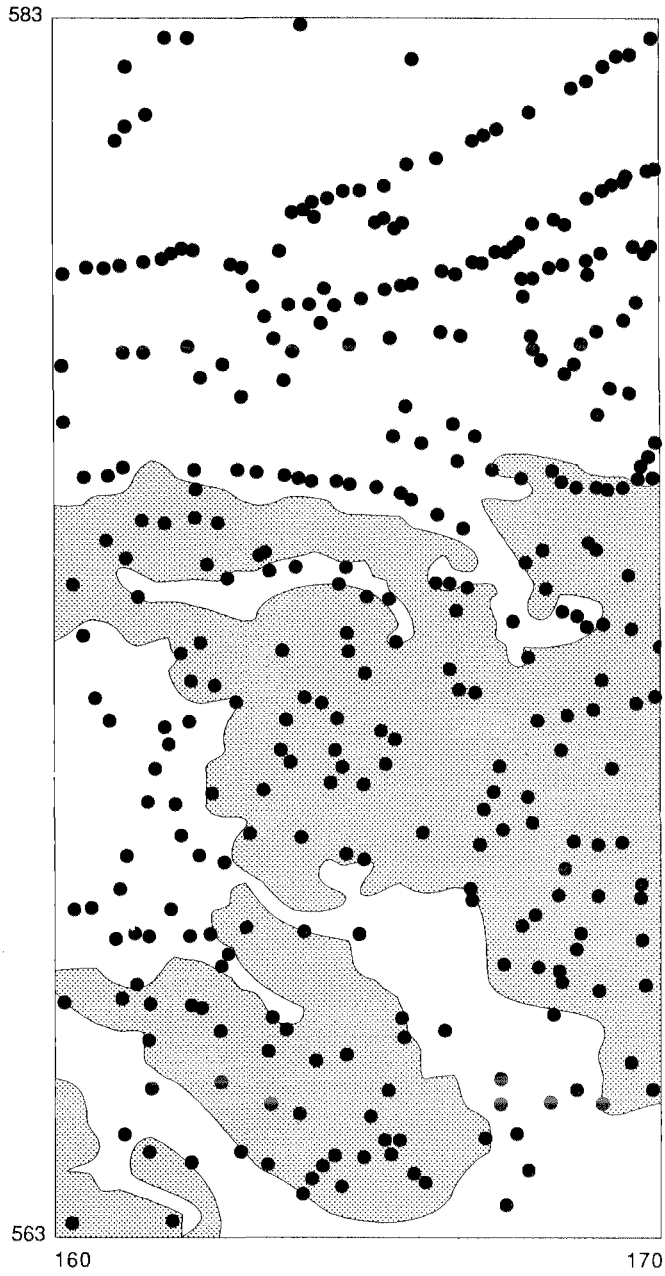


Abbildung 6 Westergo, Stichprobengebiet: Verbreitung von *knipklei* (hauptsächlich Dünkirchen II-Ablagerungen). Nach den Bodenkarten 5 West und Ost und 10 West und Ost (Bodemkaart van Nederland 1974; 1976). Legende: 1 *knipklei*; 2 (vermutliche) Wurt oder andere Siedlung.

27 Z.B. Van Giffen 1916.
28 Damals hielt man Bodensenkung für den wichtigsten Faktor.
29 Van Giffen 1913.
30 Diese verkaufte er 1912 dem FM und dem RMO.
31 Van Giffen 1926; 1928.
32 Van Giffen 1926.
33 Van Giffen 1922; 1924.
34 Van Giffen ungedr.
35 Modderman 1952.

Westergos (Berg Sion bei Dokkum, Westeremden und vor allem Ezinge in Groningen). Er publizierte jedoch auch einige Profile der Wurt »De Parel« bei Tzum[31] und der Wurt Hatsum II in der Gegend von Dronrijp.[32] Seine einzige Grabung in Westergo fand ebenfalls in Hatsum (Wurt Hatsum I)[33] statt.

Erst viel später, nachdem er emiritiert war, leitete er im Auftrag der »Vereeniging voor Terpenonderzoek« und des BAI einige Probegrabungen in Felsum, Hichtum, Feins, Klein Gietens und Kubaard.[34] Klein Gietens war auch schon 1951 von Modderman studiert worden.[35] Für eine Grabung größeren Umfangs, mit der die Ergebnisse der Grabung in Ezinge überprüft und neue Fragestellungen untersucht werden sollten, war keine dieser Wurten geeignet. Die Wahl des BAI fiel dann letztes Endes auf die Wurt Tritsum. Diese ist die einzige in Westergo, die großflächig erforscht worden ist.[36] Leider fehlt noch immer die endgültige Publikation über diese Grabung.

Weitere kleinere Notgrabungen wurden in den vergangenen Jahren in oder bei u.a. Bolsward[37] Sneek,[38] Kimswerd,[39] Pingjum, Terp,[40] De Vlaren und in Wommels durchgeführt. Vor kurzem (1988) wurde eine überschwemmte Moorsiedlung im Gebiet zwischen Sneek und Scharnegoutum untersucht.

Für alle diese Grabungen und Beobachtungen trifft zu, daß es oft nicht an Funden, das heißt an Keramik und Knochen, fehlt, daß jedoch interpretierbare Befunde sich meistens auf Brunnen beschränken.[41] In Tritsum konnten, außer vielen Grubenhäusern in den obersten Schichten, nur die Grundrisse eines oder zweier Häuser festgestellt werden.[42] Im Zentrum der Wurt Hatsum I stieß Van Giffen auf eine schwer zu deutende, NW-SO orientierte Pfostenkonfiguration.[43]

Anders als in Oostergo und Groningen waren die Bedingungen für eine gute Erhaltung von organischem Material in Westergo nicht günstig. Konservierende Mistschichten, wie sie zum Beispiel in Westeremden,[44] Ezinge[45] oder in Hoogebeintum[46] angetroffen wurden, fehlen überhaupt oder sind nur stellenweise und dann noch schwach entwickelt.[47] Hinzu (und mit hierdurch?) kommt es, daß die Wurten in Westergo ziemlich niedrig geblieben sind. Viele Gräben und Gruben schneiden ältere Auftragungsschichten oder überschneiden sich, was zur Folge hatte, daß deren Inhalt mehrere Male versetzt wurde. Infolge dieses Durcheinanders hat sich die chronologische Trennbarkeit individueller Wohnschichten in Tritsum als problematisch erwiesen. Aus Sparsamkeit wurden Pfosten nach Benutzung aus dem Boden gezogen und vielleicht – neben Mist und Torf – als Brennstoff verwendet. Hausgrundrisse sind denn auch kaum zu erkennen.

Für diese Keramikstudie ist dies alles an sich von untergeordneter Bedeutung, aber es gibt eine Konsequenz: es ist nahezu unmöglich, Funde bestimmten Teilen eines Hauses oder einer Siedlung zuzuweisen. Grabungsbelege, ohnehin nicht zahlreich, können in dieser Studie nicht verwendet werden. Es gibt jedoch eine Ausnahme: Henkelgefäße, die im Fries Museum etwa 80 Prozent der unbeschädigten größeren Töpfe ausmachen, stammen sehr oft aus Brunnen.[48]

Knapp zwei Dutzend Feuersteinsicheln,[49] im südlichen Teil Westergos aufgefunden (Abb. 7), haben im Laufe der letzten Jahrzehnte manche Feder in Bewegung gebracht. Aufgrund der vielen spätbronzezeitlichen Sichelfunde in West-Friesland (Noord-Holland) rechnen Halbertsma[50] und letztlich sogar Waterbolk[51] damit, daß die ersten Siedler aus dieser Gegend gebürtig waren. Von der Grabung Bovenkarspel-Het Valkje ist bekannt, daß ein Rückgang der Lebensbedingungen (Anstieg des Grundwassers) um 800 cal. BC[52] weitere Besiedlung unmöglich machte. Weil das Marschengebiet sich damals vermutlich von Westergo bis an Texel erstreckte,[53] gehörte eine Wanderung von Holland nach Friesland an sich zu den Möglichkeiten. In diesem Fall war man aber lange unterwegs.

36 Waterbolk 1961a.
37 Halbertsma 1956.
38 Elzinga 1962.
39 Kramer 1984.
40 Kramer 1983.
41 Z.B. Kramer 1984, fig. 3.
42 Waterbolk 1961a.
43 Van Giffen 1924, Abb. 8.
44 Van Giffen 1926.
45 Van Giffen 1936.
46 Bohrungen der RGD 1988, anläßlich des Erdrutsches einer abgetragenen Seite dieser hohen Wurt, brachten erhebliche Mistschichten ans Licht (pers. Mitt. M.W. Ter Wee).
47 Van Giffen n.p.; Waterbolk 1961.
48 Boeles 1951, 181.
49 Van Gijn & Waterbolk 1984, Appendix B.
50 Halbertsma 1963, 55; 1982, XXIV–XXVIII.
51 Waterbolk 1988, 14–5.
52 IJzereef 1981, 142. Wurtbau wurde zwischen 2750 und 2600 BP, d.h. ungefähr 900–800 cal. BC, datiert.
53 Zagwijn 1986.

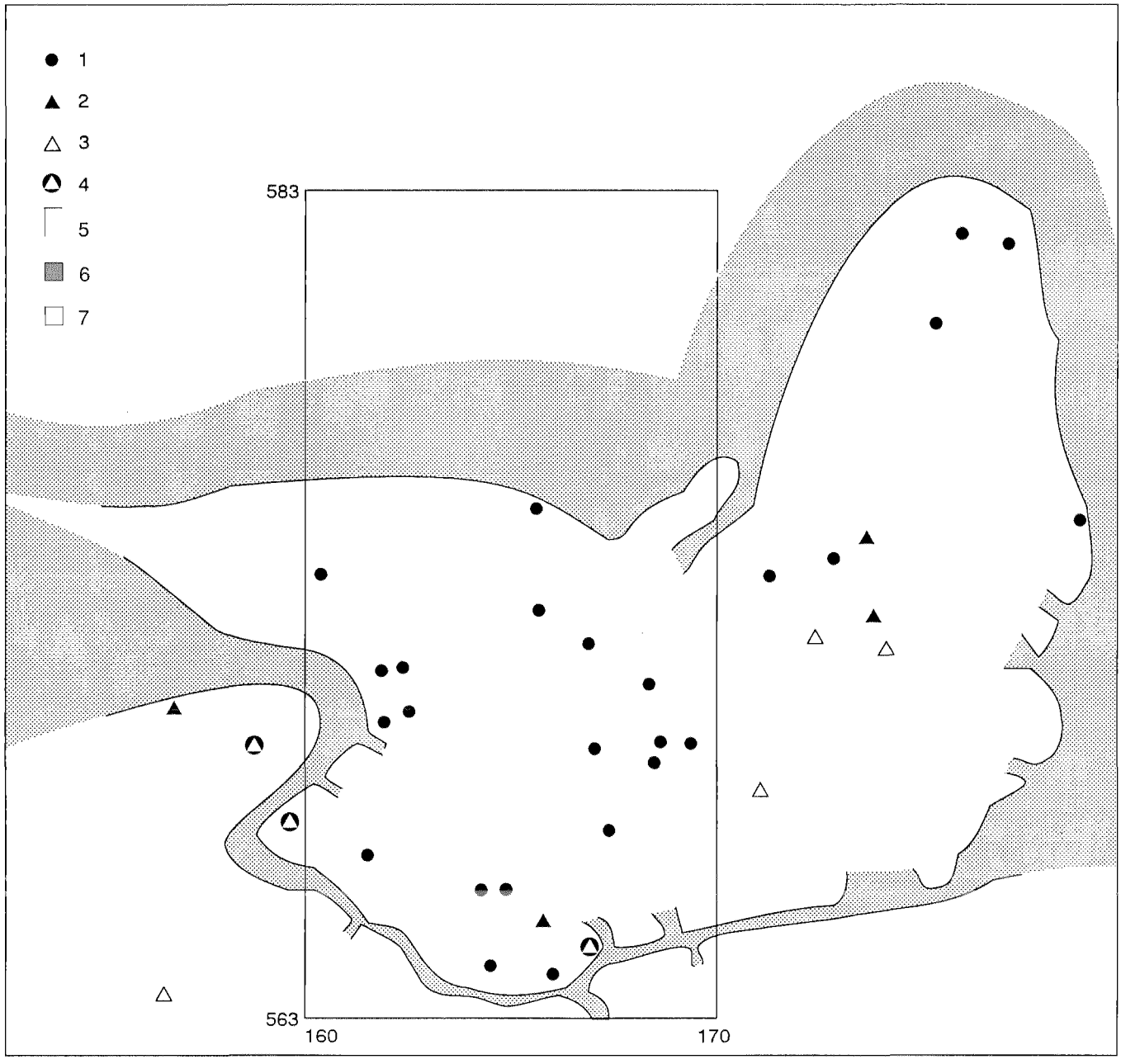


Abbildung 7 Westergo: Verbreitung der Feuersteinsicheln. Legende: 1 Wurt mit Keramik der Typen G1, G2 und/oder V1; 2 Fundstelle von Feuersteinsichel(n); 3 wie 2, nicht exakt lokalisiert; 4 wie 2, in Wurt wie 1; 5 Umrißlinie des Stichprobengebietes; 6 (vermutlich) Wasser; 7 (vermutlich) Marsch.

Man sollte sich hüten, die Sicheln als eine Art *trait d'union* zu benutzen. Sie sind ja auch aus der Eisenzeit bekannt, aus ganz anderen Teilen des Marschengebietes, z.B. Middelstum-Boerdamsterweg[54] und Jemgum,[55] und auch von Sandböden, z.B. Drenthe und Gelderland.[56] Ein Vergleich der frühesten Keramik aus Westergo mit der spätesten aus Westfriesland könnte eine Lösung dieser Frage vorantreiben.[57]

Mehr noch als Feuersteinsicheln haben Keramikfunde die Diskussion über die Herkunft der ersten Siedler bestimmt. Boeles und Van Giffen bemerkten die gegenseitige Ähnlichkeit einiger jüngerer (*Friesch-Bataafsche*) Gefäßformen der Sand- und der Marschböden, aber die älteste Keramik, die geometrisch verzierte Ware, stammte ihrer Ansicht nach aus dem hallstättischen Gebiet.[58] Erst ein halbes Jahrhundert später war es Waterbolk, der anhand der Funde aus einem früheisenzeitlichen Gräberfeld bei Ruinen, im Südwesten von Drenthe, und anhand von Funden aus Westergo eine Ähnlichkeit der frühesten Keramik bemerkte. Er gab ihr einen Namen, der zugleich eine Richtung enthielt.[59] Seine Gefäßtypen Ruinen-Wommels (RW) I bis III, später IV,[60] betonen eine Verwandtschaft zwischen den Einwohnern des Sandgebietes und denen der Marsch, jedenfalls in der ersten Siedlungsperiode. Waterbolks Ausdehnung der Gültigkeitsdauer seiner Zwillingstypologie bis zum Anfang unserer Zeitrechnung verschleiert das Bild einigermaßen. Man könnte den Eindruck bekommen, als unterhielten die damaligen Friesen und Drenthen die ganze Zeit hindurch enge Beziehungen, was sehr fraglich ist. Falls meine Daten es gestatten, möchte ich im letzten Artikel diese Frage beantworten.

Aufgrund der Keramik mit geometrischen Mustern dachte Van Giffen am Ende seines Lebens noch immer anders über die Herkunft der ersten Marschbewohner. In einer ziemlich verworrenen Darstellung[61] betonte er einerseits eine Übereinstimmung mit Formen im deutschen Hinterland (Unterbimbach in Hessen!), was meiner Meinung nach eine ganz falsche Spur ist – der hallstättische Zeitgeist beherrschte nun einmal einen sehr großen Raum –, wies aber anderseits auf die Ähnlichkeit zwischen dem Typus Ruinen-Wommels I und der frühesten Keramik in Hatzum-Boomborg und Jemgum hin. Er erwähnte in diesem Zusammenhang die alte friesische Legende der *lundgong*, der Herkunft über das Meer. Er schlug sogar vor, den Namen des Typus in Jemgum-Wommels oder, für die geometrisch verzierte Form, Hatzum-Middelstum zu ändern.

Ein fremdes Gesicht in der Runde ist das des Feuersteinspezialisten Bohmers. Er entwarf eine Methode für die statistische Bearbeitung von Keramik und hoffte, ihre Nützlichkeit anhand von Funden aus Siedlungen der Bandkeramik in Limburg und aus eisenzeitlichen Siedlungen in Westergo zu demonstrieren.[62] Die Keramik wurde eingehend vermessen (Rand- und Wanddurchmesser, Winkel zwischen Randfläche und Bauch, u.s.w. – alles in allem 11 Variablen) und die Verzierung codiert aufgezeichnet.

Die Ergebnisse der Keramik aus Westergo lassen sich zum Teil mit den meinigen vergleichen. Eine gewisse Übereinstimmung sehe ich schon, aber viel praktischen Wert kann ich an den vielen Histogrammen nicht ablesen. Aus den Schlußfolgerungen spricht kein einziges »Gefühl«, das heißt, er sah keinen Unterschied zwischen wichtigen und beiläufigen Änderungen. Hinzu kommt, daß seine Ansicht über die Reihenfolge, die auf der Einteilung Waterbolks basiert, doch wohl zu einfach war.

1.5 Das Stichprobenmaterial

Die große Mehrheit der Funde, die ich für meine Arbeit verwendet habe, stammt aus der langen Zeit (1897–1950), in der Boeles Konservator des Friesischen Museums war. Er ließ während der zahlreichen Wurtabtragungen möglichst viele Gegenstände sammeln. Vieles, sehr vieles ist jedoch verlorengegangen und vernichtet worden. Die an den Abtragungen beteiligten Arbeiter, Aufseher und Schiffer betätigten sich nur aus pekuniären Gründen. Sie hatten Materielles im Kopf und waren an dem alten Zeug nicht besonders interessiert, es sei denn, es brachte etwas ein. Für ein paar Gulden – der Tagelohn eines Arbeiters betrug vielleicht zwei oder drei Gulden! – konnten Sammler wie Mensonides, Van der Toorn und auch der junge Van Giffen eine recht hübsche Kollektion ankaufen. Es ist aber we-

54 Boersma 1988a.
55 Haarnagel 1957.
56 Hulst 1987.
57 Brandts Übersicht über westfriesische Funde verspricht für diese Theorie nichts Gutes (Brandt 1988).
58 Boeles 1913; Van Giffen 1913, 37–8.
59 Waterbolk 1959; 1962; 1965.
60 Waterbolk 1977.
61 Van Giffen 1973.
62 Bohmers 1964.

niger wichtig zu wissen, was da in den Bäuchen der Schiffe verschwand und von den Bauern auf kargem Boden wieder ausgestreut worden ist, als herauszufinden, welche Keramik von Sammlern, in diesem Falle Boeles, bevorzugt wurde.

Es kommt mir so vor, als sei man im allgemeinen – und Boeles bestätigt diese Regel – ziemlich scharf gewesen auf vollständige Gegenstände und auf Scherben mit irgendeiner Verzierung. Beide Fundkategorien sind nämlich reichlich übervertreten: Hunderte von kleinen, amorphen aber ganzen Näpfen und Bechern füllen die Schubladen, während aus mancher Wurt mehr geometrisch verzierte Scherben, eine ziemlich seltene Fundgruppe, geborgen sind als von allen anderen Sorten zusammen. Ein ganz anderer Fall ist eine Wurt *op* Holprijp (42)[63]. Anscheinend wurde hier nur Keramik mit Randverzierung (> 100 Stück) gesammelt.

Ähnliches trifft für das Verhältnis zwischen einheimischen und römischen Waren zu. Man könnte glauben, daß die Wurtenreihe zwischen Wijnaldum und Berlikum in der römischen Kaiserzeit kaum bewohnt wurde, wenn die vielen terra sigillata-Scherben uns nicht auf andere Gedanken bringen würden.

Funde, die in neuerer Zeit ihren Weg ins Museum gefunden haben, wurden ebenfalls nicht mit verbundenen Augen aufgelesen. Sowohl Zufallsfunde als auch von Museumsangestellten während Notgrabungen gesammelte Scherben sind selektiert worden: im Interesse der Repräsentanz (!) wurde von jedem »Typus« (siehe unten) eine gewisse Menge aufbewahrt.

Das Bild kennt eine weitere Verzerrung: die Anzahl der Fundstellen ist wesentlich geringer als die der abgetragenen Wurten.[64] Im 19.Jahrhundert wurde kaum systematisch gesammelt. 1853 wurde »Frieslands Kabinet van Oudheden«, das spätere Fries Museum, gegründet, aber eine aktive Erwerbung hatte dies nicht zur Folge. Erst im 20.Jahrhundert, als die Mehrheit der Wurten schon verschwunden war, wurden einige der Abtragungen mehr oder weniger von Gehilfen des Fries Museum überwacht: zum Beispiel Tolsum (66), wegen der vielen Scherben mit geometrischem Muster – übrigens meist in Briefmarkenformat –, und Hichtum (119), weil es Boeles klar war, daß es hier eine der ältesten Siedlungen betraf.[65] Andere Abtragungen wurden hin und wieder bei günstigem Wind mit dem Fahrrad besucht, aber dieses Zeichen von Interesse brachte nicht viel ein. Sammler, die einiges zu spendieren hatten, kamen dem Museum manchmal zuvor, ließen sogar die Beute reservieren![66]

Kurz gesagt, die Sammlung des Fries Museum kann, aufgrund der selektiven Wahl in den Vorkriegsjahren und der zahlenmäßigen Kriterien in späterer Zeit, nicht als repräsentativ bezeichnet werden. Es handelt sich keineswegs um eine Widerspieglung dessen, was nach mehr als 2000 Jahren noch in einem Wurtkörper angetroffen werden könnte. Dabei muß unser Urteil ein mildes sein, denn auch bei einer wissenschaftlichen Grabung wird vieles übersehen – es sei denn, man siebte eine ganze Wurt.

Boeles gab jeder Wurt, die Funde einbrachte, eine Inventarnummer. Die Funde wurden anschließend pro Wurt aufgehoben. In fünf imposanten Folianten waren für jede Fundstelle ein paar Seiten reserviert. Sein Nachfolger Elzinga änderte dieses System total: eingehende Funde wurden jahres- und monatgemäß durchnumeriert und in einer Fundkartei (pro Gemeinde) notiert. Außerdem legte er eine Kollektion für Forschungszwecke (*studiecollectie*) an. Alle Gegenstände, auch die vorher erworbenen, wurden pro »Typus« aufgehoben. Mittels einer Typenkartei (nicht an die Fundkartei gekoppelt!) wurde diese Kollektion zugänglich gemacht.

Eine gewisse geistige Gelenkigkeit war schon erforderlich, um mir dieses Unglückssystem anzueignen. Die Art und Weise der Aufbewahrung, für eine flüchtige Kenntniserwerbung recht gut, hat die Durchführung meiner Untersuchung nicht gerade beschleunigt. Fundkomplexe konnten, da über viele vollgepackte Schubläden und Regalbretter verteilt, nur auf dem Papier wieder zusammengestellt werden. Ein Teil der auf den Inventarkarten aufgeführten Funde war nicht aufzufinden, vermutlich weil er in der Typenkartei unter falscher Flagge eingetragen oder überhaupt nicht in die Kollektion aufgenommen worden war. Außerdem war die Buchführung der neu erworbenen Funde und neu entdeckten Fundstellen sehr lückenhaft.

63 Die Fundstellen sind numeriert; siehe Tab. 13.

64 Nach Angaben von Halbertsma war 1944 dreiviertel der 910 friesischen Wurten völlig oder teilweise abgetragen (Arjaans 1990, 59). Die Buchführung Boeles' zählte damals Funde aus ungefähr 250 Wurten.

65 Boeles 1913.

66 Notizen FM 1920–30.

Die Typochronologie (Phase 1) ist anhand der Keramik der Forschungskollektion und der Ausstellung des Fries Museum aufgestellt worden.[67] Die Zahl dieser individuell beschriebenen Funde beträgt 3188.
Für die Verbreitungskarten habe ich anhand der Typologie versucht, alle weiteren zugänglichen Funde aus dem Stichprobengebiet zu beschreiben (Phase II), einschließlich der nicht-inventarisierten Fundkomplexe und des Grabungsmaterials des BAI und ROB sowie der Sammlungen Van Giffens' und Verleurs' im RMO (n = 3864). Die Gesamtzahl beträgt 7052 Funde.
Von zwei Fundkomplexen, die momentan von Amateurvereinen (AWN, Argeologysk Wurkferbân) in Zusammenarbeit mit dem FM beschrieben werden, Zathe Truurd (38) und Grote Vlaren (52), habe ich flüchtige Notizen gemacht. Ich habe mir keine Privatsammlungen angesehen. Die Funde der Notgrabung der Wurt Terp (49)[68] und der großen Grabung Tritsum (72)[69] sind nicht durchgesehen worden. Von Tritsum habe ich in den Kapiteln 3 und 4 einige Ergebnisse meiner Magisterarbeit[70] verwendet.

1.6 Die Fundstellen

Die Lokalisierung der Fundorte bereitete erhebliche Schwierigkeiten. In den letzten Jahren ist es üblich geworden, Fundstellen unter Anwendung des holländischen Koordinatensystems bis auf einige Meter genau festzulegen. Die früheren Angaben, aus Boeles' Zeit, sind jedoch weniger präzise: »10 Minuten südlich von Achlum« oder »Wurt von S.J. Timmenga«, oder »Kleeblume«, »Kleeblatt«, »Butterfaß«, »Perle« – einige dieser Wurten sausen noch immer wie düstere Kometen durch das friesische All. Neulich hat Tineke Volkers eine Art Konkordanz von Boeles' Inventarnummern mit den tatsächlichen Standorten geschaffen. Einige ihrer Vorschläge habe ich übernommen.
In den meisten Fällen betrifft es Wurten, die schon lange Zeit unbewohnt waren, die damals vermarktet wurden, und deren fruchtbare Massen unter verführerischen Phantasienamen in den Zeitungen angepriesen wurden. Zu den meisten anderen Wurten gehörten richtige Namen, auf -ens, -werd oder -um endend, stolze Namen aus ursprünglich frühmittelalterlichen Zeiten,[71] aber auch hier verschmähten die Besitzer den finanziellen Gewinn nicht. Diese Siedlungen jedoch machten mir keine Probleme.

1.7 Beschreibung der Keramik (Phase 1)

Zur Herstellung der Typochronologie ist ungefähr die Hälfte der Keramik in codierter Form beschrieben worden (Tab. 1). Mein erster Entwurf einer derartigen Beschreibung stammt aus der Zeit, als ich mich während meines Studiums mit der Keramik von Tritsum beschäftigte.[72] Die heutige Version stimmt in großen Linien mit der vorigen überein, ist aber besser auf im Arbeitsgebiet vorkommende Formen und Merkmale zugeschnitten.
Die Beschreibungsliste ist ziemlich locker aufgestellt worden. Da es sich um handgefertigte Keramik handelt, habe ich die Meßgenauigkeit nicht immer hundertprozentig eingehalten. Durchmesser von Rand und Wand sind mit Schablonen gemessen worden, die jeweils 2 cm differierten – deshalb sind bei kleinen Fragmenten mit einem großen Durchmesser gerade Werte in der Mehrzahl. Die Krümmungen eines Gefäßes sind übrigens variabel. Von oben gesehen sind zum Beispiel Henkelgefäße oft etwas oval. Die Halshöhe eines Topfes variiert, wie die Dicke der Wand und die Form des Randes.
Farben habe ich je nach Laune benannt. Die Benutzung normierter Farbenkarten (z.B. Munsell) hat für jemanden, der nicht spezifisch an dem Brennverfahren interessiert ist, wenig Sinn. Gefäße zeigen oft mehrere Farben; die vorherrschende ist gewählt worden.[73]
Die Beschreibung der Form, insbesondere die der Keramik der Kaiserzeit,[74] brachte schon einige Probleme mit sich. Die Benutzung von anthropomorphen Andeutungen wie Hals, Schulter und Bauch verlangt fast eine scholastische Bildung. Im Laufe der Beschreibungsphase wurde mir jedenfalls klar, daß das Codiersystem in diesen Punkten nicht logisch formuliert war und allzu oft ein zweideutiges Resultat zur Folge hatte. Anders gesagt, bei einigen Codierungen sind leider ziemlich unterschiedliche Formen denkbar, und umgekehrt lie-

67 Versehentlich sind Funde aus der Wurt Gerns, bei Witmarsum, mit einbezogen worden. Erst später wurde mir klar, daß diese Wurt außerhalb des Stichprobengebietes lag.
68 Kramer 1983.
69 Waterbolk 1961a.
70 Taayke ungedr.
71 Gysseling 1969; Halbertsma 1975.
72 Taayke ungedr.
73 Meistens die Farbe der Randzone.
74 Insbesondere bei Gefäßen mit sehr kurzem Hals war der Unterschied zwischen Rand und Hals unklar.

ßen sich einige Randscherben auf verschiedene Weise codieren. In den folgenden Teilstudien hoffe ich, das Ausmaß dieses Problems – übrigens eher zeitraubend als fälschend, denn die Effekte waren in den meisten Fällen hinterher korrigierbar –, reduzieren zu können.
Natürlich wäre ein System von ausschließlich Maßen und Gradienten, wie das von Van Heeringen,[75] eine Alternative gewesen. Ich bevorzugte aber die herkömmliche Methode, weil ich auf *face validity*, das subjektive »Erkennen« eines Typs, vertraute und noch immer vertraue. Ein Typ ist eine Sammlung von Gefäßen, die zwar als Gruppe gewisse Merkmale gemeinsam haben, aber individuell nicht immer all diese Kennzeichen aufweisen. Die Gefahr eines überwiegend metrischen Systems ist, daß später während der statistischen Bearbeitung Formen gruppiert werden, die zwar gewisse Übereinstimmungen aufweisen, zum Beispiel von derselben Größe oder glatt poliert sind, sonst aber sehr heterogen aussehen,[76] oder umgekehrt, daß ein Typ mit großer Variation unnötig in Subgruppen aufgeteilt wird.
Man sollte vermeiden, schon beim Beschreiben ins Typisieren zu geraten. Weil ich aber die Keramikeinteilung im voraus zu erleichtern wünschte, habe ich das vorläufig geschätzte Alter eines Fundes in die Beschreibung mit aufgenommen.[77] Auf diese Weise wurde vermieden, daß zeitlich weit auseinanderliegende, aber ziemlich ähnliche Fragmente aufgrund bestimmter formaler Kriterien in einer Typusgruppe landeten. Das Endurteil stimmte übrigens nicht immer mit dem vorläufigen überein.
Eine codierte Beschreibung kann die Form eines Gefäßes nie völlig wiedergeben. Dies würde eine Materialkenntnis voraussetzen, die das Studium als solches überflüssig machen würde. Ich habe deshalb die meisten Funde skizziert. Erstens dienten die Zeichnungen zur Korrektur und Ergänzung der Einteilungen – Schreib- und Tippfehler lassen sich bei an sich bedeutungslosen Ziffern kaum vermeiden, und manchmal möchte man seine Meinung ändern –, zweitens gaben sie zusätzliche Informationen über schwer in Worte oder Codierungen zu fassende Merkmale.

2 TYPOLOGIE

2.1 Gestaltung der Typologie

Die in den letzten Jahrzehnten publizierten Typologien zeitgleicher Keramik aus benachbarten Gebieten zeigen in ihrem Ordnungsprinzip nur wenig Variation. Die Einteilung von Van Es in Format- und Formklassen (I *Situlae*, II *Dolia*, III engmündige Gefäße, IV Terrinen u.s.w.), erstmals verwendet in seiner Publikation über die Grabung Wijster,[78] hat späteren Veröffentlichungen einen deutlichen Stempel aufgedrückt.
Ein ganz anderes Verfahren ist die Betonung von Dichotomien wie eng- versus weitmündige oder glatt- versus rauhwandige Keramik.[79] Bei seiner Beschreibung der friesischen Keramik der späten Eisenzeit und Kaiserzeit machte Boeles einen Unterschied zwischen glattrandigen Töpfen (mit Henkeln) und Gefäßen mit Randverzierung.[80] Ähnliches bemerkte Löbert an der Keramik der Grabung Hatzum-Boomborg.[81] Die Bearbeitung der Keramik von Tritsum lehrte mich, daß beide Zweiteilungen (glatt/rauhwandig, mit/ohne Randverzierung) sich recht gut zusammenschmieden lassen.

Bei der Einteilung lassen sich folgende Schritte erkennen:
1 Zunächst wurde zwischen geschlossenen (Terrinen), offenen (Schalen) und anderen Gattungen unterschieden.
2 Innerhalb der erstgenannten Gruppe wurde alle Keramik mit einem Bauchdurchmesser zwischen 10 und ungefähr 20 cm – die Obergrenze schwankt je nach Periode – in die Kategorie Kleinkeramik eingeteilt.
3 Der weitaus größte Teil des Stichprobenmaterials besteht aus größerer Keramik. Anders als Van Es scheint mir eine Unterteilung in Terrinen und *Dolia* (Van Es Typen IV und II) nicht sinnvoll. Weil ich mir vorgenommen hatte, eine praktische Typologie aufzustellen, wählte ich eine Haupteinteilung, die auf der An- oder Abwesenheit von nur einem Merkmal, nämlich Randverzierung, basiert.
Keramik mit verziertem Rand (Tupfen, Wellen, Kerben) besitzt ungefähr dieselben Gefäß- und Randformen wie die andere Kategorie. In diesem Sinne wäre es

75 Van Heeringen & Van Trierum 1981.
76 Whallon 1982.
77 Siehe Tab. 1: 32 und 33.
78 Van Es 1967.
79 Nortmann erwähnt einen »Dualismus« zwischen glatt- und rauhwandiger Keramik (Nortmann 1983a, 28).
80 Boeles 1951, 179–82.
81 Löbert 1982, 103.

unnötig, diese Keramik separat zu besprechen. Andererseits weist eine ausgeprägte Kombination von Kennzeichen darauf hin, daß randverzierte Keramik zu einem bestimmten, obgleich unbekannten Zweck angefertigt wurde. Diese Kennzeichen sind:[82]
- Weitmündigkeit;
- relativ großes Format;
- rauhe, jedenfalls keine glatte Oberfläche (Oberteil);
- Abwesenheit von Henkeln;
- Abwesenheit von Linienverzierung.

Umgekehrt findet man bei glattrandiger Keramik:
- Weit- und Engmündigkeit;
- durchschnittlich mittelgroßes Format;
- im allgemeinen sorgfältige Behandlung der Oberfläche (Oberteil);
- Henkel;
- Linienverzierung (geometrische Muster, *streepband*).

Natürlich kann man gegen eine derartig simple Zweiteilung Einspruch erheben. Während Randverzierung bewußt angebracht worden ist, fußt deren Abwesenheit nicht notwendigerweise auf einer ebenfalls bewußten Entscheidung. Ein weiterer Einwand ist die möglicherweise beschränkte Bedeutung dieses Basisprinzips, denn Randverzierung hat in den anderen Stichprobengebieten vermutlich eine weniger bedeutungsvolle Rolle gespielt. Für diese Gebiete müssen also andere Einteilungskriterien gefunden werden, was die gegenseitigen Vergleichsmöglichkeiten nicht gerade fördern wird. Ein dritter Einwand könnte sein, daß Beschreibung und Interpretation sich überschneiden.
Das hier benutzte Kriterium besitzt eine große Schlagkraft: alle Randscherben können in eine der beiden Hauptgruppen eingeteilt werden. Erst wenn man innerhalb der glattrandigen Gruppe anhand der Maße zwischen Eng- und Weitmündigkeit unterscheidet, fällt eine Menge (kleinerer) Scherben aus. Alternative Angriffspunkte wie Behandlung der Oberfläche oder die An- oder Abwesenheit von Henkeln zeigen sich in dieser Hinsicht weit weniger effektiv.
Nicht immer sind alle Elemente vorhanden. Gefäße mit geometrischem Muster sind zum Beispiel nur selten mit Henkeln ausgestattet worden, und auf kaiserzeitlichen Henkelgefäßen sucht man vergebens nach Ritzlinienverzierung.
Die Gültigkeit der Zweiteilung soll nicht übertrieben werden. Ich bin davon überzeugt, daß sie in den Köpfen vieler Generationen von Töpferinnen irgendeine Rolle gespielt hat, aber die Ausnahmen – z.B. Henkelgefäße mit Tupfenrand – deuten darauf hin, daß diese Dichotomie nie ein heiliges Gesetz gewesen ist.

Als Grundlage des chronologischen Gebäudes benutzte ich die vorläufige Altersbestimmung der Keramikfragmente (siehe Par. 1.7) aufgrund der Annahme, daß meine Elementarkenntnisse des Materials für eine insgesamt korrekte, wenn auch schwebende zeitliche Einteilung ausreichten. Etwa 90% der Scherben ließen sich in drei Gruppen einordnen, vorläufig bezeichnet als frühe und mittlere Eisenzeit, späte Eisenzeit bis frühe römische Kaiserzeit sowie mittlere Kaiserzeit.

Von den Messungen an Rand und Bauch sind zwei Indizes abgeleitet worden, und zwar »relativer Randdurchmesser«, und »relative Halshöhe«.[83]
Der Randdurchmesser geteilt durch den Bauchdurchmesser liefert die Zahl des »relativen Randdurchmessers«. Dieser Meßwert gibt Information über die Weit- oder Engmündigkeit eines Gefäßes. Statt Randdurchmesser wäre Messung der Halsöffnung eher angebracht gewesen, aber die Korrelation zwischen beiden Maßen ist eine derartige (in Tritsum $r > 0{,}99$), daß ich mich auf ein Maß beschränkt habe, und zwar auf dasjenige, das sich am leichtesten messen ließ. Bei Kleinkeramik muß man vom Randdurchmesser 2–3 cm abziehen, bei größerer Keramik 3–5 cm, um zur Halsöffnung zu gelangen. Für eine Unterteilung in Weit- und Engmündigkeit macht es nichts aus, welches Maß man benutzt.
Die »relative Halshöhe« wurde berechnet, indem die Halshöhe durch den Bauchdurchmesser geteilt wurde – diese Teilung ist eine Gelegenheitswahl, denn die Höhe eines Gefäßes oder die Höhe minus Halshöhe liegen als Vergleichsfaktor eher auf der Hand. Leider sind komplette Gefäße wenig zahlreich. Der gewählte Index ist gut zu gebrauchen, ergibt bei abweichenden, z.B. schlanken, Formen jedoch Probleme.
Hin und wieder konnte der Inhalt gemessen werden. Bei vollständigen Gefäßen kann das Volumen auf einfache Weise festgestellt werden: Man braucht nur mit einem Meßbecher leichtes, nicht-destruktives Material hineinzugießen.[84] Weil ich vorwiegend mit Randscher-

82 Siehe die diesbezüglichen Tabellen.
83 Siehe Tab. 2.
84 Verlinde 1985, 290.

ben konfrontiert wurde, habe ich versucht, ihr Volumen anhand einer kleinen Stichprobe (n = 20) vollständiger, leider nicht allzugroßer Töpfe mathematisch zu rekonstruieren.
Es zeigte sich, daß das Volumen eines Gefäßes (bis zum Hals), ob es nun niedrig und weitmündig oder schlank und engmündig war, durchschnittlich in hohem Maße ($r = 0{,}95$) mit dem Inhalt eines Zylinders mit dem gleichen Durchmesser und der gleichen Höhe ($\pi \cdot r^2 \cdot h$) korrelierte. Weil ein Gefäß normalerweise keine Zylinderform aufweist, wurde das Ergebnis mit einer (experimentell gewonnenen) Konstante (0,54) multipliziert. Die Maximal-Abweichung zwischen einem gemessenen und dem errechneten Wert betrug etwa 15%, was für diesen Zweck durchaus akzeptabel ist.
Ein Beispiel: ein Topf mit einem Bauchdurchmesser von 32 cm und einer Wandhöhe von 26 cm hat einen Inhalt von 11,1 l. Die Berechnung ergab $0{,}54 \times 3{,}14 \times (0{,}5 \times 32)^2 \times 26 / 1000 = 11{,}3$ l.

Die vielgestaltige Beschaffenheit handgefertigter Keramik erfordert eine Wahl: soll man die Ähnlichkeiten oder die Unterschiede betonen? Die Zahl der Merkmale ist groß, die Zahl der jeweiligen Werte noch viel größer – schon anhand einer Kombination von Randform, Magerung und Bauchdurchmesser wären leicht 100 bis 200 »Typen« aufzuzählen.
Ich habe mich bemüht, eine Einteilung vorzunehmen, die auf deutlich wahrnehmbaren Kennzeichen basiert, von denen ich vermute, daß sie absichtlich verursacht oder angebracht wurden: Format, Henkel, Verzierung, die Zahl der Glieder und dergleichen. Dieses Verfahren hatte zur Folge, daß einige Typen recht umfangreich geworden sind. Andererseits sind die Trennungslinien nicht derart locker formuliert worden, daß alle Funde irgendwo eingeordnet werden konnten. Aufgrund ungenügender oder zweideutiger Information konnten etwa ein Fünftel der Randscherben und die Mehrheit der Wand- und Bodenfragmente nicht oder nur unter Vorbehalt irgendeinem Typ oder irgendeiner Variante zugeordnet werden.[85] Bei der jüngeren glattrandigen Keramik wird z.B. zwischen weit- und engmündigen Gefäßen unterschieden. Fragmente ohne Meßwerte, die ebenfalls nicht skizziert wurden, können zwar oft chronologisch, aber nicht typologisch ausgewertet werden. Außergewöhnliche Fragmente werden in Paragraph 2.7 einzeln besprochen.
Trotz meines Bestrebens um Klarheit konnte eine gewisse Trübung des Bildes nicht vermieden werden. Keramik mit deutlichen Eigenschaften zweier verschiedener Typen, z.B. ein Henkelgefäß mit Wellenrand oder ein *streepband*-Fragment mit 3-facher Facettierung des Randes, schon wegen des chronologischen Wertes – Gleichzeitigkeit von Merkmalen – interessant, werden teils einzeln vorgeführt, teils bei dem am meisten zutreffenden Typ untergebracht.
Von jedem Typ sind einige charakteristische Beispiele abgebildet. Die Zahlenverhältnisse der Zeichnungen sind nicht repräsentativ. Veröffentlichung von relativ seltenen Formen halte ich für wichtiger als die von massenhaft auftretenden Typen.
Ich möchte davor warnen, daß man sich in die Beschreibungen und Zeichnungen verrennt. Die von mir geschaffene Ordnung stellt eine hinter dem Schreibtisch formulierte, nur scheinbare Übersichtlichkeit dar. In Wirklichkeit ist die Variabilität der Keramikformen bedrückend groß.

1 Die Typencodierung sieht folgendermaßen aus. Ein Buchstabe bezeichnet die Hauptkategorie:
G glattrandige, mittelgroße und große Keramik;
V mittelgroße und große Keramik mit Verzierung des Randes;
K Kleinformen (Henkelbecher, Situlen).
Die Trennungslinie zwischen K- und G-Keramik, die im Prinzip auf dem Bauchdurchmesser basiert, hängt vom Durchschnittswert der Größe der Typen in einer bestimmten Periode ab. Seltene Kleinformen mit einem Tupfenrand werden ebenfalls unter K besprochen.
2 Bei den Typen G4 bis G7 bezeichnet der anschließende Buchstabe »w« oder »e« Weit- oder Engmündigkeit (siehe Vorbemerkung bei Typ G4). V-Keramik ist nur ganz ausnahmsweise engmündig.
3 Die nächste Ziffer bezieht sich auf eine Unterteilung der Haupttypen dieser Kategorien. Im großen und ganzen bezeichnen die Ziffern eine chronologische Reihenfolge, aber einige Typen überschneiden sich (G4 und G5) oder sind gleichaltrig (G6 und G7).
Weil das Tempo der Änderungen bei glattrandiger Keramik schneller war als bei V-Keramik, in meinen Augen jedenfalls, läuft die Entwicklung der beiden Kategorien nicht synchron. Typ V4 folgt zum Beispiel auf Typ V3, ist aber gleichaltrig mit den Typen G5 bis G7.
4 Ein letzter Buchstabe wurde zur weiteren Unterte-

85 Die Restklasse (Tab. 14) zählt z.B. 1200 geometrisch verzierte Wandscherben und 200 Böden.

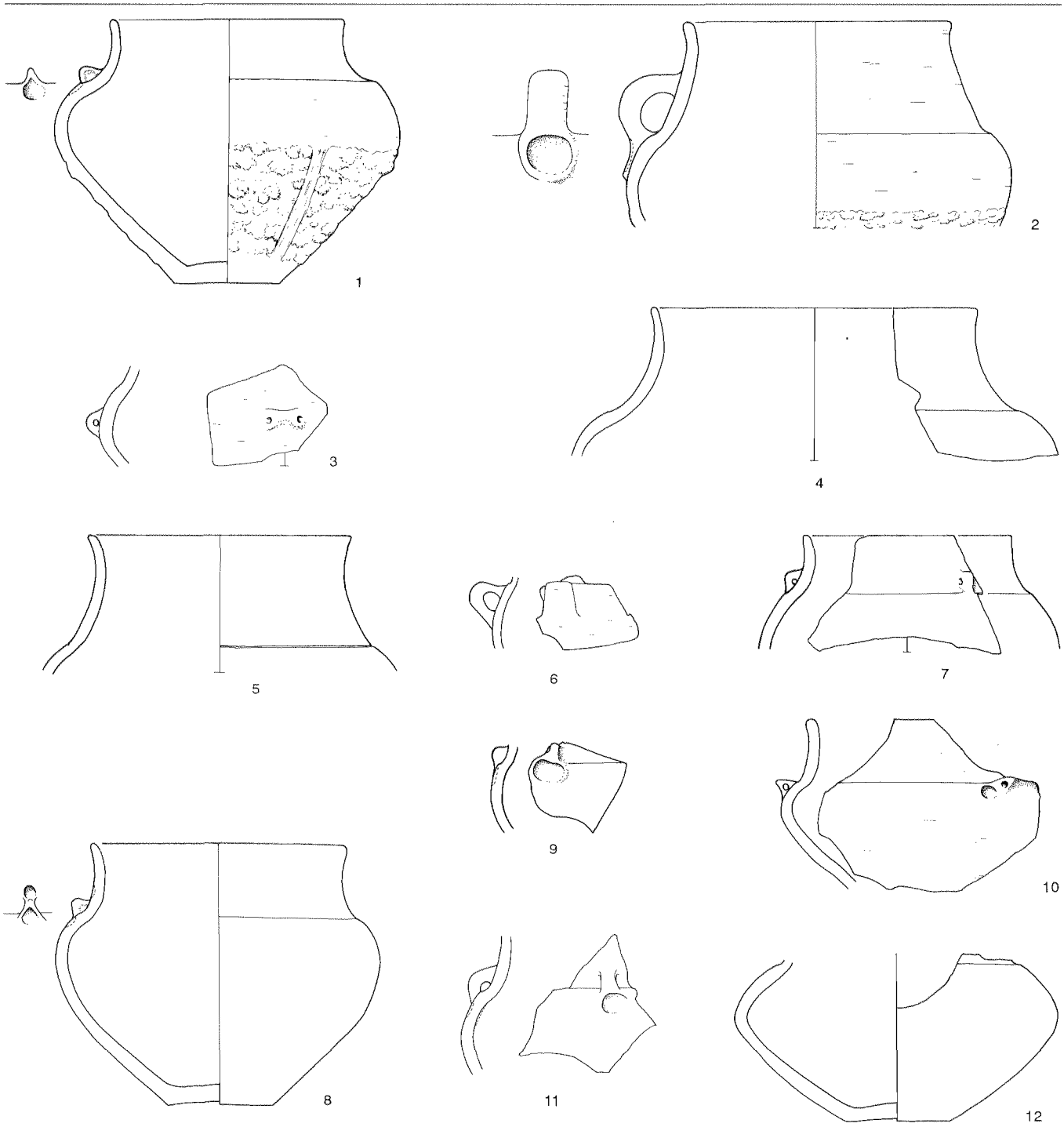


Abbildung 8 Westergo: Typ G1 (ohne Verzierung). 80: 11;
93: 1, 8; 119: Rest.

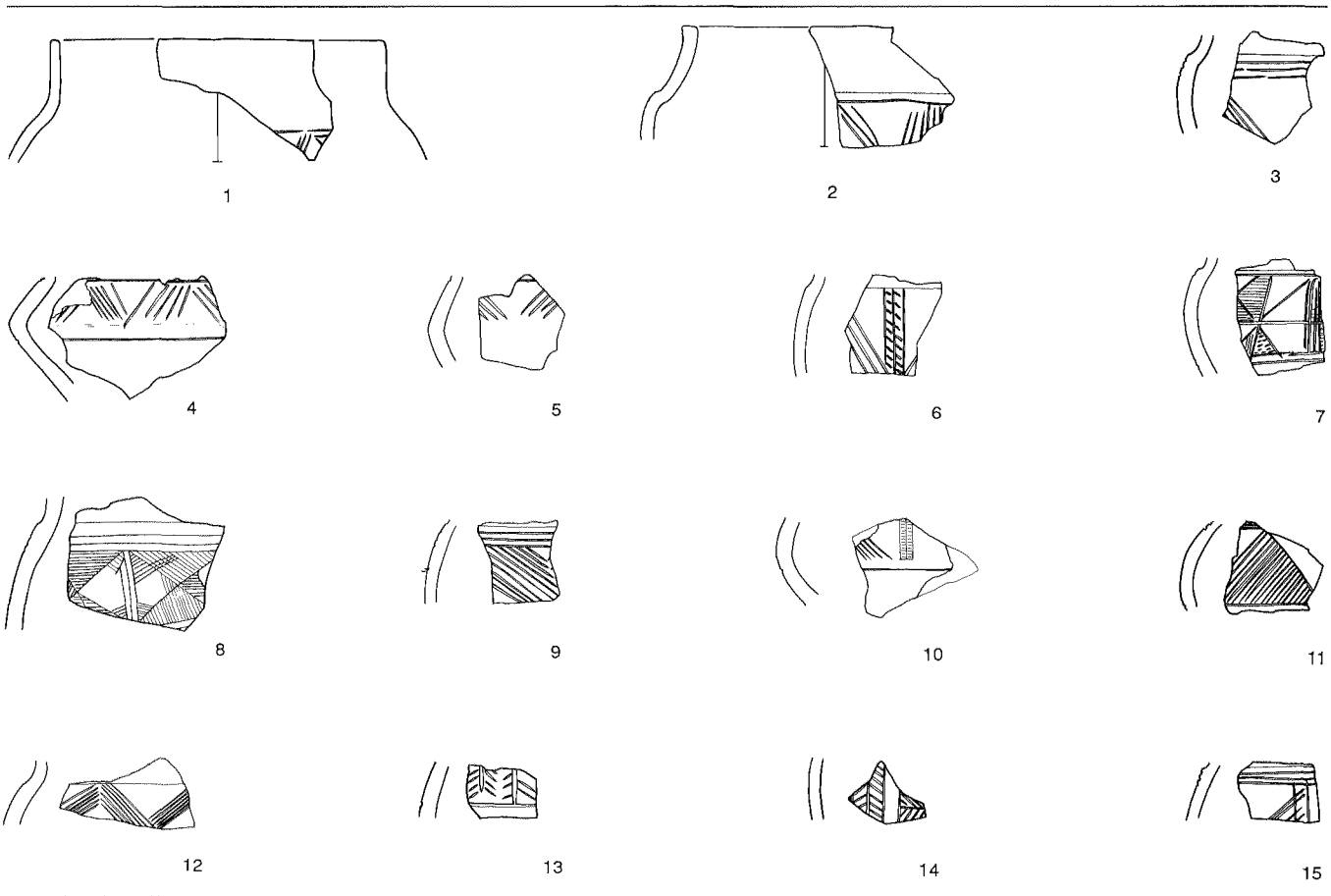


Abbildung 9 Westergo: früheisenzeitliche geometrische Muster (meist Typ G1). 76: 13; 85: 14; 89: 11, 15; 128: 12; 119: Rest.

lung in Varianten aufgrund der (Rand)form oder Verzierung hinzugefügt.
Zum Schluß: in der folgenden Darlegung werden die wichtigsten Merkmale der Typen nur global besprochen. Für eine Übersicht über die Daten (Meßwerte, Magerung, Gebrauchsspuren u.dgl.) möchte ich auf die Tabellen verweisen.

2.2 Größere Gefäße mit glattem Rande

Typ G1 (Abb. 8–9)
Hochhalsige, mittelgroße Keramik. Deutlicher Halsabsatz; Übergang manchmal nur mit einer Rille akzentuiert. Gewölbte oder flache Schulter, schwacher Bauchknick oder abgerundet. Gerundeter Rand, manchmal etwas verdickt. Hals konkav bis konisch. Flacher Boden.[86]
Ziemlich harte Ware. Magerung normalerweise Gesteinsgrus (Quarzit, Granit); manchmal Muschelgrus (Abb. 8: 1) oder aber Keramikgrus in Kombination mit Gesteinsgrus. Farben: schwarzbraun, graubraun, graugelb. Oberteil glatt bis poliert; unten manchmal gerauht, vereinzelt mit Schlickbewurf.
Am Übergang Hals–Schulter oder auf dem Bauch ziemlich oft ein Knopf oder eine Schnuröse. Henkel (Schulter–Hals) sind selten. Manchmal unten oder seitlich eine Delle. Freiliegende Dellen kommen einmal vor, in Dreizahl auf der Schulter.

86 Bei den frühen Typen bricht der Boden, wie eine Untertasse, am Übergang zum Bauch ab.

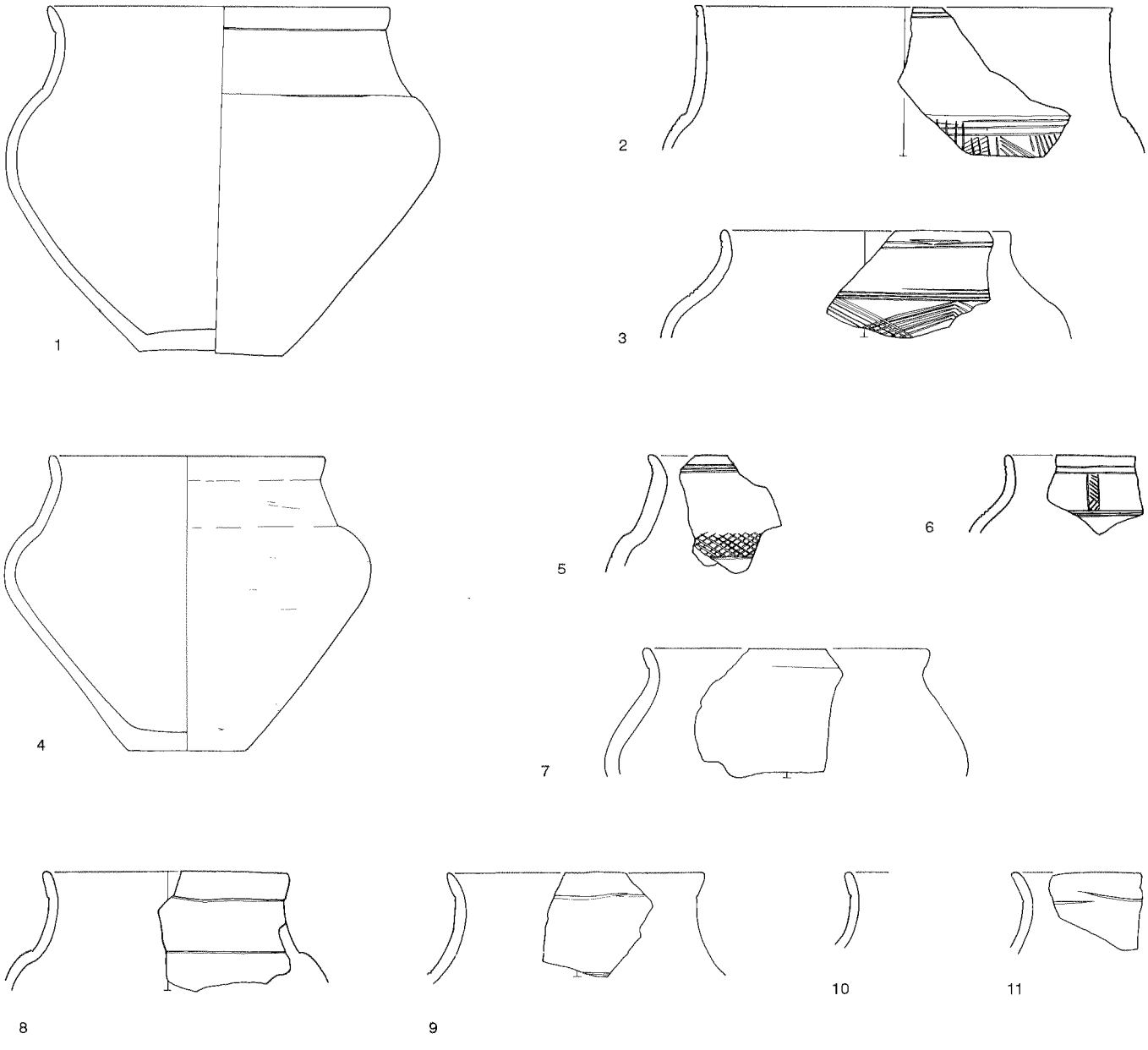


Abbildung 10 Westergo: Typ G2. 45: 9; 66: 5, 6, 8; 93: 4; 95: 1, 7; 119: 2, 3; Gerns, bei Witmarsum: 10, 11.

Etwa ein Viertel der Gefäße ist mit geometrischem Ritzmuster verziert. Meistens eine einzige Zone von Winkelbändern oder hängenden und stehenden schraffierten Dreiecken. Manchmal schmale senkrechte Bänder, waagerecht schraffiert.[87] Unter dem Halsabsatz fast immer eine Zone von mehreren horizontalen Rillen.

87 Siehe Boeles 1951, Fig. 24: 3 und 5, Pl. XII: 1.

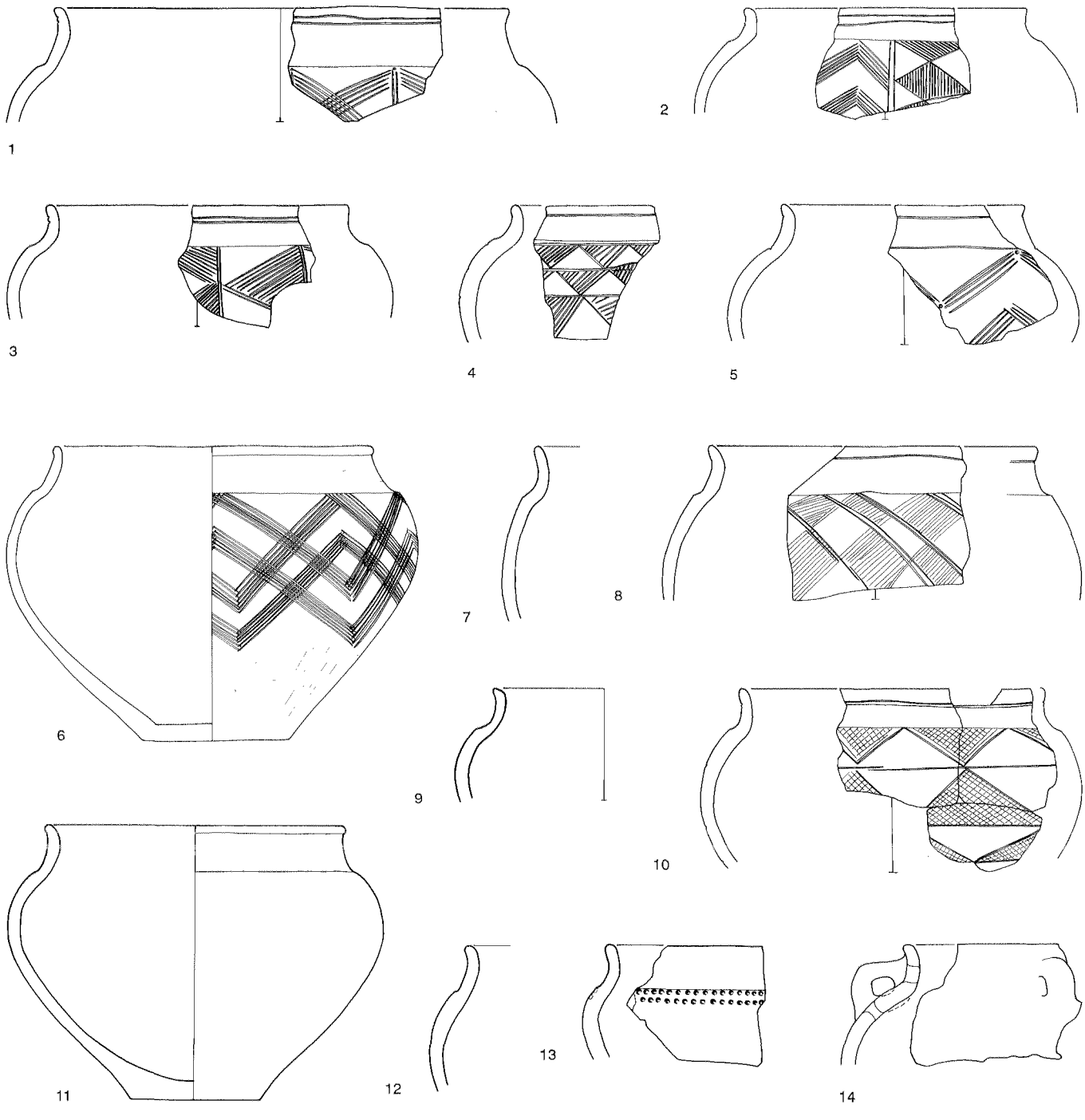


Abbildung 11 Westergo: Typ G3a. 60: 12; 66: 3–5, 13; 80: 2; 95: 14; 119: 1, 7–10; 129: 6, 11.

Typ G2 (Abb. 10)
Ziemlich engmündige, hochhalsige Keramik mit akzentuiertem Rand. Hals eingezogen oder konkav; Rand oft hervorstehend oder ausbiegend, manchmal länglich verdickt. Meistens 1–2 Rillen unter dem Rand. Hals–Schulter-Übergang markiert von Absatz oder/und Rille. Schulter und Bauch gerundet. Eingezogenes Unterteil, flache Bodenplatte. Keine Henkel oder Knubben.
Ziemlich harte Ware. Magerung überwiegend Muschelgrus; einige Male Gesteins- oder Keramikgrus. Außenseite glatt oder poliert. Farben: schwarz bis graubraun.
Etwa ein Drittel der Gefäße weist geometrische Ritzmuster auf, in mehreren Zonen, auf dem Bauch, manchmal auch auf dem Hals. Größere Variabilität und lockerere Ordnung als bei G1 und G3: kreuzende Bänder, Punktlinien, Dreiecke, Quadrate und Wellenlinien (»Girlanden«), Punkteindrücke auf Kreuzungen von Bändern.

Typ G3a (Abb. 11)
Mittelgroße, bauchige Keramik mit niedrigem Hals. Hals konkav bis konisch, von der gewölbten Schulter abgesetzt. Einfacher Rand, manchmal verdickt; oft hervorstehend.
Mittelmäßig bis hart gebrannt. Die Grundmasse ist meistens mit Muschelgrus gemagert; Keramikgrus (oft neben Muschelgrus) und »?« an zweiter und dritter Stelle. Dunkle Farbenpalette (schwarz bis graubraun); etwa 10 Prozent oxidierend gebrannt. Ober- und Unterteil sorgfältig geglättet. Henkel sehr selten.
Unter dem Rand und am Anfang der Schulter oft (dünne) horizontale Rillen. Der Bauch oft (etwa 65%) mit geometrischem Ritzmuster verziert, in ein bis drei Zonen, ab Halsabsatz. Am häufigsten finden sich kreuzende Zickzackbänder (4–6 Rillen); weiter gibt es Kombinationen von schraffierten Dreiecken, Rauten und Quadraten. Bei einer jüngeren Variante wird mit solchen Figuren ein waagerechtes oder senkrechtes Zickzackband ausgespart. In einigen Fällen konnte feiner Muschelgrus in den Ritzlinien festgestellt werden.
Bei den jüngsten Vertretern des Typs G3a fehlen Ritzlinien völlig[88]. Sie sind von Blöckchen Tupfen oder sonstigen Eindrücken, in regelmäßigen Abständen, auf der Schulter ersetzt worden. Polierte schmale Zonen (*gleren*), senkrecht vom verzierten Oberteil bis auf den Boden,[89] sind selten.

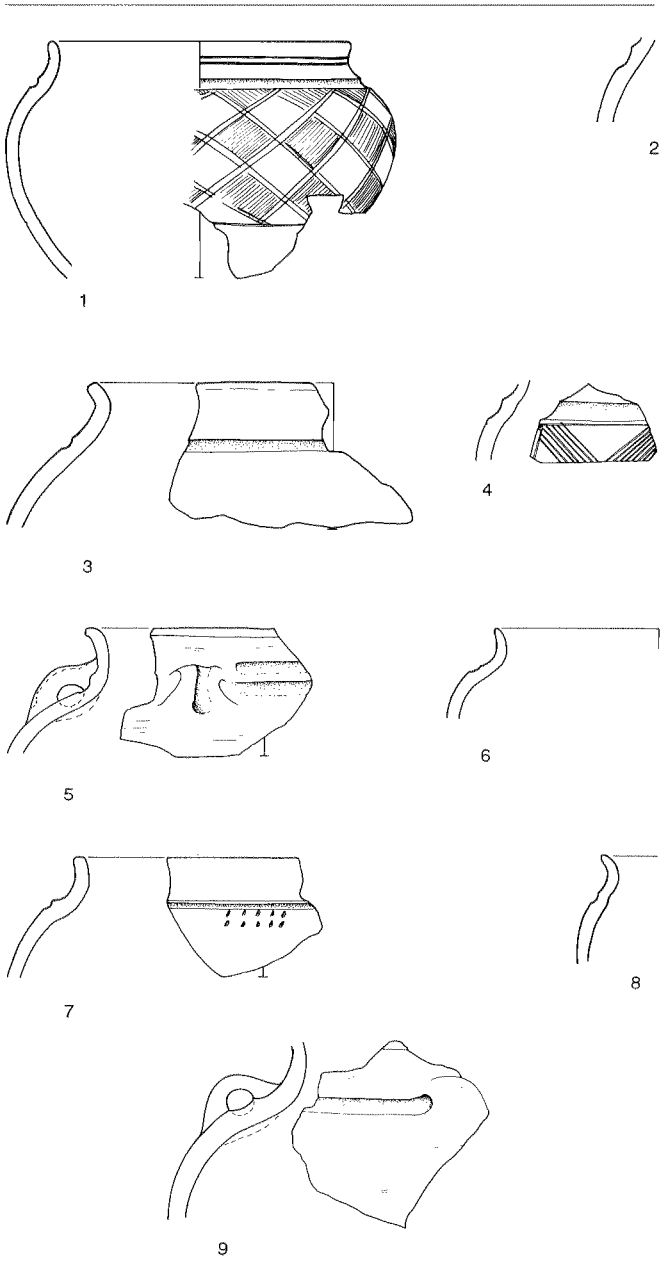


Abbildung 12 Westergo: Typ G3b. 66: 4; 76: 1; 98: 3; 109: 5; 119: 2, 6, 8; Gerns, bei Witmarsum: 7, 9.

88 Eine Ausnahme bildet ein Töpfchen aus De Pankoeken (107), jetzt im Rathaus in Witmarsum. Vermutlich späteisenzeitliche Ware (rote Farbe; Keramikgrus).
89 Boeles 1951, Pl. XII: 5b; Woltering 1980, Afb. 6.

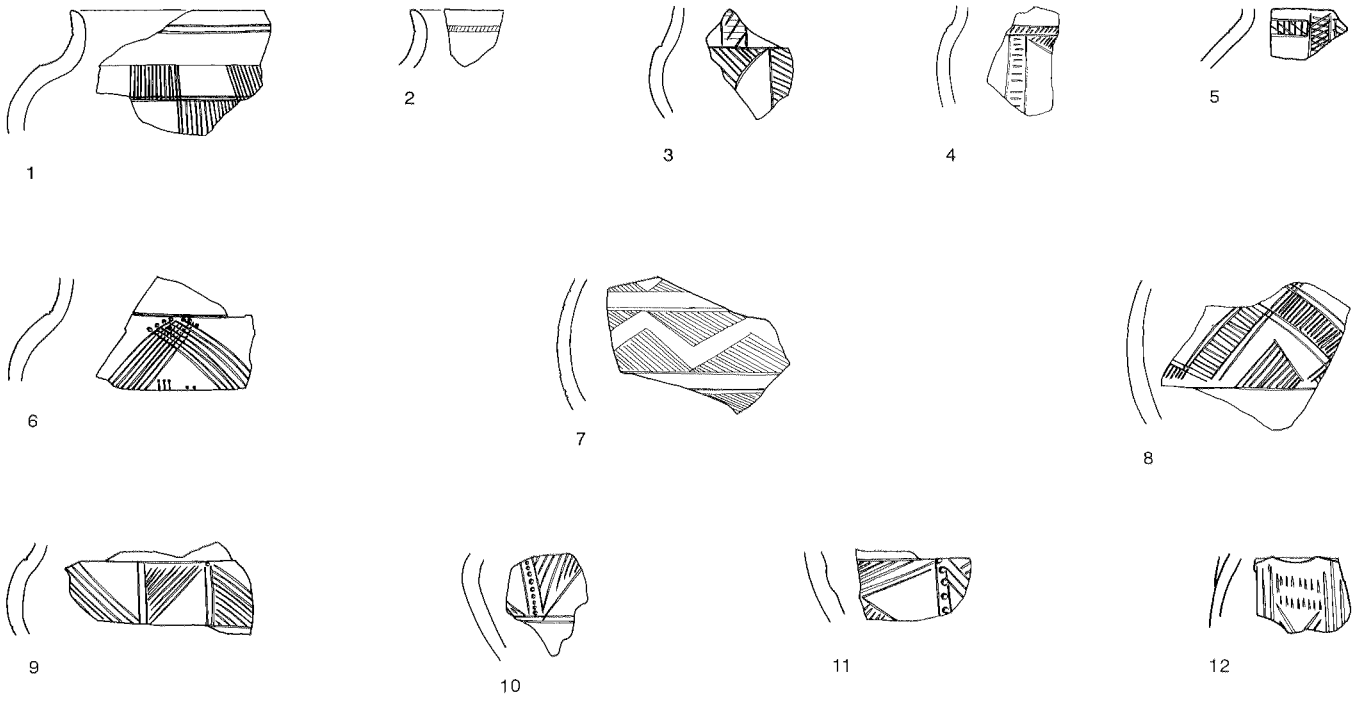


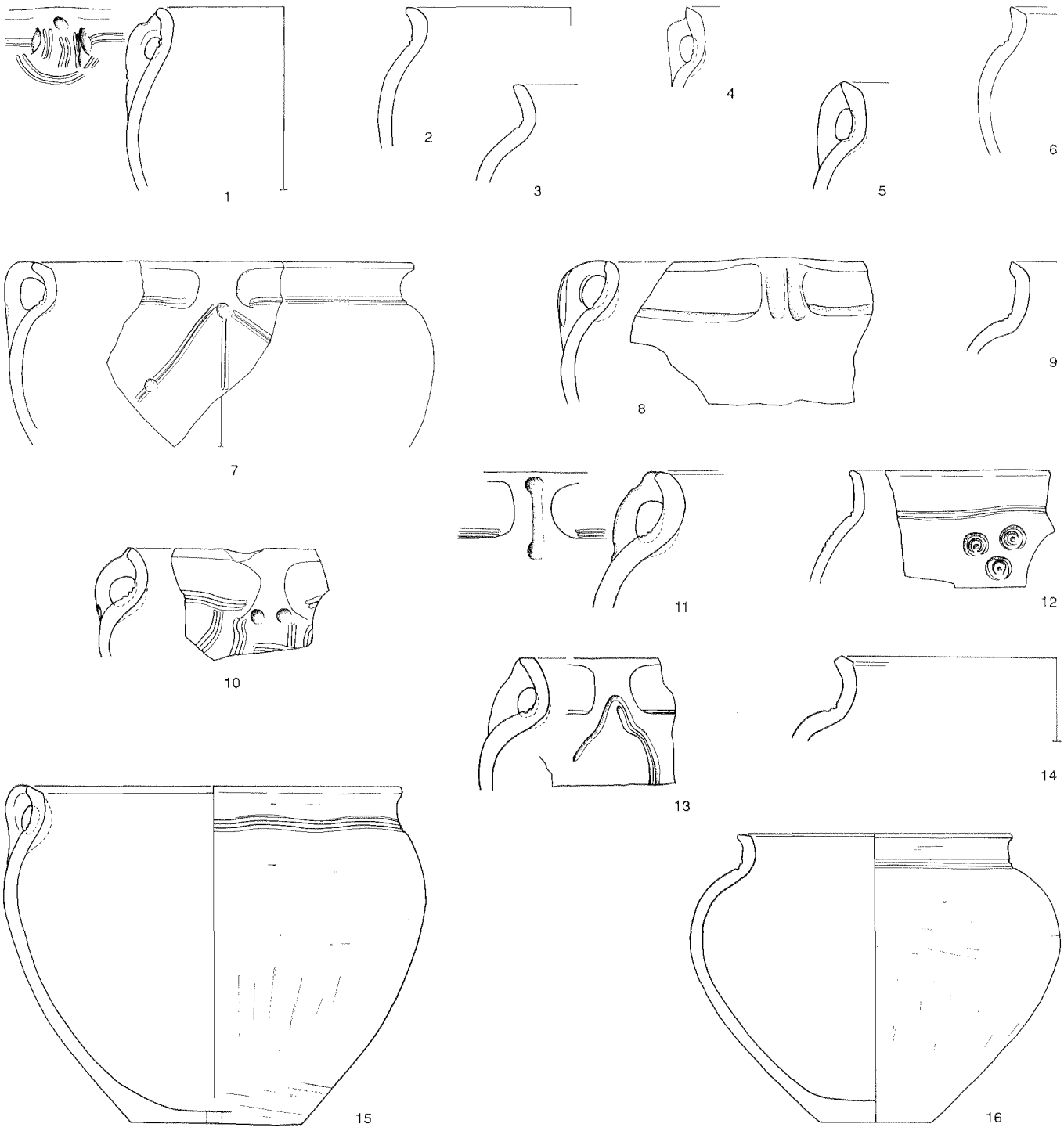
Abbildung 13 Westergo: geometrische Muster der Typen G1 bis G3. 66: 1–3, 5–7; 80: 4; 119: 8–12.

Typ G3b (Abb. 12)
In großen Linien gleicht G3b dem vorigen Typ. Den wichtigsten Unterschied bildet der Halsabsatz in Form von ein oder zwei geglätteten Riefen oder *cannelures*. Einige der Henkelgefäße, häufiger als bei G3a, sind engmündig. Die Maße sind durchschnittlich etwas größer. Die geometrischen Motive sind die gleichen wie bei G3a, kommen aber weniger oft vor und fehlen bei Henkelgefäßen. Neben reduzierend gebrannten Gefäßen sieht man öfters Keramik in helleren Farbtönen wie ocker und hellbraun (etwa 30 Prozent).

Vorbemerkung zu den Typen G4 bis G7
Bei Keramik mit einem Bauchdurchmesser von über 20 cm, in der späten Eisenzeit ungefähr die Grenze zwischen Kleinkeramik und Kochtöpfen, zeigt sich bei einem relativen Randdurchmesser von etwa 0,72 eine Zäsur. Die meisten Töpfe sind erheblich weitmündiger (Durchschnittswert um 0,84), eine kleine Gruppe ist deutlich engmündiger (durchschnittlich um 0,59). Diese Grenze benutze ich bei den hier weiter zu beschreibenden Typen für eine Unterteilung: Gw4 bis Gw7 sind weitmündige Formen, Ge4 bis Ge7 engmündige.
Es hat wenig Zweck, einen Unterschied zwischen Keramik mit Henkeln und henkelloser Keramik zu machen. Komplette im Museum gelandete Gefäße sind fast immer mit Henkeln ausgestattet,[90] was aber nicht heißen soll, daß sie damals allgemein waren.[91] Henkelgefäße, insbesondere die der engmündigen Gattung, hatten offensichtlich eine größere Chance, die Jahrhunderte unbeschädigt zu überdauern als Gefäße anderer Art. Vielleicht spielt neben dem Gebrauch (Brunnen!) die Stärke des Aufbaus auch eine Rolle.
Bei Randscherben der Typen G4 bis G7 ist das Ver-

90 Das Verhältnis zwischen Gefäßen mit Henkeln und henkellosen Gefäßen ist ungefähr 12:1.
91 Eine Übersicht über das Geschirr im 1.Jahrhundert n.Chr. in Assendelft zeigt z.B. einige henkellose Gefäße (Brandt 1983, Fig. 7: 5a, 11 und 16).

Abbildung 14 Westergo: Typ Gw4 (Variante Gw4a: 1–3; Gw4b: 4–6; Gw4c: 7–10; Gw4d: 11–16). 45: 5; 56: 13; 66: 2, 4, 9, 12, 14; 80: 6; 95: 16; 119: 1, 7, 8, 10; 123: 15; 131: 11; Midlum, bei Harlingen: 3. ▷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hältnis mit/ohne Henkel ungefähr 1:3. Wenn angenommen werden dürfte, daß beide Gattungen die gleiche Chance hatten, gesammelt zu werden, dann ist es sehr gut möglich – in wieviele Randscherben zerfällt ein kompletter zweihenkliger Rand? –, daß henkellose Fragmente von Henkelgefäßen stammen.
Übrigens zeigt eine vergleichende Analyse der beiden Gattungen (in bezug auf Format, absoluten und relativen Randdurchmesser, Brand, Randform u.s.w.) keine bedeutenden Unterschiede. In Anbetracht dieser Daten gehören sie anscheinend zur selben Population.

Typ Gw4 (Abb. 14)
Weitmündige, mittelgroße bis große Keramik mit Henkeln und *streepband-* oder *cannelure*-Verzierung. Gewölbte Schulter. Bei jüngeren Exemplaren ist der Bauch ziemlich straff. Der Hals ist konkav und meistens etwas versenkt.
Sofern eine Magerung wahrgenommen wurde, handelte es sich um Keramikgrus. Die Ware ist ziemlich hart. Die am häufigsten vorkommenden Farben der Außenseite sind ocker und orange. Die Oberfläche der Oberseite ist glatt, manchmal poliert. Der untere Teil ist manchmal gerauht.
Der Übergang Hals–Schulter wird durch mehrfache horizontale Rillen (*streepband*) gekennzeichnet. Eine Minderheit (zirka 8 %) ist mit breiten Riefen (*cannelures*) ausgestattet.
Ein oder zwei Henkel sind vermutlich fast immer vorhanden, von der Schulter bis zum Rand, seltener bis zum Hals. Bei 4 nahezu vollständigen Gefäßen war nur ein Henkel vorhanden. Das Profil ist gerundet, in weniger Fällen stumpfwinklig. Die Henkel sind meist im Hals–Schulter-Übergang versenkt. Oft sind sie mit Dellen an der Ober- und Unterseite, mit senkrechten Riefen oder mit *streepband* (bis zum Bauch) verziert. Bauchverzierung kommt manchmal vor (Abb. 14: 12; 51: 4, 5).
Aufgrund der Randform werden vier Varianten unterschieden. Abweichungen vom Grundtyp werden erwähnt (Par. 2.7.2).

Gw4a (Abb. 14: 1–3) Einfacher, gerundeter Rand, meistens unverdickt. Oft mit Keramikgrus gemagert. Relativ viel Henkelfragmente.

Gw4b (Abb. 14: 4–6) Einfacher, abgeplatteter Rand, meistens verdickt. Kleinste der vier Varianten. Relativ dickwandige und weiche Ware. Oft keine Magerung sichtbar. Oft fließender Übergang Hals/Schulter. Relativ oft Henkelverzierung.

Gw4c (Abb. 14: 7–10) Rand mit einer seitlichen Facette. Rand oft etwas geknickt. Hals meistens von der Schulter abgesetzt. Relativ selten Henkelverzierung. Wenig Rußspuren.

Gw4d (Abb. 14: 11–16) Verdickter Rand mit zwei Facetten. Größte der vier Varianten. Außen- und Innenseite relativ glatt.

Typ Ge4 (Abb. 15 und 51: 6)
Engmündige, mittelgroße Keramik mit konvexer Schulter und konvexem Bauch und *streepband*-Verzierung. Konkaver Hals, oft versenkt. Einfacher, ausbiegender Rand, meistens unverdickt. Nur ausnahmsweise facettiert. Am Übergang Hals–Schulter *streepband* oder breite Riefen. Ware vergleichbar mit Gw4. Deutliche Präferenz für Keramikgrus.
Fast immer mit Henkel ausgestattet, vermutlich paarweise. Gewöhnlich von der Schulter bis zum Hals, etwas versenkt, manchmal bis an den Rand. Meist stumpfeckiges Profil, bei späten Vertretern auch spitz. Oft mit Tupfen an der Ober- und Unterseite, mit senkrechten Riefen oder *streepband* (bis zum Bauch) verziert.
Bauchdurchmesser mit dem des Typus Gw4 vergleichbar, Wand jedoch dünner. Randdurchmesser auffallend oft um 16 Zentimeter.

Typ Gw5 (Abb. 16)
Weitmündige, mittelgroße bis große Keramik mit Henkeln. Gewölbte Schulter, gerundete Wandpartie. Der Hals ist meistens konkav; durchschnittlich niedriger als bei Gw4. Bei etwa einem Drittel der Fragmente ist er von der Schulter abgesetzt.
Ziemlich weiche Ware. Magerung, in Reihenfolge: organisch, »?« oder Keramikgrus. Farbenspektrum der Außenseite hell: oft ocker, weit weniger orange oder graugelb. Oberfläche öfter matt als geglättet. Innenseite weniger sauber behandelt als bei Gw4.
Ein bis zwei Henkel meistens am Rand (oft etwas versenkt). Profil meistens rund. Verzierung des Henkels kommt manchmal vor, meistens in Form von Fingertupfen. Einmal *streepband* unter dem Henkel. Wandverzierung: einmal senkrechte »Fingerstriche« auf dem Unterteil.
Aufgrund der Randform werden vier Varianten unterschieden, auf die gleiche Weise wie bei Gw4:

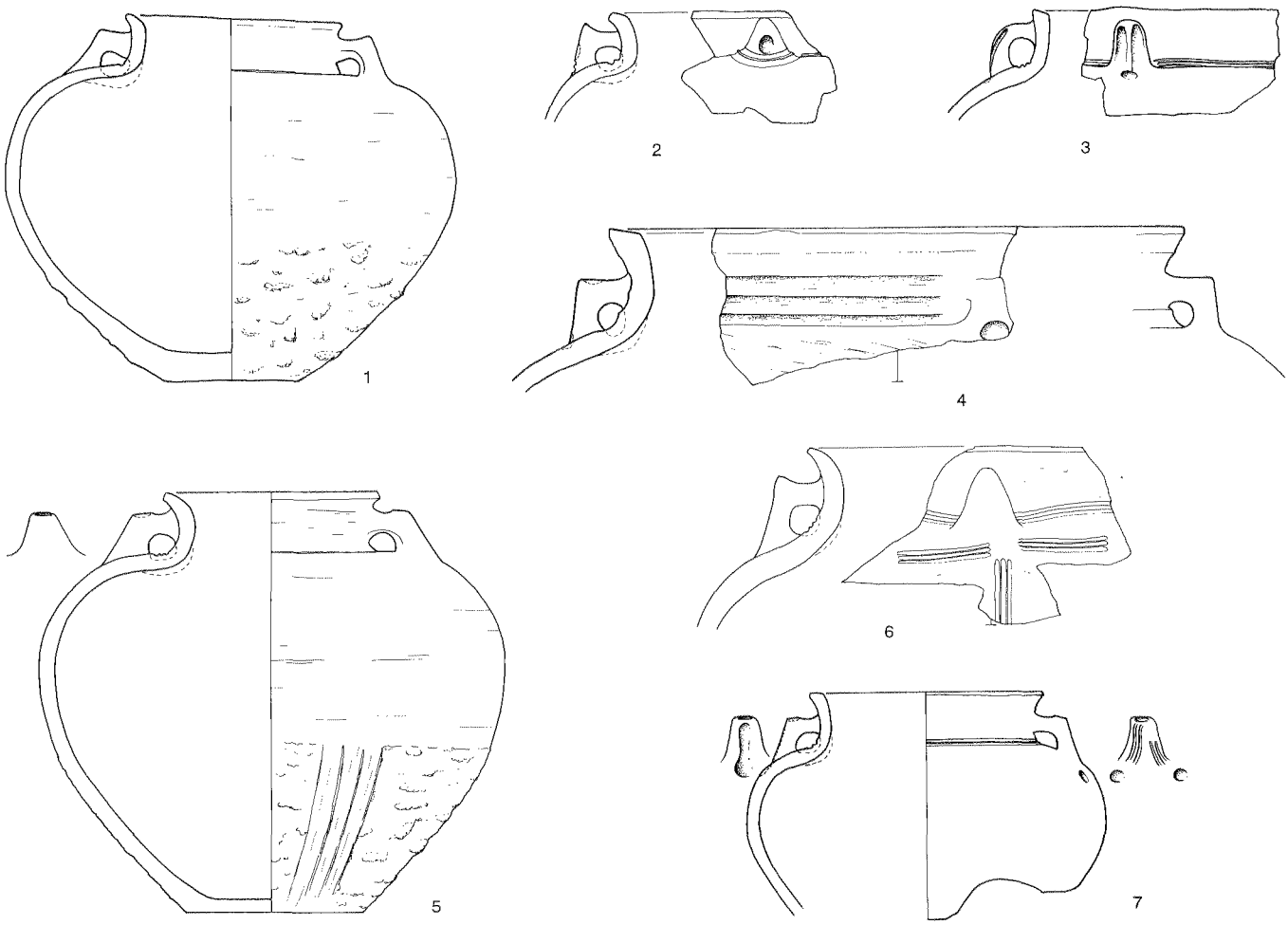


Abbildung 15 Westergo: Typ Ge4. 41: 6; 56: 4; 66: 3; 70: 5; 88: 7; 95: 1; 119: 2.

Gw5a (Abb. 16: 1–2) Einfacher, gerundeter Rand, meistens unverdickt. Kleinste der vier Varianten. Relativ hoher Hals. Dickwandige und weiche Ware, oft mit Keramikgrus gemagert. Relativ viel Henkelfragmente. Relativ wenig Rußspuren.

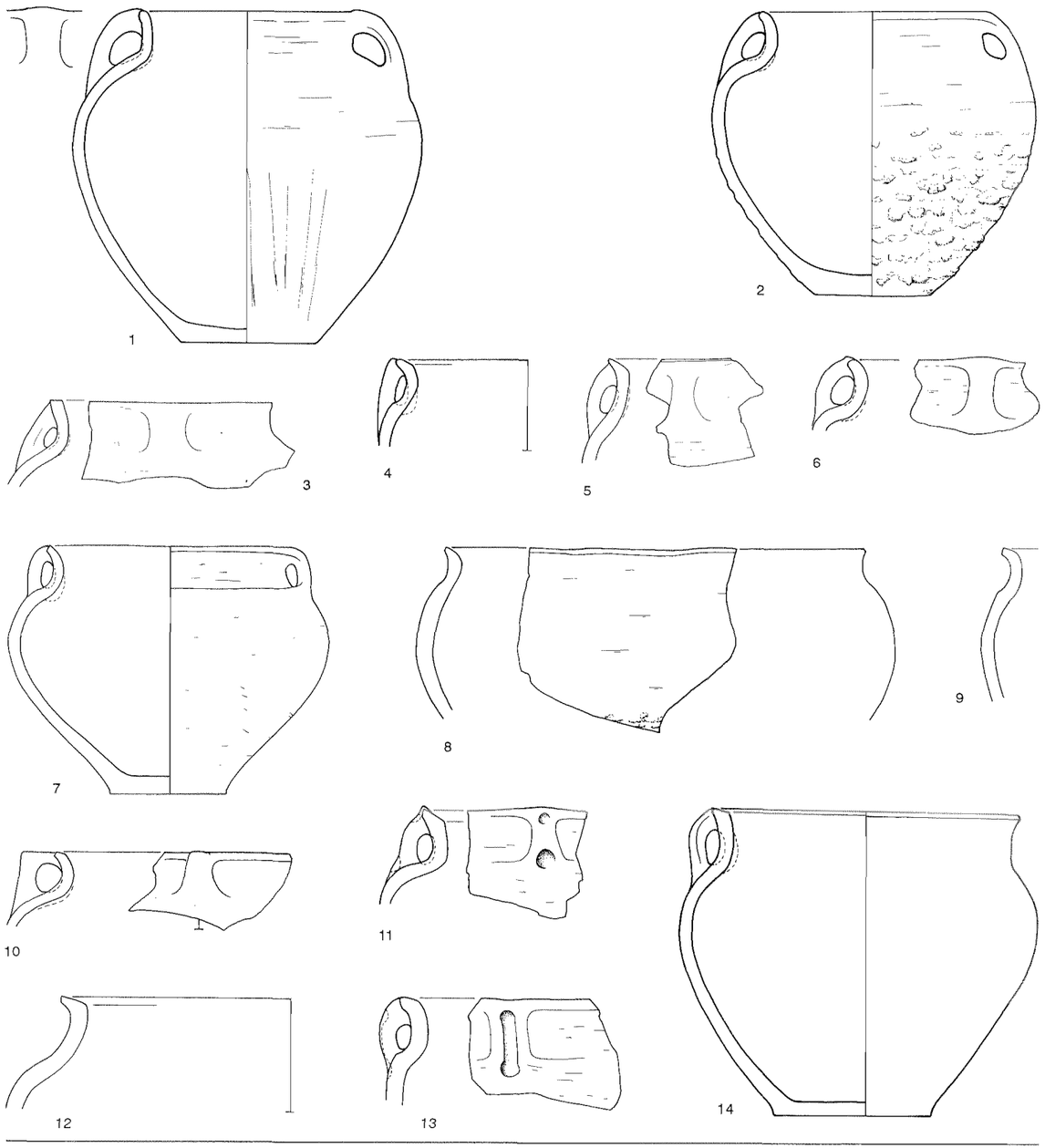
Gw5b (Abb. 16: 3–5) Einfacher, abgeplatteter Rand, meistens verdickt. Relativ niedriger Hals. Außenseite oft ungeglättet. Wenig Henkelfragmente. Relativ oft Rußspuren.

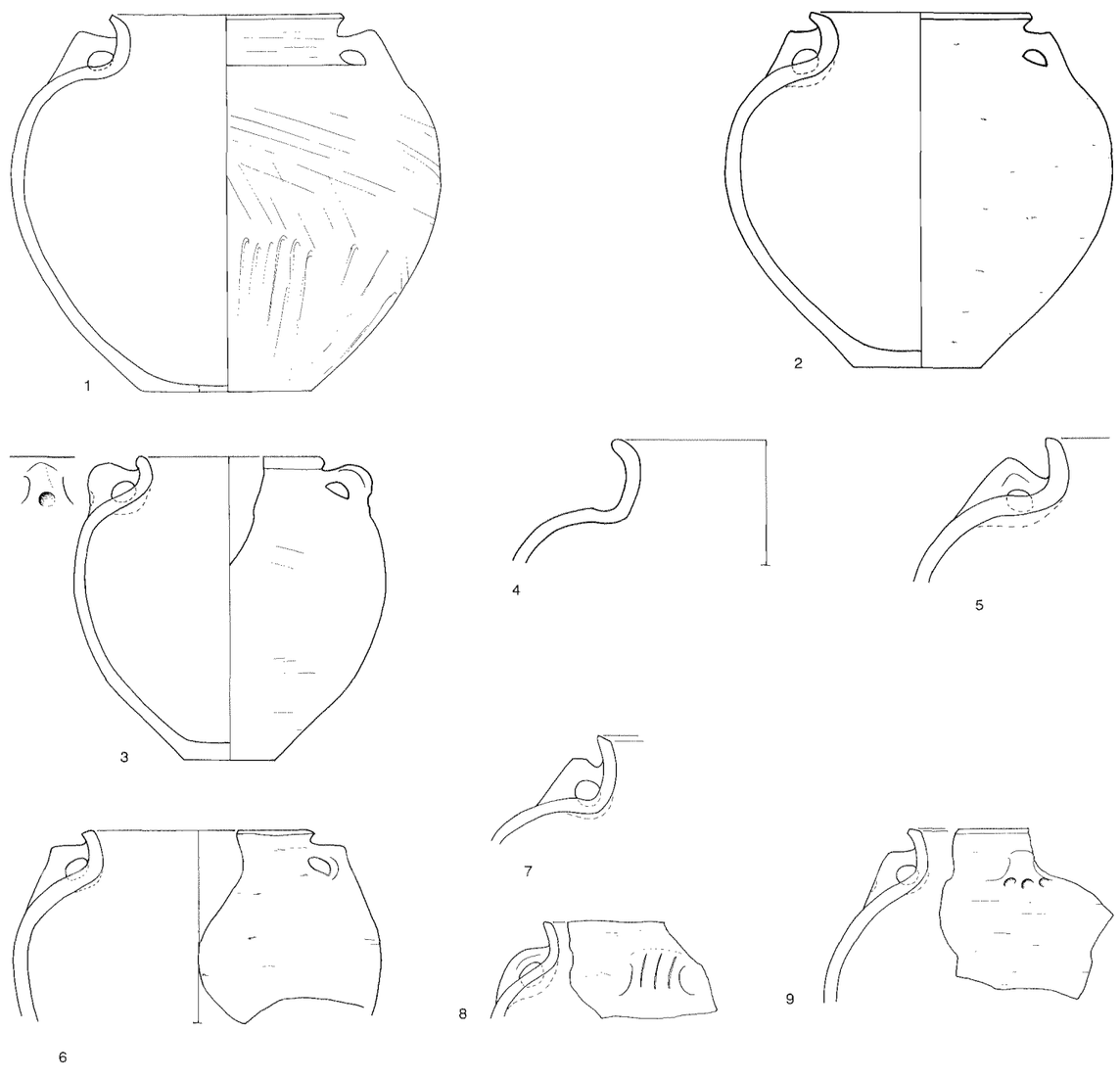
Gw5c (Abb. 16: 6–9) Rand mit einer seitlichen Facette. Rand zeigt öfters einen Knick. Größte der vier Varianten. Relativ niedriger Hals. Relativ glatte Außenseite. Keine verzierten Henkel.

Gw5d (Abb. 16: 10–14) Verdickter Rand mit zwei Facetten. Relativ hoher Hals. Oft keine Magerung wahrgenommen.

Typ Ge5 (Abb. 17–18)
Engmündige, mittelgroße bis große Keramik mit Henkeln am Hals oder am Rand. Aufgrund der Position des Henkels ist eine Unterteilung möglich:[92]

92 Zehn Fragmente weisen keinen Henkel auf.





◁ Abbildung 16 Westergo: Typ Gw5 (Variante Gw5a: 1–2; Gw5b: 3–5; Gw5c: 6–9; Gw5d: 10–14). 45: 5; 46: 14; 51: 12; 66: 10; 71: 1, 2; 76: 9; 80: 8; 82: 3; 119: 11; 128: 6; 131: 13; Gerns, bei Witmarsum: 7.

Abbildung 17 Westergo: Variante Ge5a. 45: 8, 9; 82: 7; 88: 4; 113: 2; 119: 6; Gerns, bei Witmarsum: 1, 3, 5.

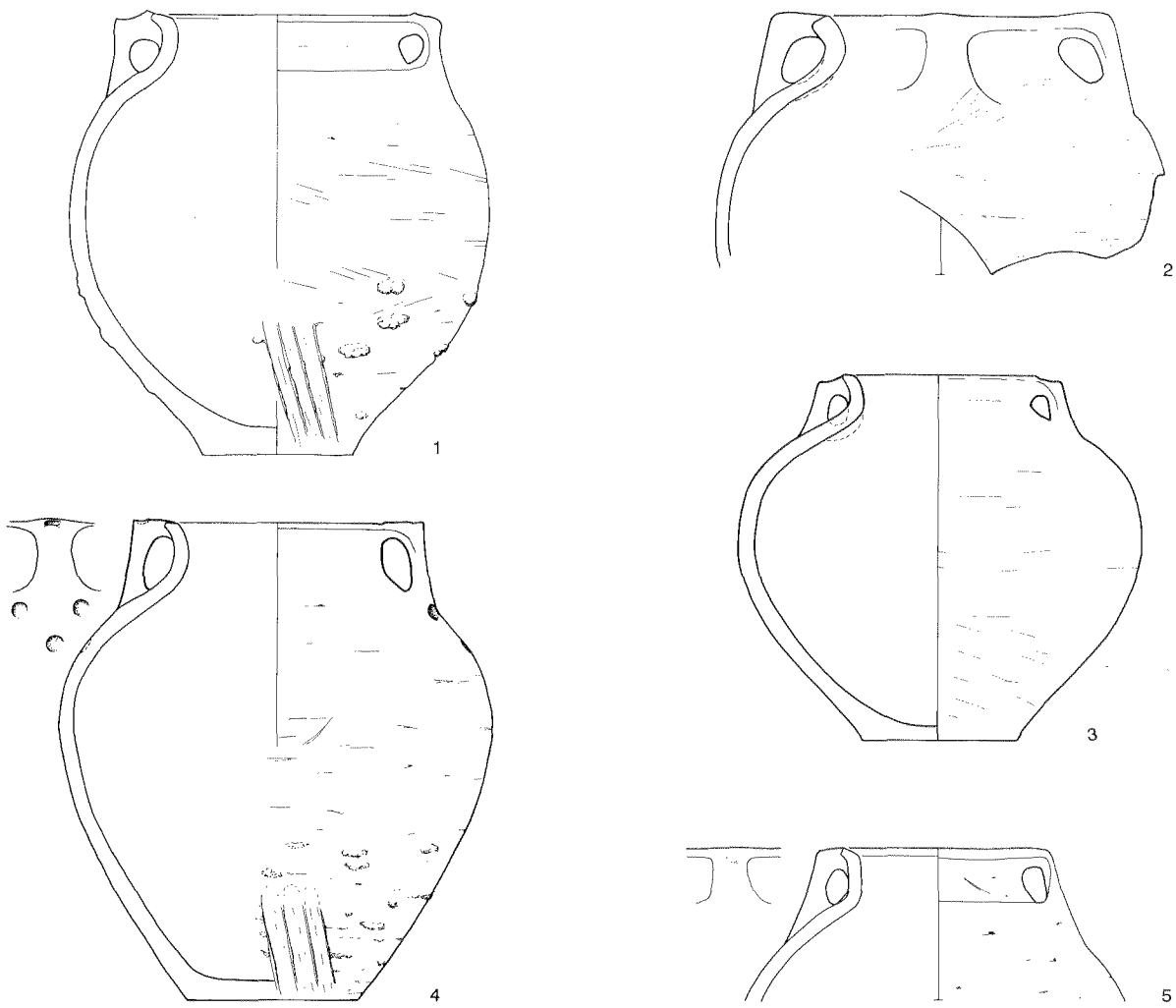


Abbildung 18 Westergo: Variante Ge5b. 40: 4; 66: 1; 119: 5; 120: 3; 122: 2.

Ge5a (Abb. 17) Engmündige, mittelgroße bis große Keramik mit Henkeln am Hals. Konvexe Schulter und konvexer Bauch. Größter Durchmesser oft in der Mitte. Konkaver Hals, leicht versenkter Halsabsatz. Einfacher, meistens unverdickter Rand.
Mäßig harte Ware. Magerung: Keramikgrus oder »?«. Helle Farben, meistens ocker. Oberfläche geglättet oder matt.
Vermutlich zwei Henkel, leicht im Schulter–Hals-Übergang versenkt. Oft stumpfeckiges Profil. Henkel manchmal mit Fingertupfen verziert. Keine Wandverzierung.

Ge5b (Abb. 18) Engmündige, mittelgroße Keramik mit Henkeln am Rand. Gerundete Schulter und gerundeter Bauch, aber schlanker als Ge5a. Konkaver Hals. Rand meistens verdickt, manchmal zweifach facettiert.
Ziemlich weiche Ware. Meistens mit organischem Material gemagert. Helle Farben, oft orange. Oberfläche oft matt ausgeführt.

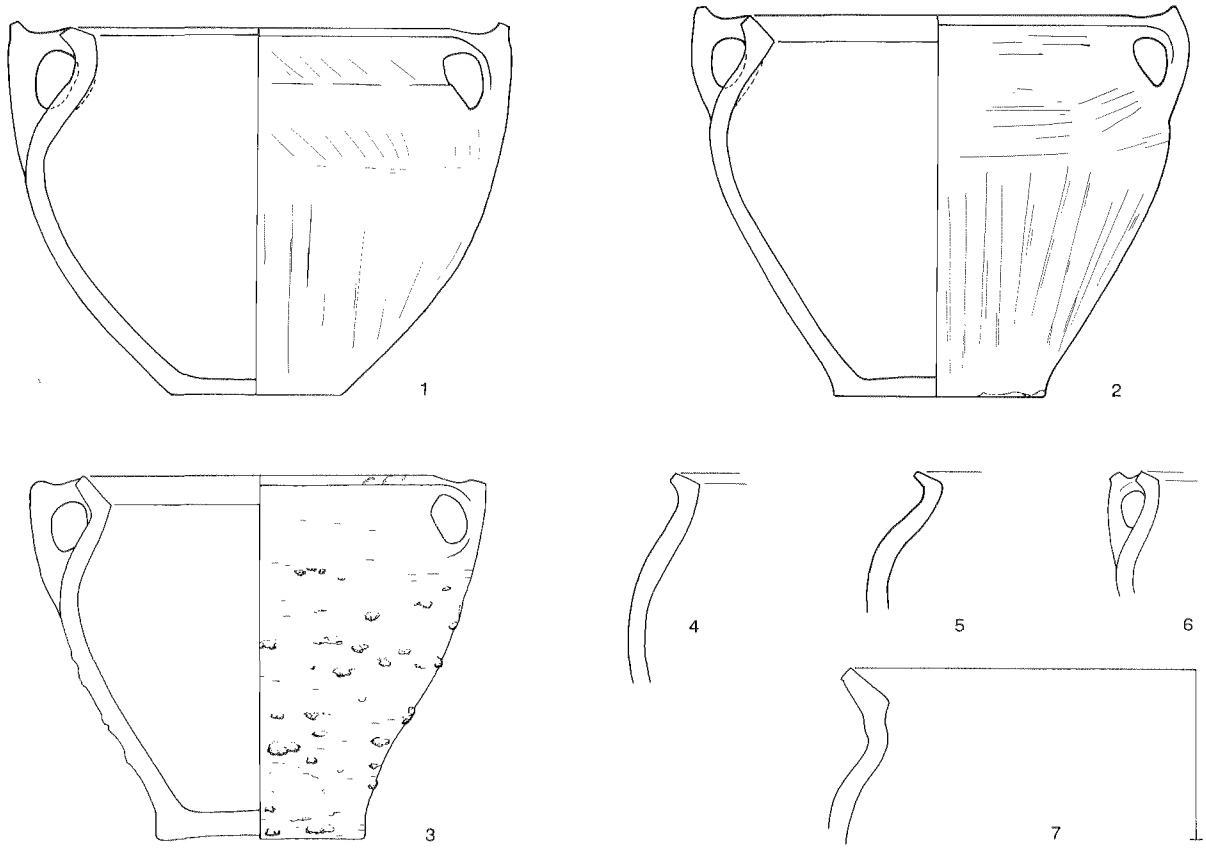


Abbildung 19 Westergo: Variante Gw6a. 45: 4, 6; 76: 5; 80: 7; 119: 2, 3; Gerns, bei Witmarsum: 1.

Meistens zwei Henkel (einmal vier Henkel), von der Schulter bis zum Rand. Oft stumpfeckiges Profil. Manchmal mit Fingertupfen verziert.

Typ Gw6 (Abb. 19–20)
Weitmündige, mittelgroße bis große Keramik. Hals kurz oder fehlend; kein Absatz des Halses oder Randes, manchmal aber ein Knick in Schulterhöhe. Schulter meistens flach.
Der verdickte Rand steht hervor und ist an der Innenseite scharf abgestrichen. In ganz wenigen Fällen ist er an einigen Stellen ausgezogen. Die Randform ist abgekantet dreieckig oder mehrfach facettiert (siehe unten).
Die Ware ist ziemlich weich. Zur Magerung wurde oft organisches Material benutzt; bei einem Drittel der Fälle konnte keine Magerung festgestellt werden. Die Außenseite ist ocker, gelbgrau oder orange gefärbt. Die Oberfläche ist meistens ungeglättet, manchmal etwas rauh.
Henkel sind oft, fast immer paarweise, vorhanden. Sie erstrecken sich meist von der Schulter bis zum Rand. Stumpfeckiges oder spitzes Profil; öfters ist die Spitze ausgezogen (Knopfhenkel). Keine Verzierung des Henkels oder des Bauches.
Aufgrund der Randform werden zwei Varianten unterschieden:

Gw6a (Abb. 19) Hervorstehender Rand mit stumpfdreieckigem Profil. Kein Hals. Die Mündung ist meistens abgestrichen. Drei Fragmente mit *streepband* oder breiten Riefen. Nur wenig Henkelfragmente.

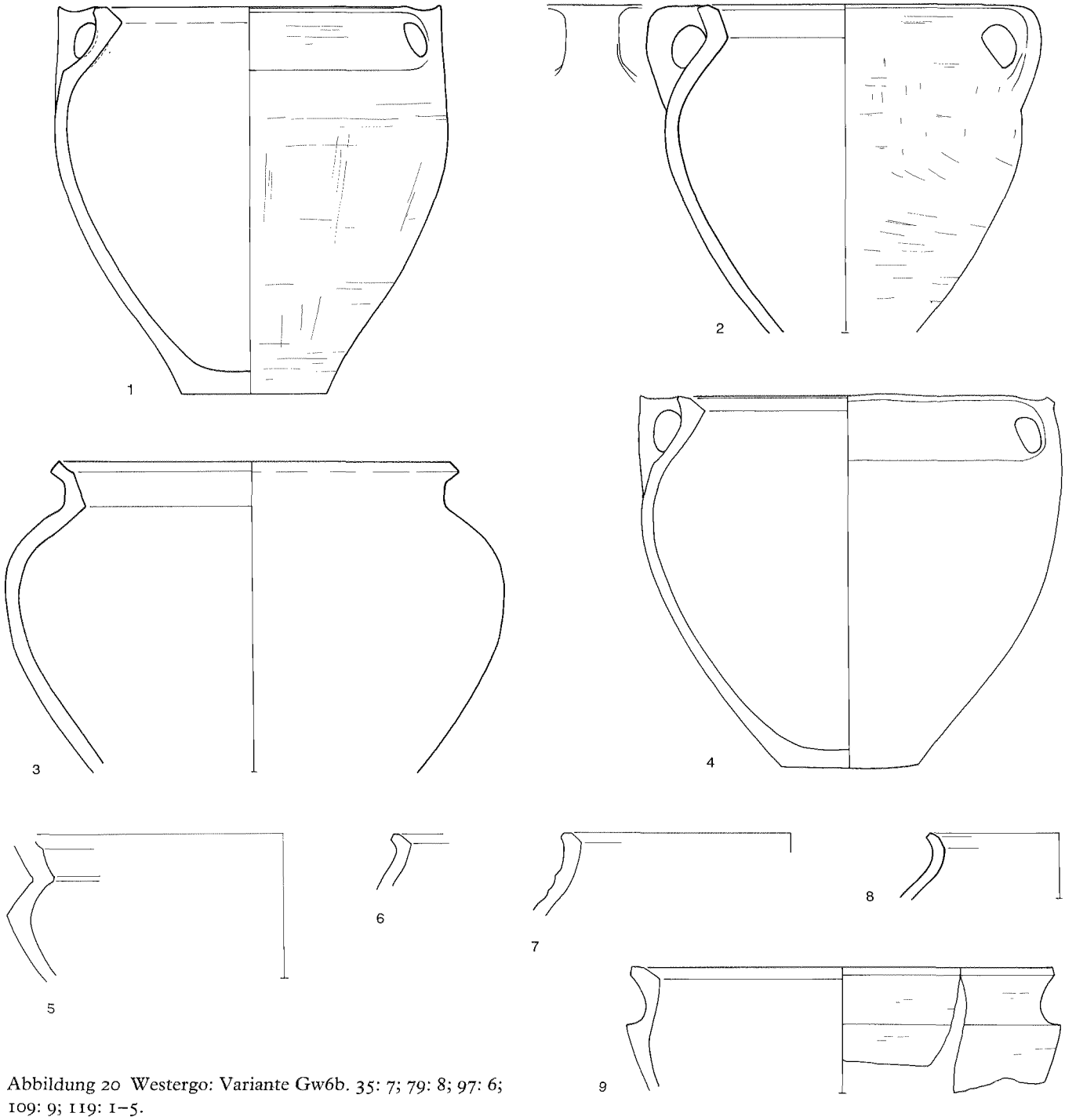


Abbildung 20 Westergo: Variante Gw6b. 35: 7; 79: 8; 97: 6; 109: 9; 119: 1–5.

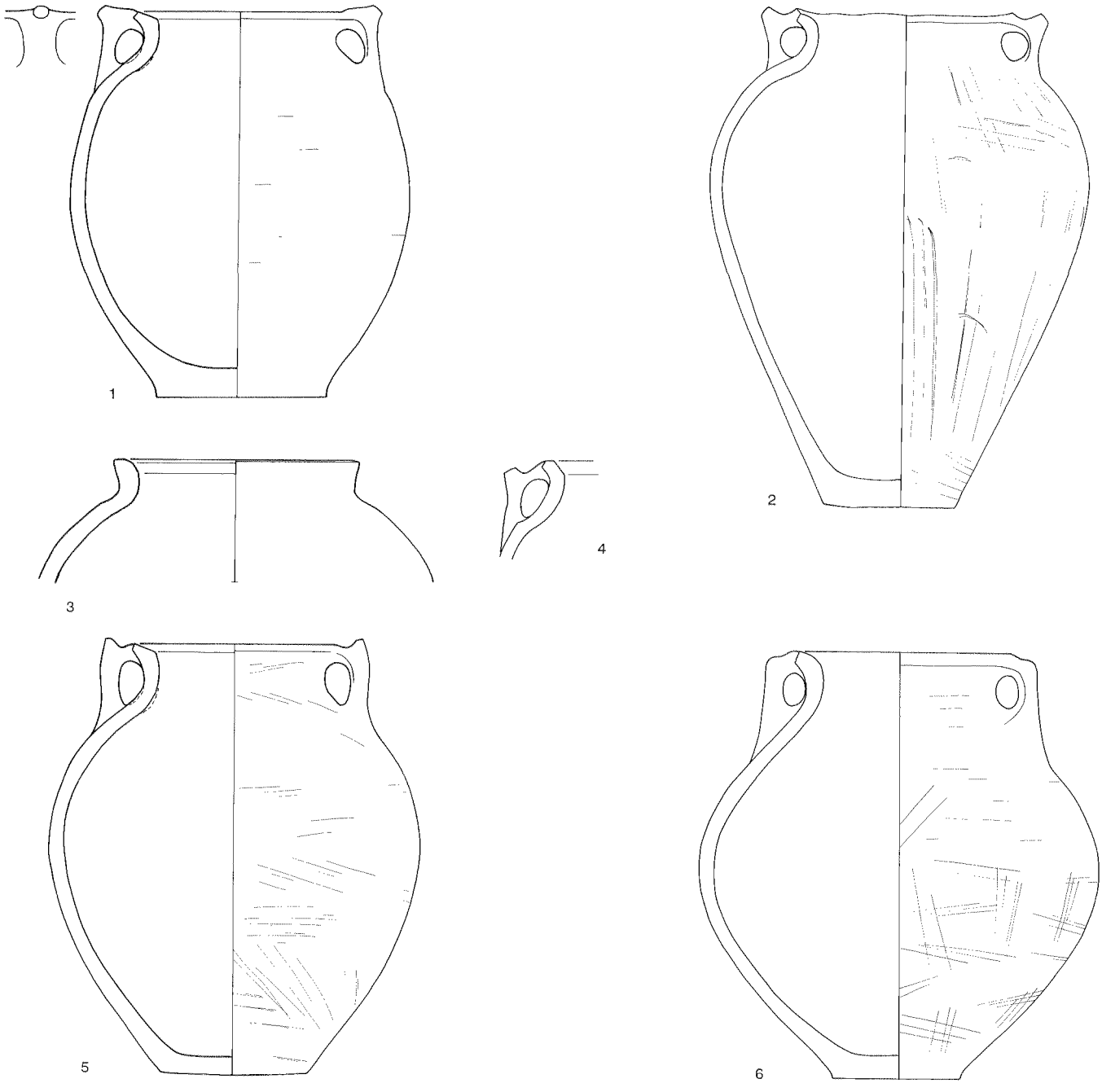


Abbildung 21 Westergo: Typ Ge6. 44: 1; 49: 5; 82: 4; 93: 2; 113: 6; 119: 3.

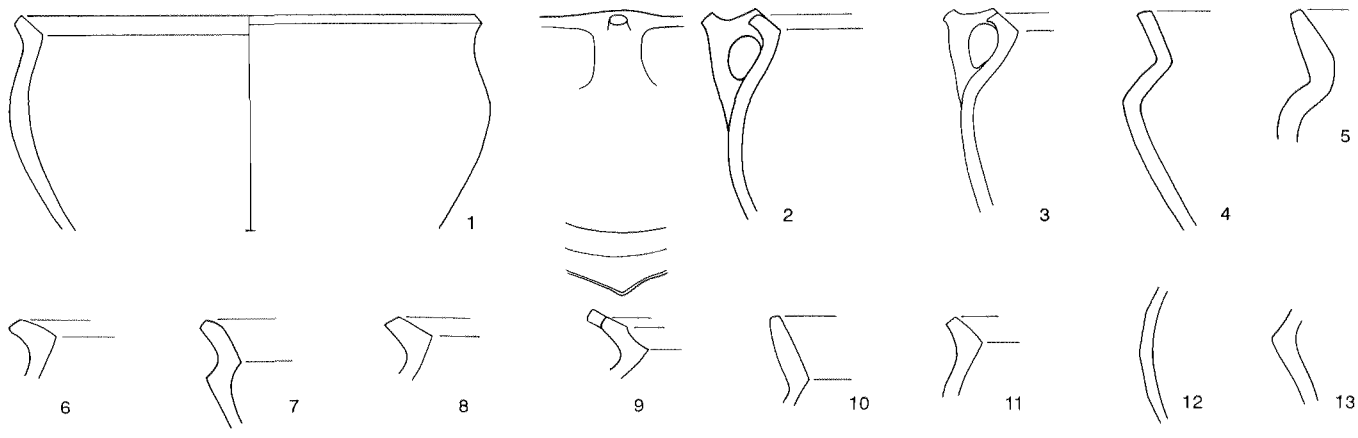


Abbildung 22 Westergo: Variante Gw7a. 45: 4, 12, 13; 70: 9; 80: 1, 5, 10, 11; 119: 2, 3, 6, 8; Umgebung Witmarsum: 7.

Gw6b (Abb. 20) Verdickter Rand mit drei oder vier Facetten (einschließlich Mündung). Kurzer oder fehlender Hals. Etwas weichere und dickwandigere Ware als Gw6a. Meistens zwei Henkel.

Typ Ge6 (Abb. 21)
Engmündige, schlanke, mittelgroße Keramik. Kurzer, konkaver Hals, ohne Absatz. Größter Durchmesser der Wandung oft in der Mitte.
Kurzer, hervorstehender Rand, meistens verdickt. Zwei oder drei Facetten; Mündung nur selten abgestrichen.
Ziemlich weiche Ware. Magerung oft organischen Ursprungs, ebensooft nicht feststellbar. Farben der Außenseite: ocker, orange, manchmal gelbgrau. Oberfläche nicht geglättet. Unterteil gelegentlich durch Schlickbewurf gerauht.
Henkel meist paarweise, von der Schulter bis zum Rand. Henkelprofil stumpfeckig, oft mit ausgezogener Spitze. Keine Verzierung.
Eine Ausnahme bildet ein komplettes Gefäß (Inv. Nr. FM 80f-5) mit Wellenrand-Verzierung.

Typ Gw7 (Abb. 22–23)
Glattwandige, dunkelfarbige (*gesmoorde*) Variante des weitmündigen Typs Gw6. Etwas kleineres Format. Öfters ein Knick in Schulterhöhe. Einige Fragmente zeigen ein Zickzackprofil.
Feine Ware. Sehr oft keine Magerung wahrgenommen. Farben: bräunlich-schwarz, grau oder braungrau. Geglättete, oft polierte Oberfläche.
Vermutlich nicht immer mit Henkeln ausgestattet. Stumpfwinkliges Profil, mit ausgezogener Spitze. Nicht versenkt.
Aufgrund der Randform werden zwei Varianten – die gleichen wie bei Gw6 – unterschieden:

Gw7a (Abb. 22) Hervorstehender Rand mit stumpfdreieckigem Profil. Zweimal ist der Rand an einigen Stellen ausgezogen. Glatte Oberfläche; zwei Fragmente mit Muschelgrusmagerung zeigen dagegen eine rauhe Oberfläche.[93] Wenig Henkelfragmente.

Gw7b (Abb. 23) Verdickter Rand mit drei oder vier Facetten (einschließlich Mündung). Kurzer oder fehlender Hals. Relativ harte, dünnwandige Ware; meistens keine Magerung wahrgenommen. Sehr oft poliert.

Typ Ge7 (Abb. 24)
Glattwandige, dunkelfarbige Variante des engmündigen Typs Ge6. Hoch und schlank. Manchmal mit einem Knick in Dreiviertelhöhe.
Ziemlich harte, feine Ware. Meistens keine Magerung wahrgenommen. Polierte oder geglättete Oberfläche.
Normalerweise mit Henkeln ausgestattet. Stumpfeckiges Profil mit ausgezogener Spitze. Nicht versenkt; keine Verzierung.

93 Aufgrund der Magerung lassen sich diese Fragmente besser mit V4-Keramik als mit der *gesmoorde* Ware vergleichen.

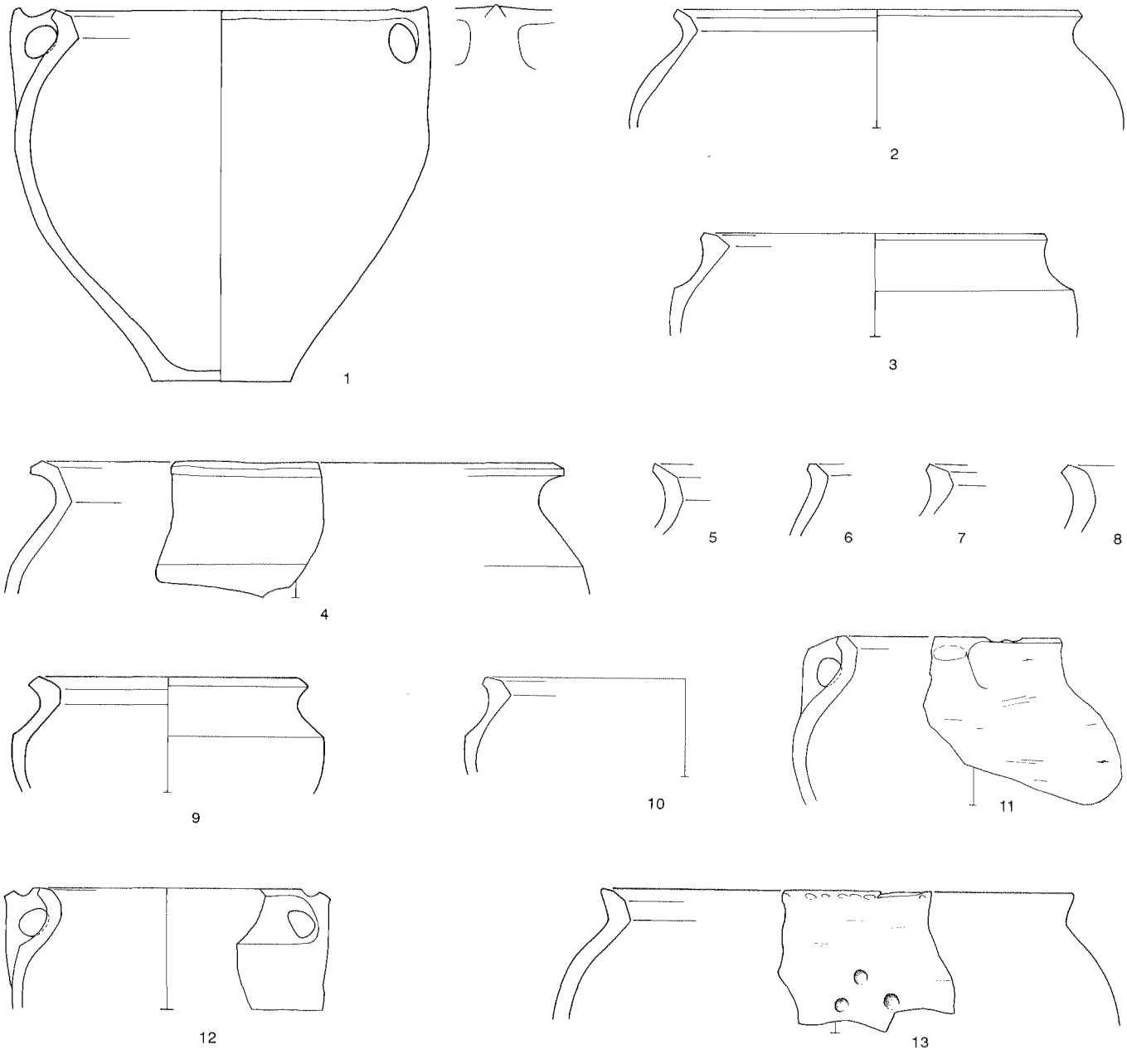


Abbildung 23 Westergo: Variante Gw7b. 31: 4; 82: 2, 5, 7, 8; 113: 1; 119: 3, 9, 10, 13; 131: 11; Gerns, bei Witmarsum: 6; Umgebung Wijnaldum: 12.

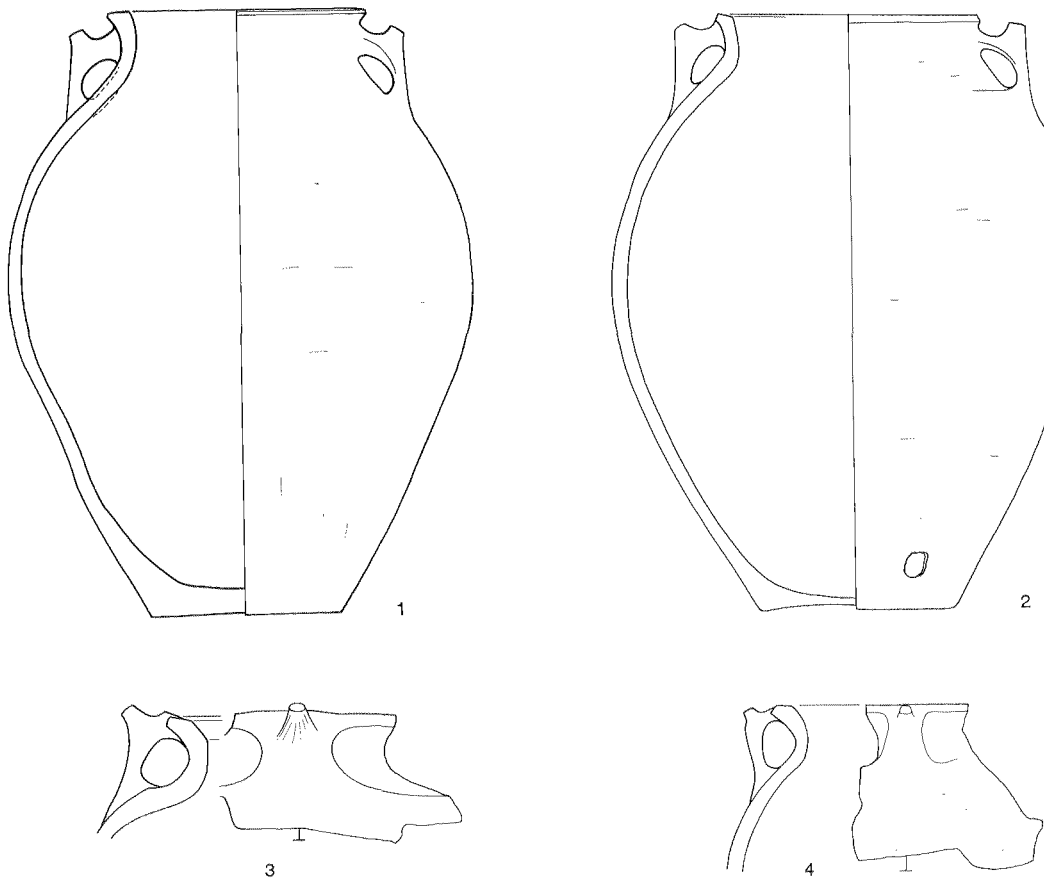


Abbildung 24 Westergo: Typ Ge7. 49: 1, 2; 82: 4; Gerns, bei Witmarsum: 3.

2.3 Größere Gefäße mit verziertem Rande

Typ V1 (Abb. 25)
Mittelgroße, weitmündige Keramik mit Fingertupfen oben auf dem Rand. Schwach doppelkonische, manchmal dreigliedrige Form, aber ohne Halsabsatz. Hals und Rand nur selten ausgebogen. Rand meistens unverdickt, sehr oft abgeplattet.
Ziemlich harte Ware. Magerung überwiegend Gesteinsgrus, manchmal (vermischt mit) Keramikgrus. Dunkles Farbenspektrum, oft graubraun. Oberfläche des Oberteils matt bis rauh, des Unterteils gerauht oder mit Schlickbewurf.

Die Randverzierung ist manchmal stilisiert, wobei die individuellen Fingertupfen in einem wellenartigen Muster aufgelöst sind. Manchmal finden sich horizontale Rillen unter dem Rand (wie bei G2) oder auf der Schulter. Ebenfalls auf der Schulter läßt sich, in seltenen Fällen, eine Reihe Fingertupfen oder eine Rippe mit Fingertupfen feststellen.

Typ V2 (Abb. 26–27)
Weitmündige Keramik mit Verzierung oben auf dem Rand. Abgesetzter Hals, meistens konkav. Der Rand ist abgeplattet, unverdickt oder verdickt. Gerundete Schulter und gerundeter Bauch (wie bei G3a).

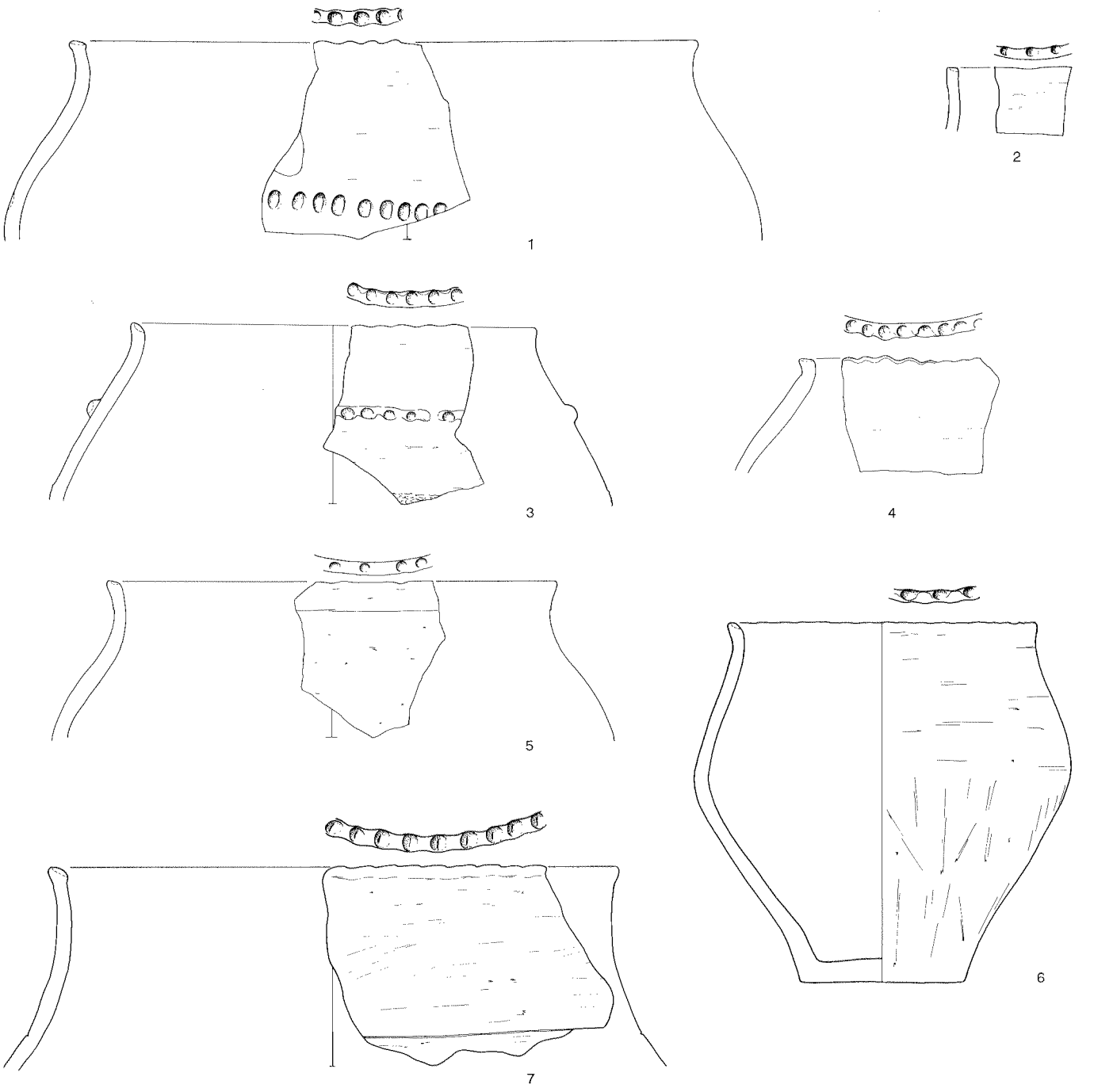
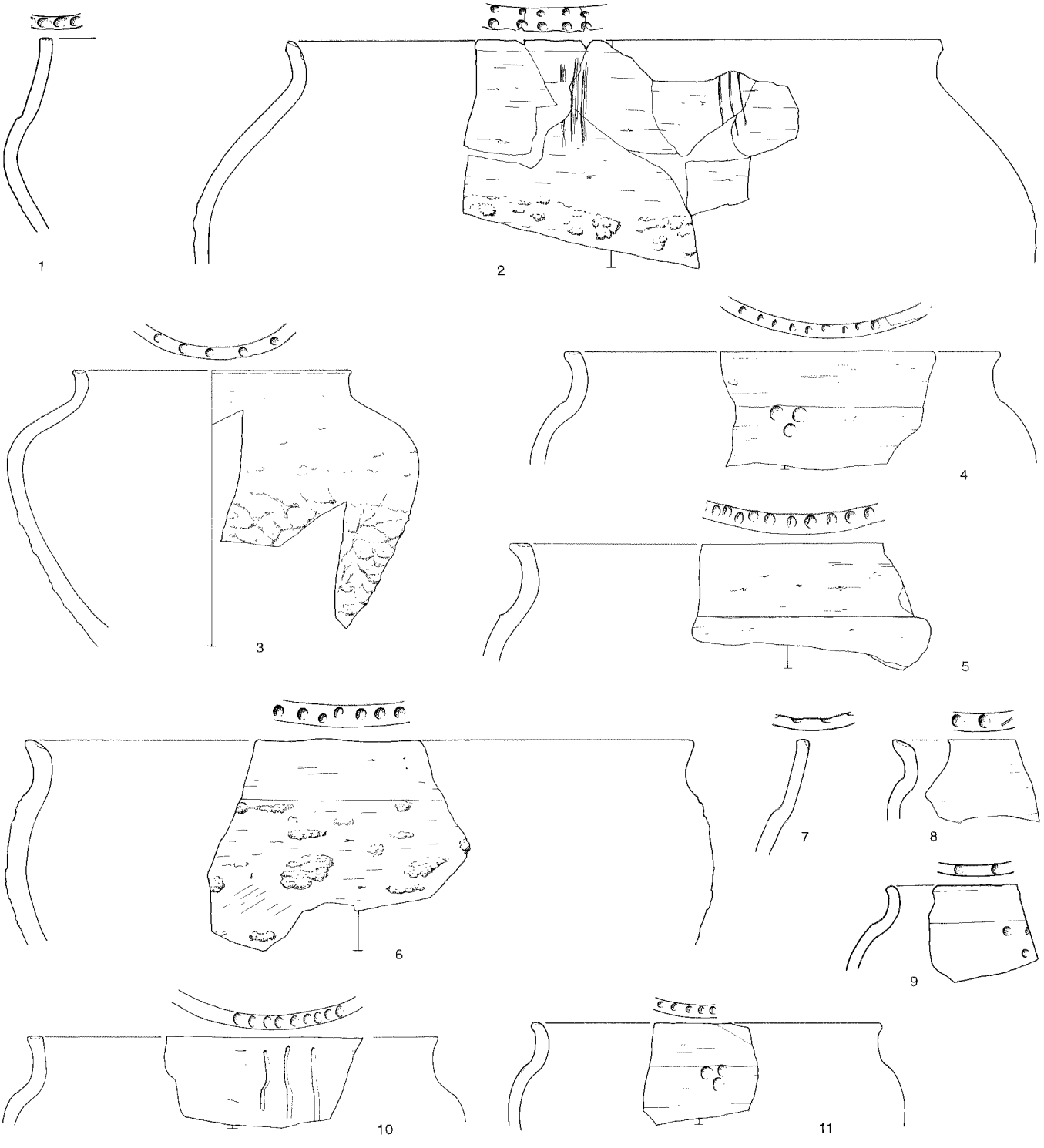


Abbildung 25 Westergo: Typ V1. 56: 5; 80: 4; 93: 6; 109: 2; 119: 1, 3, 7.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◁ Abbildung 26 Westergo: Variante V2a. 41: 8, 10; 51: 11; 57: 2; 97: 3; 119: 1, 4–7; Gerns, bei Witmarsum: 9.

V2a (Abb. 26) Mittelgroße bis große, weitmündige Keramik mit Fingertupfen oben auf dem Rand. Die Ware ist ziemlich hart. Die Magerung besteht aus Keramikgrus oder Muschelgrus, in einigen Fällen aus Gesteinsgrus oder organischem Material. Die Farbe der Außenseite ist meistens dunkel (graubraun); ocker und orange kommen vor. Die Oberfläche des Oberteils ist matt bis rauh, der untere Teil ist manchmal durch Schlickbewurf gerauht.
Der Rand ist mit Fingertupfen (einmal Nageleindrükke) verziert. Am Hals befinden sich manchmal senkrechte Rillen oder »Fingerstriche«. Die Schulterpartie ist gelegentlich mit einer Reihe Fingertupfen oder mit einem Blöckchen Eindrücke versehen.

V2b (Abb. 27) Große, weitmündige Keramik mit Kerben oben auf dem Rand. Form der Gefäße übereinstimmend mit V2a, Maße jedoch größer.
Magerung meistens Keramikgrus, manchmal Muschelgrus; oft nicht wahrnehmbar. Farben: ocker, orange, graubraun. Oberfläche wie bei V2a.
Die Randverzierung besteht aus Kerben, oft im Zickzack- oder Kreuzmuster, aber auch in Querrichtung. Kerben meistens gruppiert. Auf der Schulter einmal ein Blöckchen Eindrücke, einmal eine Reihe Fingertupfen.

Typ V3 (Abb. 28–29)
Mittelgroße bis große Keramik mit Fingertupfen oder Kerben seitlich des Randes. Gerundete Wand und Schulter; Hals gelegentlich abgesetzt. Halsform überwiegend konkav, manchmal konisch mit hervorstehendem Rand. Rand meistens verdickt; die Minderheit zeigt zweifache Facettierung.
Weiche bis mäßig harte Ware. Magerung, der Häufigkeit nach: organisches Material, Keramikgrus oder »?«. Überwiegend helle Farben. Behandlung der Oberfläche wie bei V1 und V2. Einige Male mit Henkeln versehen. Anhand der Randverzierung sind, wie bei V2, zwei Varianten unterschieden:

V3a (Abb. 28) Fingertupfen am Rand; einige Male in Kombination mit Kerben oben auf dem Rand. Manchmal senkrechte Rillen oder Riefen am Hals und auf einem Teil des Bauches. Zweimal eine Reihe Fingertupfen auf der Schulter.

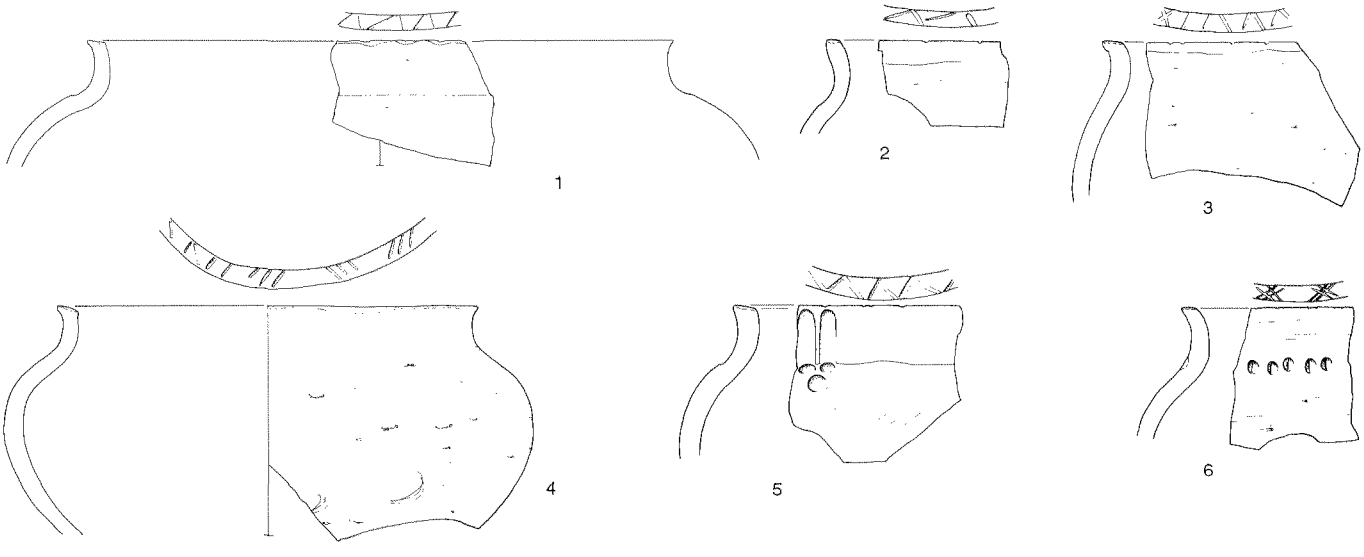


Abbildung 27 Westergo: Variante V2b. 41: 2; 45: 1; 52: 5; 97: 4; 109: 3; 119: 6.

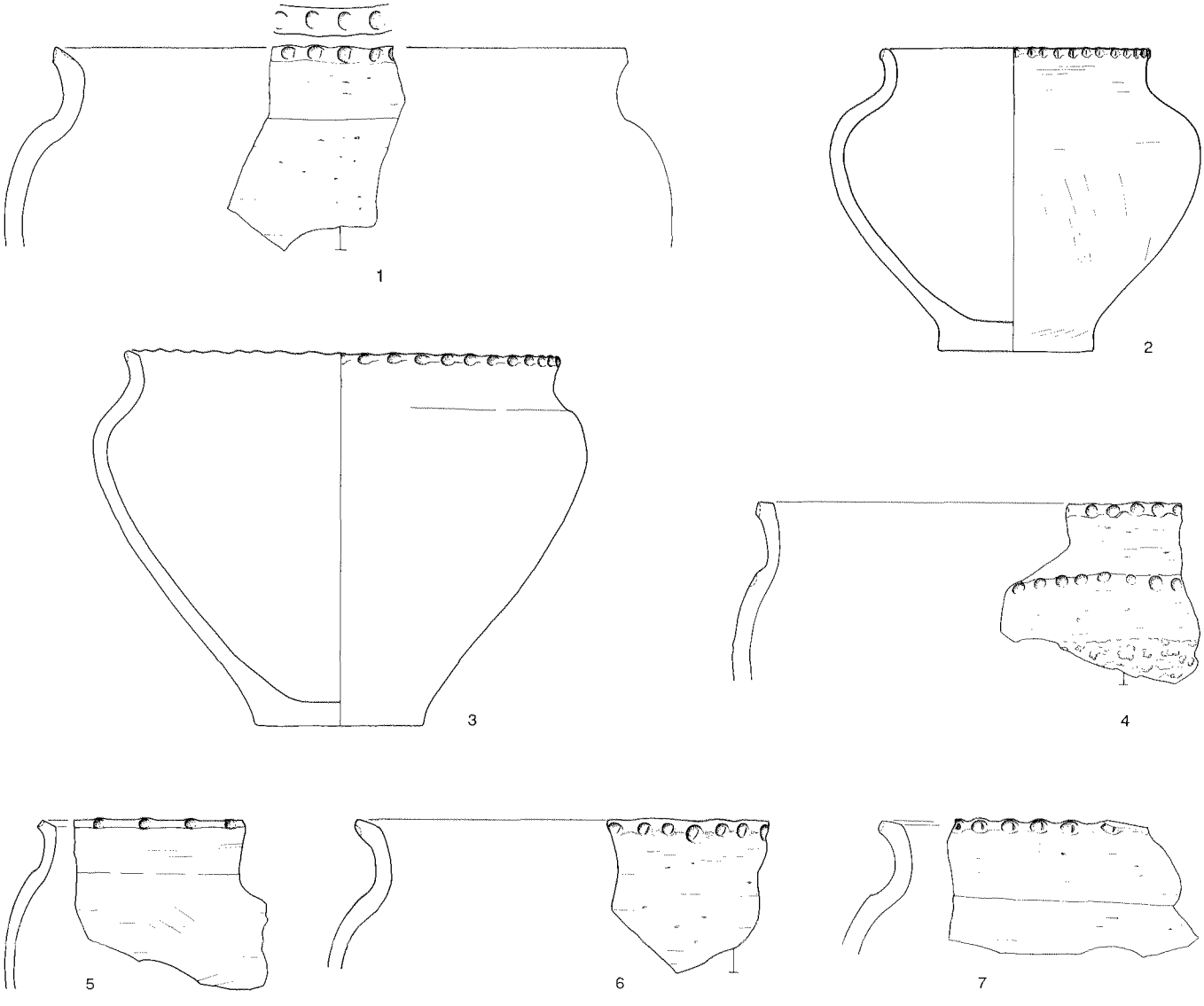
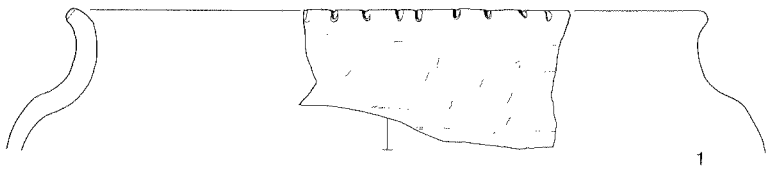


Abbildung 28 Westergo: Variante V3a. 30: 5; 45: 1; 51: 7; 71: 3; 82: 2; 119: 4, 6.

V3b (Abb. 29) Kerben, in Ausnahmefällen Nageleindrücke, am Rand (und zusätzlich einmal Kerben auf dem Rand, einmal Fingertupfen oben auf dem Rand). Zweimal eine Reihe Fingertupfen über der Schulter, viermal *streepband* oder breite Riefen. Etwas größeres Format als V3a; weniger oft Rußspuren.

Typ V4 (Abb. 30–33)
Typ V4 umfaßt Keramik mit Wellenrand-Verzierung (*kartelrand*). Hinzugefügt wurden Fragmente mit Fingertupfen- oder Kerbverzierung, die der Form nach – fehlender Hals – jünger sind als V3. Aufgrund der Rand–Hals–Schulter-Gliederung und der Ausführung

Abbildung 29 Westergo: Variante V3b. 19: 6; 45: 5, 7; 80: 1; 82: 3; 119: 2, 4; 122: 8. ▷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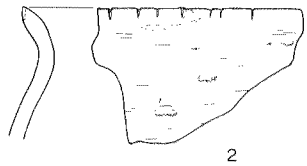
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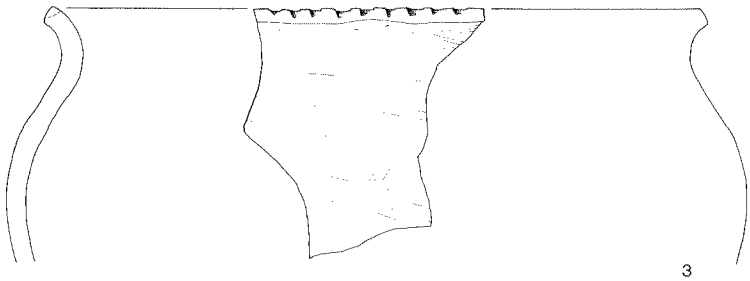
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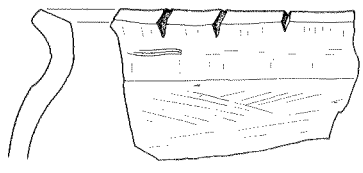
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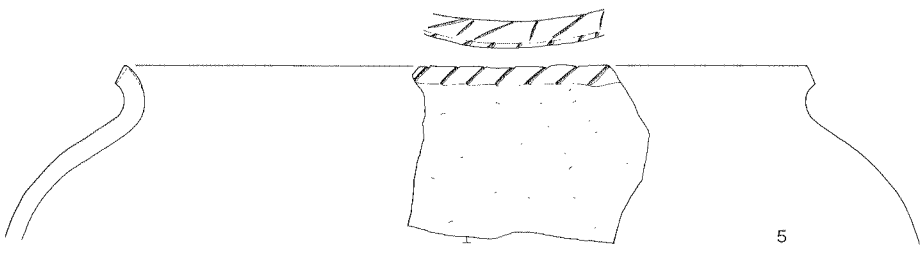
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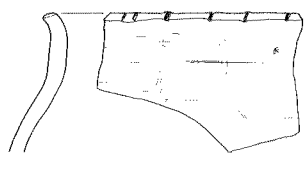
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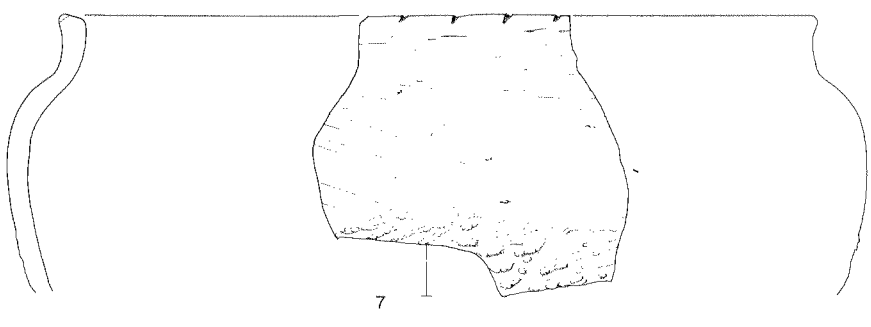
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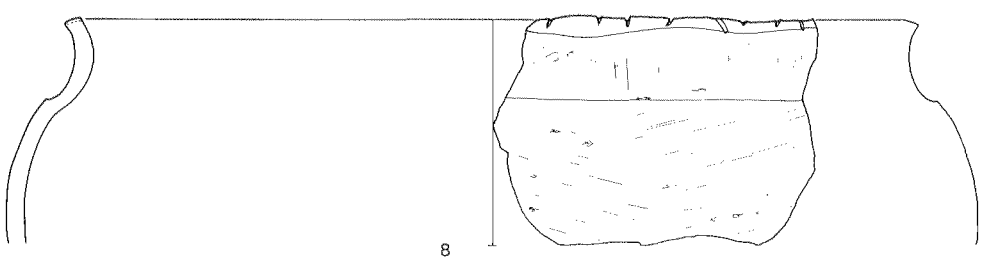
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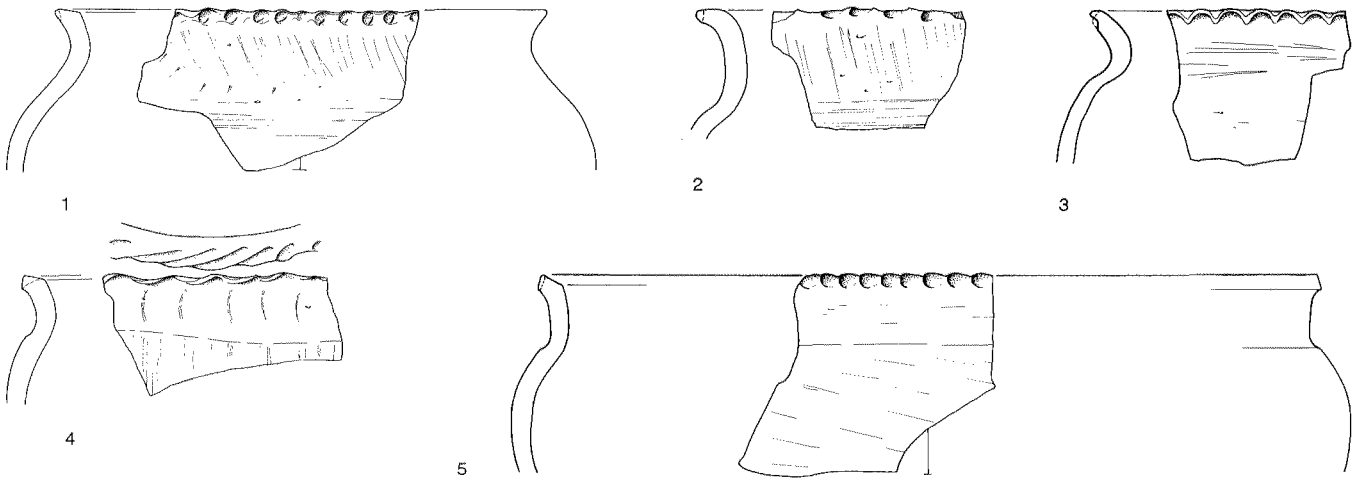


Abbildung 30 Westergo: Variante V4a. 31: 5; 82: 1, 2, 4; 119: 3.

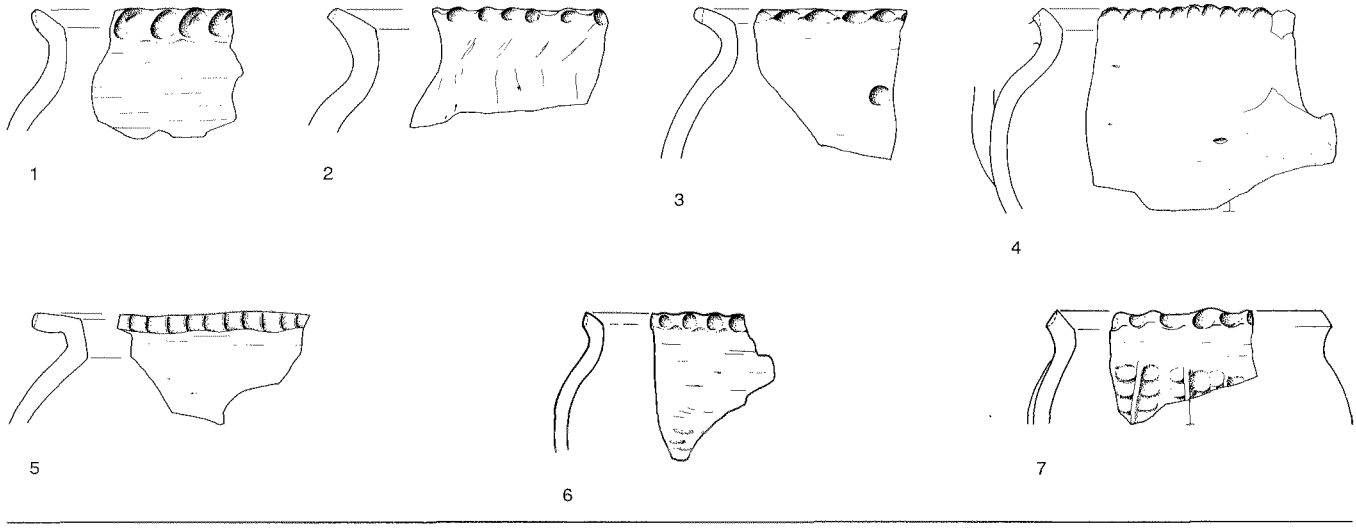
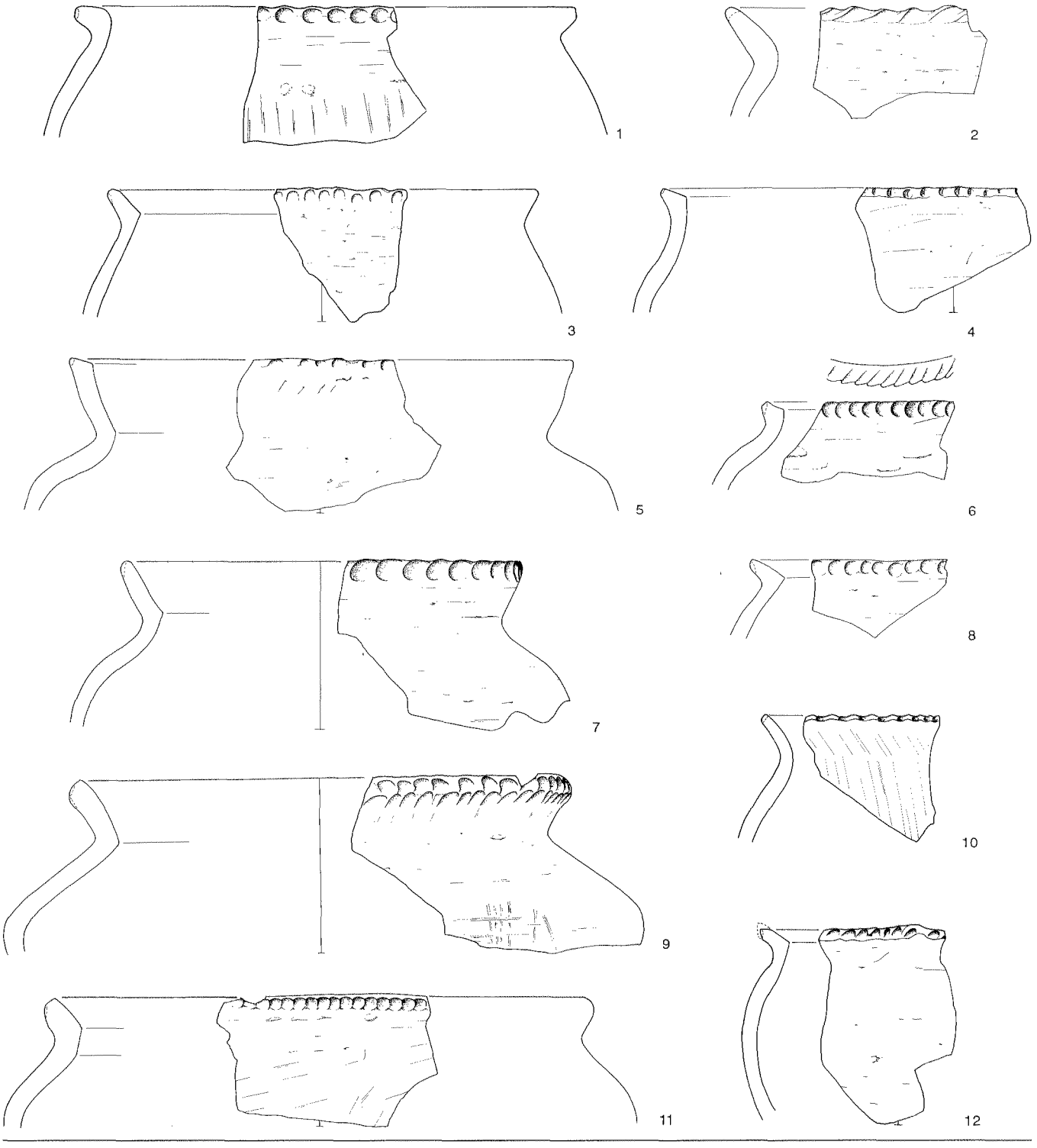


Abbildung 31 Westergo: Variante V4b. 45: 5; 82: 1–4; 97: 7; 119: 6.

der Mündung werden vier Varianten, die zusammen etwa 80–85 % der *kartelrand*-Ware repräsentieren, unterschieden:

V4a (Abb. 30) Weitmündige, mittelgroße bis große Keramik mit Wellenrand. Rand meistens verdickt und abgeplattet oder zweifach facettiert. Kurzer, hervorstehender oder konkaver Hals. Halsabsatz nur selten vorhanden. Schulter- und Bauchpartie gerundet; der größte Durchmesser oberhalb der Mitte des Gefäßes. Ziemlich weiche Ware. Fast die Hälfte der Fragmente ist mit organischem Material gemagert, sonst mit Keramikgrus oder »?«. Das Farbenspektrum der Außenseite ist hell: ocker, graugelb, orange. Die Oberfläche (oben) ist matt bis rauh.

Abbildung 32 Westergo: Variante V4c. 38: 10; 45: 8; 58: 1; 80: 5, 7, 9, 11; 82: 4, 6; 88: 2; 119: 3, 12. ▷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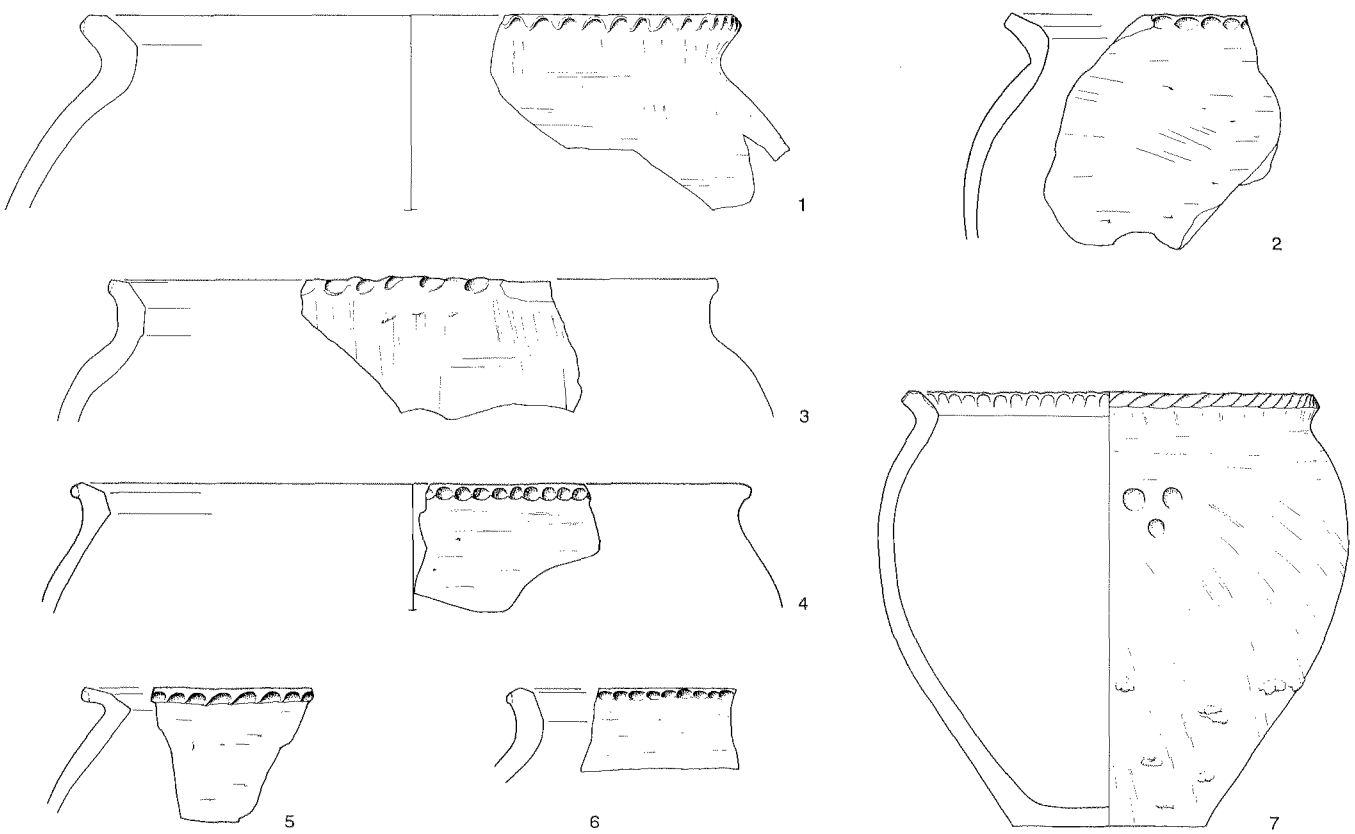

Abbildung 33 Westergo: Variante V4d. 24: 5; 80: 3, 7; 82: 1; 119: 2, 4, 6.

Die Randverzierung besteht überwiegend aus grobem[94] *kartelrand*. Schultermarkierung wie bei V3 kommt vereinzelt vor. Henkel (Schulter-Rand) sind selten vorhanden.

V4b (Abb. 31) Weitmündige, mittelgroße bis große Keramik mit Wellenrand und Facettierung der Mündung. Der Hals ist rudimentär. Der Rand steht hervor. Die Ware läßt sich mit der des Typs V4a vergleichen. Keramikgrus als Magerung kommt seltener vor als bei V4a. Verzierung wie bei V4a.

94 »Grob« heißt: in der Wulstlinie sind individuelle Fingertupfen erkennbar.

V4c (Abb. 32) Weitmündige, mittelgroße bis große Keramik mit hervorstehendem Wellenrand (etwa 10% mit einzelnen Eindrücken). Rand und Hals sind mehr oder weniger identisch. Längliche Form, oft stumpf dreieckig. Die Mündung des Gefäßes ist meistens abgestrichen. Die Schulter ist manchmal flach, mit schwachem Knick (einmal scharf) in die Bauchpartie übergehend.
Ware vergleichbar mit vorigen Varianten. Farbe meistens ocker oder graugelb. Ausführung etwas rauher als bei V4a und V4b.
Einige Randfragmente zeigen eine erheblich größere Randlänge (45–59 mm). Die Form der Ränder sieht der des Typs Wijster IIIA1 ähnlich. Die Magerung ist variabel: organisches Material, Keramik-, Muschelgrus oder Sand (Abb. 32: 5, 7).

V4d (Abb. 33) Ziemlich weitmündige, mittelgroße bis große Keramik mit 3- oder 4-fach facettiertem hervor-

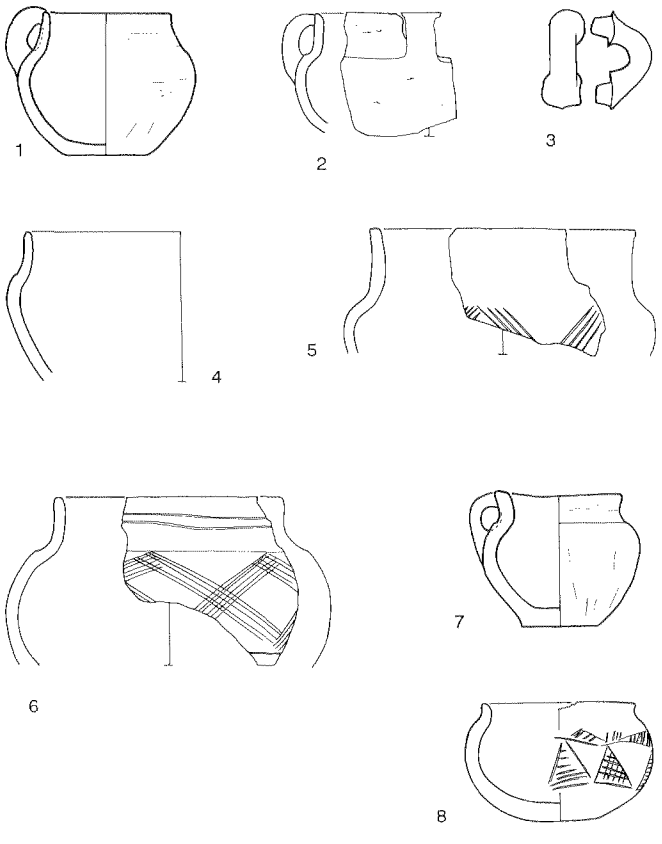

Abbildung 34 Westergo: Typ K1 (1–5) und Typ K2 (6–8). 66: 1, 6; 68: 3; 97: 7; 109: 2; 119: 4, 5, 8.

stehendem Wellenrand. Ein Hals fehlt meistens. Rand oft stark verdickt. Mündung meistens abgestrichen. Gerundete Schulter und gerundeter Bauch (einmal Schulterknick).
Mäßig harte Ware. Magerung organisch oder »?«. Farben: ocker, orange, graugelb. Matte Oberfläche.
Wellenrand oft stilisiert, d.h. keine Fingertupfen erkennbar.

2.4 Kleinkeramik
Die Kleinkeramik bildet eine sehr heterogene Gruppe. Auf diesen Seiten werden nur ziemlich allgemein vorkommende Gefäßformen behandelt, und dann noch auf zusammenfassende Weise. Von richtigen Typen ist nur bei K3a und K4 die Rede. Näpfe mit einem Bauchdurchmesser bis zu 8 cm und Miniaturgefäße werden in Paragraph 2.6 besprochen.
Weil diese Töpferarbeit zum Teil sehr schlecht zu datieren ist, ist sie nur schwer von späterer Keramik, z.B. der der Völkerwanderungszeit, abzugrenzen. Ich habe den Eindruck, daß Kleinkeramik damals manchmal auf – für friesische Begriffe – »herkömmliche« Art angefertigt wurde.

Typ K1 (Abb. 34: 1–5)
Kleinkeramik mit relativ hohem, meistens konischem Hals. Rand unverdickt, meistens gerundet. Die Ware ist weich bis mäßig hart. Dunkles Farbenspektrum. Wechselnde Behandlung der Oberfläche. Magerung: Gesteinsgrus oder Muschelgrus.
Oft ein Henkel von der Schulter bis zum Rand oder (eingezapft) auf der Schulter. Einmal ein Knopf (wie bei G1). Manchmal geometrische Verzierung; einmal eine Rille unter dem Rand.

Typ K2 (Abb. 34: 6–8)
Kleinkeramik mit niedrigem Hals. Mini-Ausgabe des Typs G3a. Rand gerundet, manchmal verdickt. Weiche bis mäßig harte Ware. Dunkle Farben. Gemagert mit Muschelgrus, sonst mit Gesteinsgrus, organischem Material oder mit Keramikgrus.
Manchmal ein Henkel von der Schulter bis zum Rand. Oft geometrisch verziert. Einmal mit Tupfen auf dem Rand und senkrechten Ritzlinien vom Rand abwärts.

Typ K3
K3a (Abb. 35) Kleinkeramik mit *streepband*-Verzierung. Konkaver Hals. Ränder in 50 % der Fälle verdickt, etwa ein Drittel zweifach facettiert. Ziemlich weiche Ware. Helle Farben: meistens ocker oder orange. Magerung: oft Keramikgrus, sonst organisches Material oder »?«. Überwiegend glatt bis poliert. Oft Koch- und Rußspuren.
Fast immer ein Henkel, mit gerundetem Profil, meistens Schulter-Rand. Manchmal zwei Henkel (Schulter-Hals). Etwa ein Viertel der Henkel verziert mit Tupfen, Rillen oder *streepband*.
Verschiedene Größeklassen: um 11 cm Bauchdurchmesser, um 14 und – die Mehrheit – um 17 cm. Fließender Übergang zu Gw4 und Ge4.

K3b (Abb. 36) Kleinkeramik wie K3a, jedoch ohne *streepband*. Form ziemlich variabel, von der Becher- bis zur Terrinenform. Ränder überwiegend verdickt,

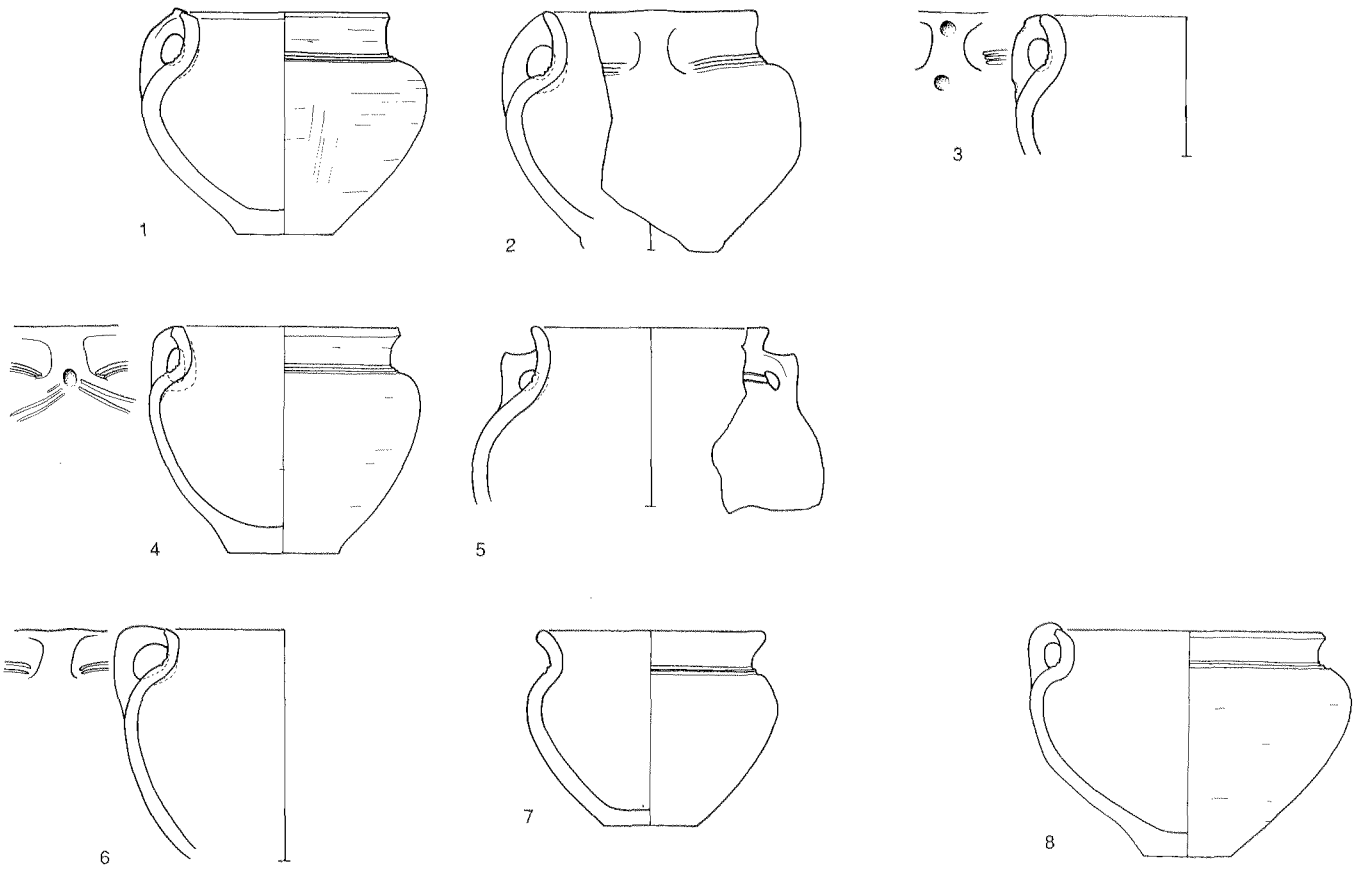

Abbildung 35 Westergo: Typ K3a. 79: 8; 93: 7; 117: 1; 119: 3, 5; 120: 4; 122: 2, 6.

manchmal mit Tupfen oder Wellen verziert. Hin und wieder ein Schulter- oder Bauchknick. Auffallend sind einige schlanke Becher mit ausschweifendem Rand (Abb. 36: 8).
Weiche Ware. Farben: überwiegend ocker oder graugelb. Magerung: oft organisches Material, weit weniger Keramikgrus oder »?«. Oberfläche weniger gut behandelt als bei K3a. Oft Ruß- und Kochspuren.
Oft ein Henkel, meistens von der Schulter bis zum Rand. Einmal mit einem Knopf ausgestattet (Abb. 36: 4). Manchmal zwei Henkel. Gerundetes bis spitzes Profil. Kaum verziert.
Durchschnittlich kleiner als K3a. Fließender Übergang zu Gw5 und Ge5.

Typ K4 (Abb. 37)
Kleine bis mittelgroße, sorgfältig gearbeitete Schalen oder Becher, meistens auf einem Standfuß. Ein kurzer, hervorstehender Rand, meistens verdickt und facettiert. Hals sehr kurz oder fehlend. Keine Henkel.
Weiche bis mäßig harte Ware, meistens reduzierend gebrannt. Selten orange. Oberfläche der Außenseite glatt bis poliert. Magerung oft nicht wahrnehmbar; manchmal feines organisches Material.
Schmaler, eingeschnürter Standfuß oder Standring, oft mit einer seitlichen Facette. Der Fuß ist öfters hohl von unten.[95] Der Boden ist an der Innenseite nicht vertieft. Manchmal ist über dem Fuß eine Rippe angebracht.
Von den 218 Fragmenten geben nur vier Stück Auskunft über das ganze Profil. Bodenscherben sind in der Mehrzahl (n = 125). Es ist nicht möglich, die Boden-

95 Hohler Standfuß: 77 Stück; massiver Standfuß: 32 Stück.

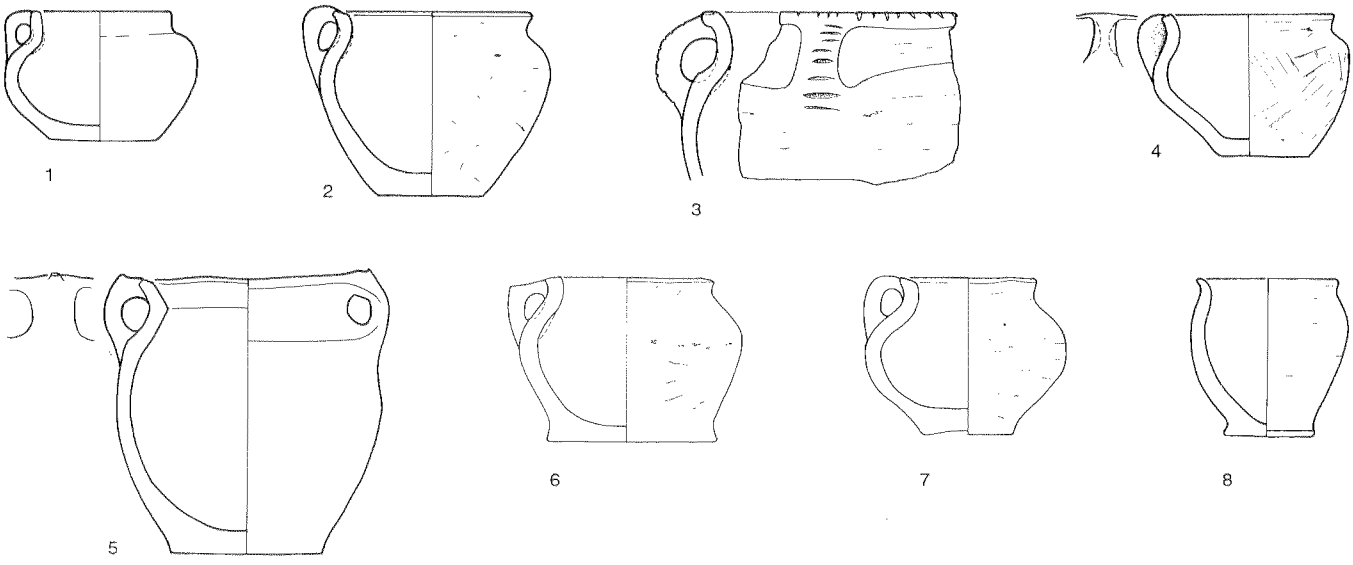

Abbildung 36 Westergo: Typ K3b. 6: 4; 26: 1; 45: 8; 66: 6, 7; 119: 2, 5; 131: 3.

form jeder Variante mit Bestimmtheit festzustellen. Flache Böden bilden jedenfalls eine Ausnahme. Verzierung fehlt meistens (Abb. 37: 29–30).[96]
Aufgrund der Form lassen sich drei Varianten unterscheiden:

K4a (Abb. 37: 1–4) Schale mit breiter, ziemlich flacher Schulter und einem ebenfalls flachen oder leicht konvexen Unterteil. Ziemlich scharfer Umbruch. Einfacher, kurzer Rand. Vermutlich flacher Boden oder kurzer Standfuß.

K4b (Abb. 37: 5–8)[97] Fußschale oder -becher mit schmaler Schulter, mit scharfer Umbruch übergehend in eine konvexe Bauchpartie. Rand oft dreifach facettiert. Ziemlich hoher Standfuß.

K4c (Abb. 37: 9–20) Fußschale mit konvexer Wandpartie. Keine Schulter. Rand oft abgestrichen. Standfuß.

96 Die Zickzackbänder (Abb. 37: 30) sind übrigens erst nach dem Brennvorgang eingeritzt.
97 Siehe ebenfalls Van Es 1977, Fig. 101: 17.

2.5 Schalen und Kümpfe (Abb. 38)
Kümpfe und Schalen sind innerhalb des Stichprobenmaterials ein ziemlich rares Phänomen. Beim besten Willen sind nicht mehr als 39 Stück festzustellen, wobei zu bemerken ist, daß sich kaiserzeitliche Kümpfe schwer von zeitgleichen weitmündigen Terrinenformen (z.B Variante V4c) und von Sieben (siehe Par. 2.8.2) trennen lassen. Ich beschränke mich auf die Beschreibung der wichtigsten Fragmente.

2.5.1 Schalen und Kümpfe mit einfachem Rande
– Inv. Nr. FM 82a-246 (Abb. 38: 2): Schale mit verdicktem, abgeplattetem Rand und einem Henkel. Keine Magerung wahrgenommen. Graugelbe Farbe. Matte Oberfläche.
– (Abb. 38: 1, 3): Zwei Schalen aus Feins mit gerauhtem Unterteil. Gemagert mit Gesteinsgrus. Farbe: grau bis graubraun. Von der größeren Schale sind die Außen- und Innenseite geglättet.
– (Abb. 38: 4): Eine Schale aus Jorum. Graubraune, matte Oberfläche. Vermutlich mit Keramikgrus gemagert.
– Inv. Nr. FM 157-48 (Abb. 38: 5): Schale mit breitem, abgeplattetem Rand. Wenigstens eine Durchbohrung, unter dem Rand. Keramikgrusmagerung. Farbe: ocker. Matte Oberfläche.

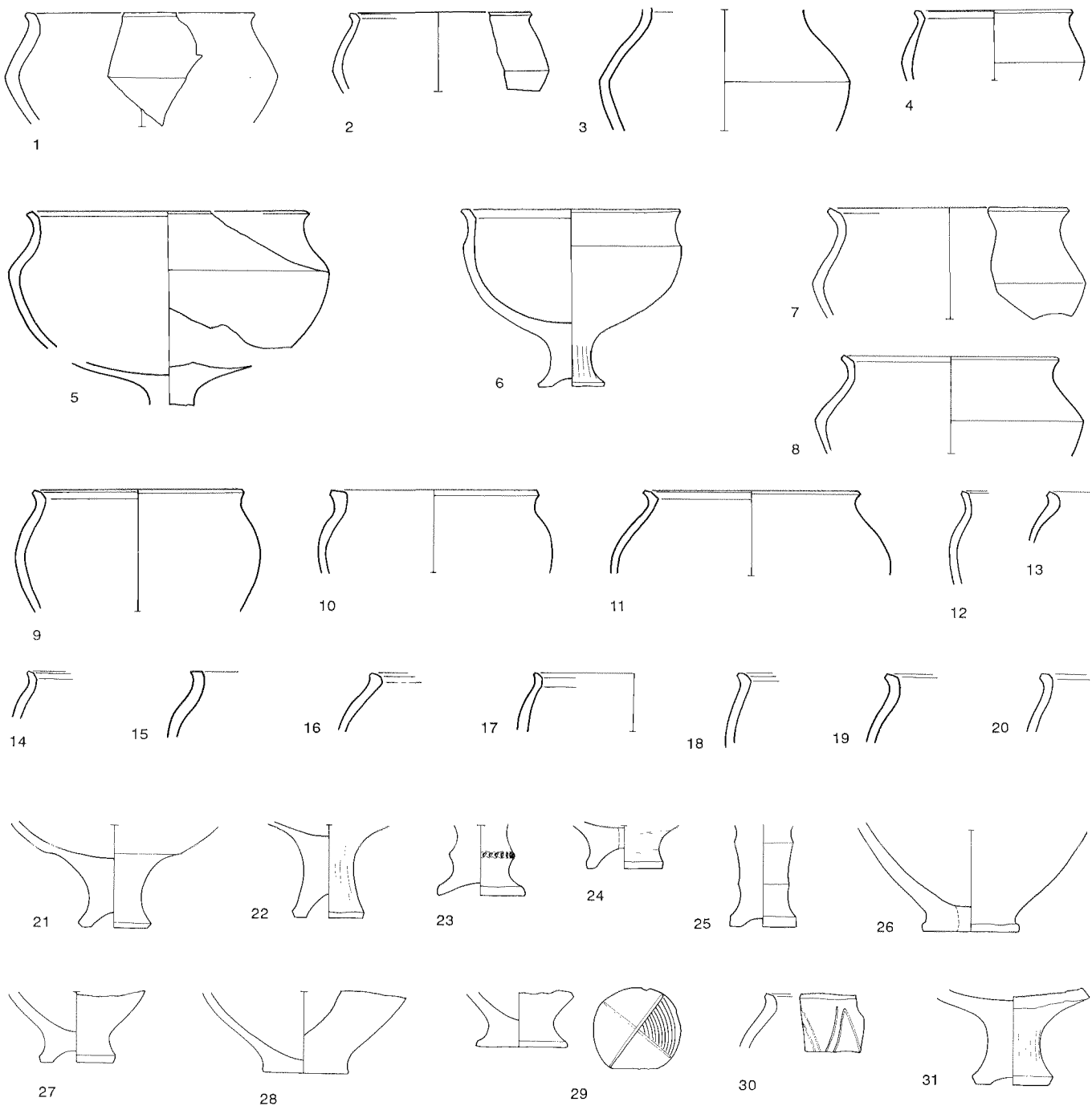

Abbildung 37 Westergo: Typ K4 (Variante K4a: 1–4; K4b: 5–8; K4c: 9–20). 15: 1; 60: 30; 66: 3, 10, 13, 16, 26; 76: 21, 23; 80: 6, 29; 82: 9, 11, 12, 14, 18, 19, 22, 24, 27, 28, 31; 89: 15, 17; 93: 5; 119: 1, 4, 7, 8, 20; 122: 25.

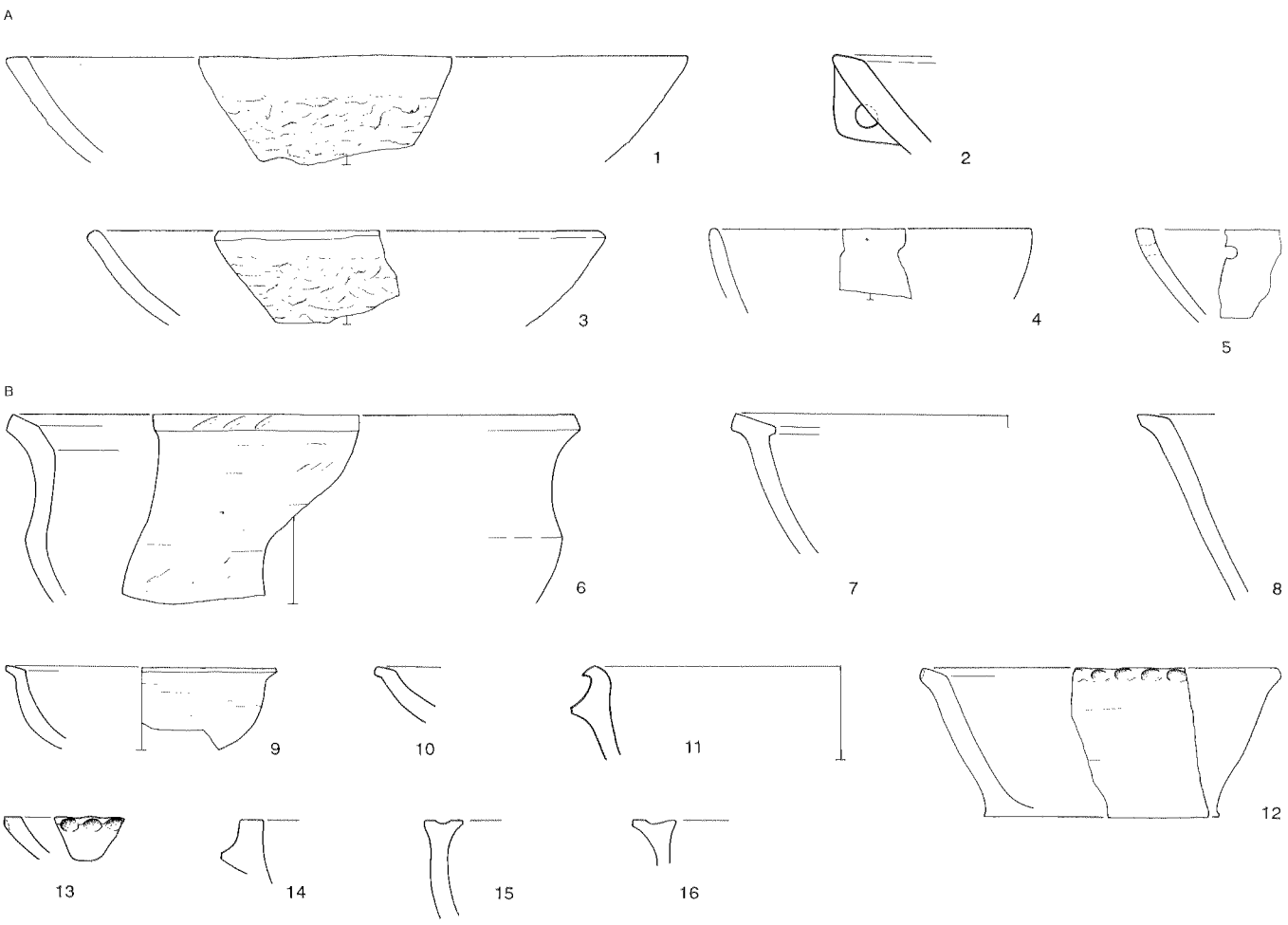

Abbildung 38 Westergo: Schalen und Kümpfe mit einfachem Rand (A) und mit facettiertem Rand (B). 31: 13; 33: 16; 41: 6, 7; 45: 5; 66: 15; 73: 10; 80: 12, 14; 83: 4; 95: 9; 97: 8; 109: 1, 3; 119: 2, 11.

2.5.2 Schalen und Kümpfe mit facettiertem Rande

– Inv. Nr. FM 180-47: Kumpf mit Wellenrand und Leiste an der Innenseite des Randes. Organische Magerung. Graugelbe Farbe. Matte Oberfläche.

– (Abb. 38: 7): Schale mit einer Leiste an der Innenseite des Randes. Farbe: ocker. Glatte Oberfläche. Keine Magerung wahrgenommen.

– Inv. Nr. FM 180-88: Kumpf mit verdicktem, facettiertem Wellenrand. Organische Magerung. Graugelbe Farbe. Matte Oberfläche.

– (Fundstelle 18): Schale aus Franeker mit verdicktem, facettiertem Rand. Keine Magerung wahrgenommen. Graugelbe Farbe. Matte Oberfläche.

– Inv. Nr. FM 82-115 (Abb.38: 11): Kumpf mit einer breiten Schulterrippe. Keramikgrusmagerung. Farbe: ocker. Außen- und Innenseite glatt.

– Inv. Nr. FM 138-12 (Abb. 38: 14): Kumpf mit einer breiten Schulterrippe. Organische Magerung. Graubraune Farbe. Außen- und Innenseite glatt.

– Inv. Nr. FM 143-66: Flache Schale mit leicht hohlem Boden. Keramikgrusmagerung. Orangefarbig. Rauhe Oberfläche.

– Inv. Nr. FM 1981/III-20: Steilwandige Schale mit Wellenrand. Organische Magerung. Graubraune Farbe. Matte Oberfläche.

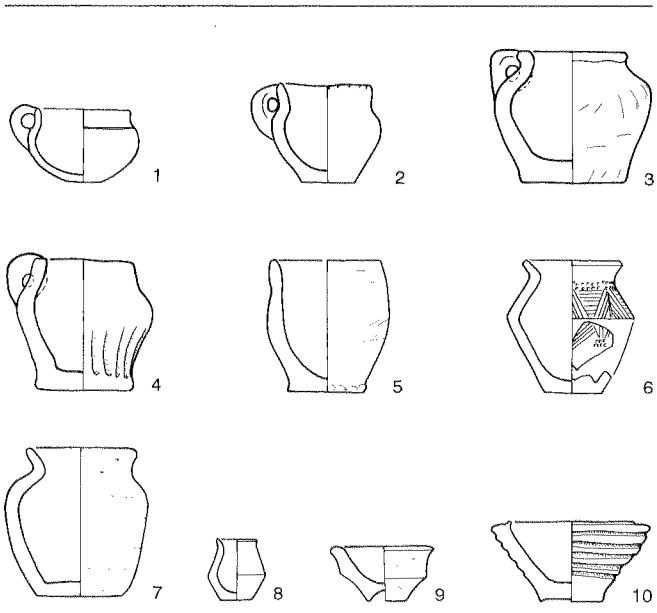

Abbildung 39 Westergo: Kleinstkeramik. 57: 9; 58: 3; 66: 5, 10; 75: 4; 82: 7; 86: 2; Janum: 6; Umgebung Oosterend: 1, 8.

– (Abb. 38: 6): Terrinenartiger Kumpf. Rand mehrfach facettiert. Farbe: ocker. Matte Oberfläche.
– (Abb. 38: 15, 16): Zwei Randfragmente mit einer Rille oben auf dem Rand. Dunkelfarbig, glatt.
– Inv. Nr. RMO a1913/11.130 (Abb. 38: 12): Schale mit Wellenrand. Farbe: ocker. Matte Oberfläche. Keine Magerung wahrgenommen.

2.6 Kleinstkeramik (Abb. 39)
Kleiner als die unter 2.4 beschriebenen Becher und Tassen sind Näpfchen und dergleichen. Der formelle maximale Bauchdurchmesser – bei Schälchen: Randdurchmesser – ist 8 cm. Die Serie variiert von Miniaturgefäßen, vermutlich Spielzeug, bis zu kleinen Bechern und Schälchen. Die Verteilung der Bauchdurchmesser läßt einen fließenden Übergang zu Kleinkeramik, insbesondere zum Typ K3b, vermuten. Eine Wanddicke von durchschnittlich 0,8 cm verleiht diesen Formen ein ziemlich plumpes Aussehen. Die Ware ist weich, Magerung fehlt meistens. Die Randform ist einfach. Henkel sind selten. Verzierung fehlt nahezu: einige Male Eindrücke auf dem Rand, einmal Nageleindrücke unter dem Boden, einmal senkrechte Rippen auf der Wand. Koch- und Rußspuren gibt es fünfmal.
Einige Exemplare erfordern die Aufmerksamkeit:
– Inv. Nr. FM 188-55 (Abb. 39: 9): Mehrere Rippen, hohler Boden. Weiche Ware, graugelb, matte Oberfläche. Keine Magerung?
– Inv. Nr. FM 123-1 (Abb. 39: 10): Mehrere Rippen. Mäßig harte Ware, graugelb, matte Oberfläche. Muschelgrusmagerung.
– Inv. Nr. FM 71-11 und 80d-4: Näpfchen mit niedrigem Henkel. Gesteinsgrus- bzw. organische Magerung.
– Inv. Nr. FM 64-1 und 80f-9: Kleine Situlen mit Knöpfen auf der Wand. Gesteinsgrus- bzw. organische Magerung.
– Inv. Nr. FM 64a-1 und 65-42: Kumpfartige Becher mit einem Henkel. Gesteinsgrusmagerung. Oberfläche matt ocker bzw. glatt graubraun.

2.7 Sonderformen (Abb. 40–44)
Unter Sonderformen verstehe ich atypische Keramik mit einer ausgeprägten Form und Gefäße, die augenscheinlich einem Typ oder einer Periode angehören (namentlich Abb. 41). Bei einem Teil der erwähnten Fragmente müssen die Überschriften »Eisenzeit« und »Kaiserzeit« deshalb im bildlichen Sinne aufgefaßt werden. Die Liste enthält übrigens nur eine Auswahl.

2.7.1 Eisenzeit (Abb. 40)
Die meisten Fragmente sind mit Gesteinsgrus gemagert. Die Oberfläche ist geglättet.
– Inv. Nr. FM 82a-54 (Abb. 40: 4): Konisches Oberteil mit waagerechter Rille.
– Inv. Nr. FM 82a-407: Konisches Randfragment.
– Inv. Nr. FM 82a-239 (Abb. 40: 3): Engmündiges Randfragment mit hohem Hals. Farbe: hellocker.
– Inv. Nr. RMO a1913/11.39 (Abb. 40: 1): Schlanker, asymmetrischer Topf mit einer[98] Buckeldelle auf der Schulter.
– Inv. Nr. FM 82a-380 (Abb. 13: 12): Schulterfragment mit Henkelansatz; Verzierung in Tiefstich-Technik. Rötliche Farbe.
– Inv. Nr. FM 227-38 (Abb. 40: 2): Weitmündiges Gefäß ohne Halsabsatz. Farbe: dunkelbraun.

98 Van Giffen, aus dessen Sammlung das Gefäß stammt, schrieb zunächst in seiner Fundliste »zwei Buckeldellen (...), diametral gestellt«, hat das aber später geändert. Der Topf ist unvollständig, eine zweite Delle könnte vorhanden gewesen sein.

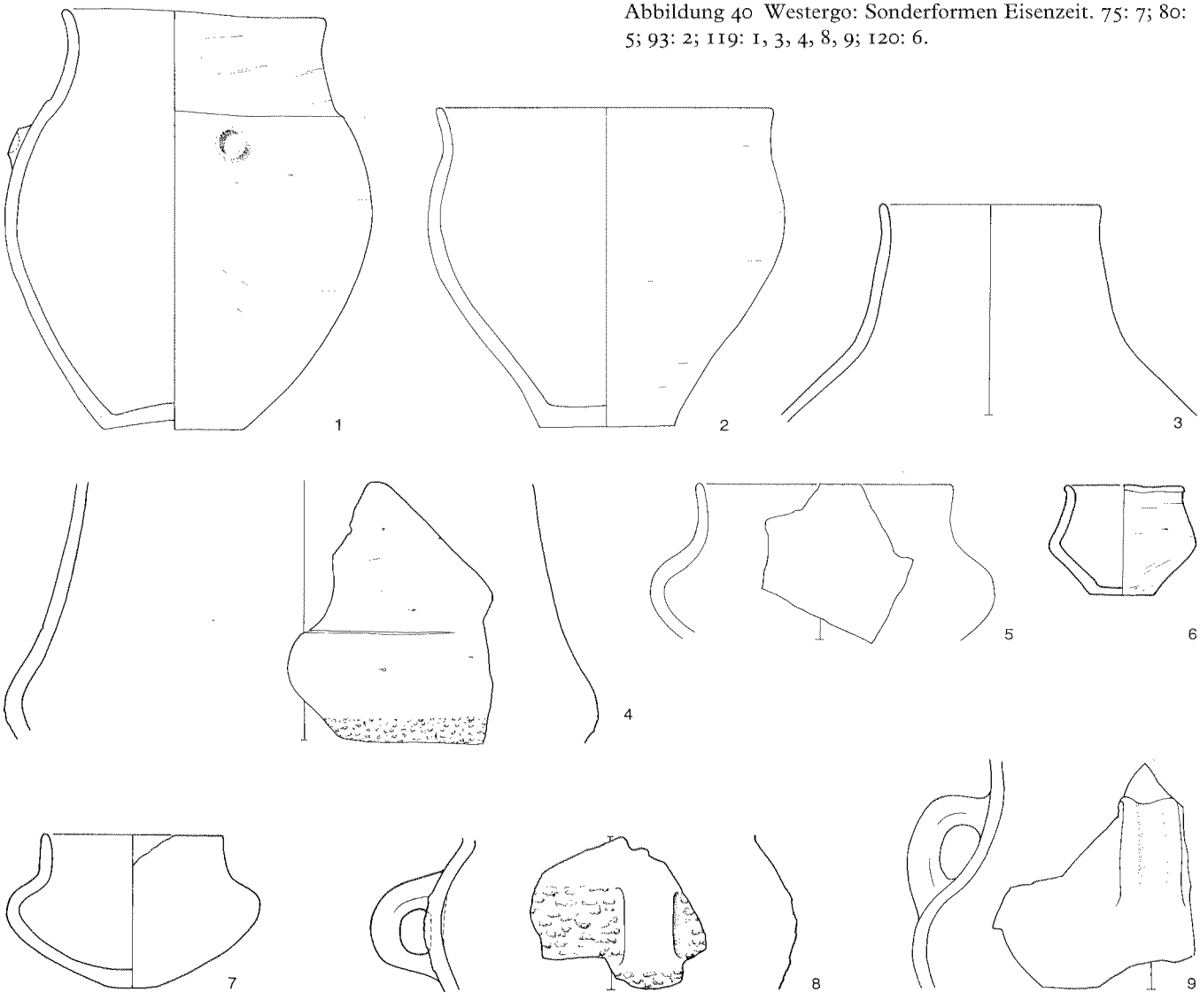

Abbildung 40 Westergo: Sonderformen Eisenzeit. 75: 7; 80: 5; 93: 2; 119: 1, 3, 4, 8, 9; 120: 6.

– (Abb. 40: 7): Weitmündiges Gefäß mit waagerechtem Hals und gerundetem Boden. Vergesellschaftet mit einer – vermutlich – G1-Wandscherbe.[99]
– Inv. Nr. FM 182-5 (Abb. 40: 6): Kleines doppelkonisches Gefäß mit kurzem, hervorstehendem Rand. Gemagert mit Gesteins- und Keramikgrus. Graubraune Farbe. Glatte Oberfläche.
– Inv. Nr. FM 82a-55: Randfragment eines engmündigen Gefäßes mit vermutlich vier Henkeln am Hals. Mäßig harte Ware, gemagert mit Keramikgrus. Farbe: ocker. Matte Oberfläche.
– Inv. Nr. FM 1969/VII-5: Wandfragment mit waagerechtem Henkel auf der Schulter. Gemagert mit Keramikgrus. Farbe: ocker. Matte Oberfläche.

99 Gefunden von P. Geel in einem Brunnen (?) bei der östlichen Wurt in Baarderburen (75).

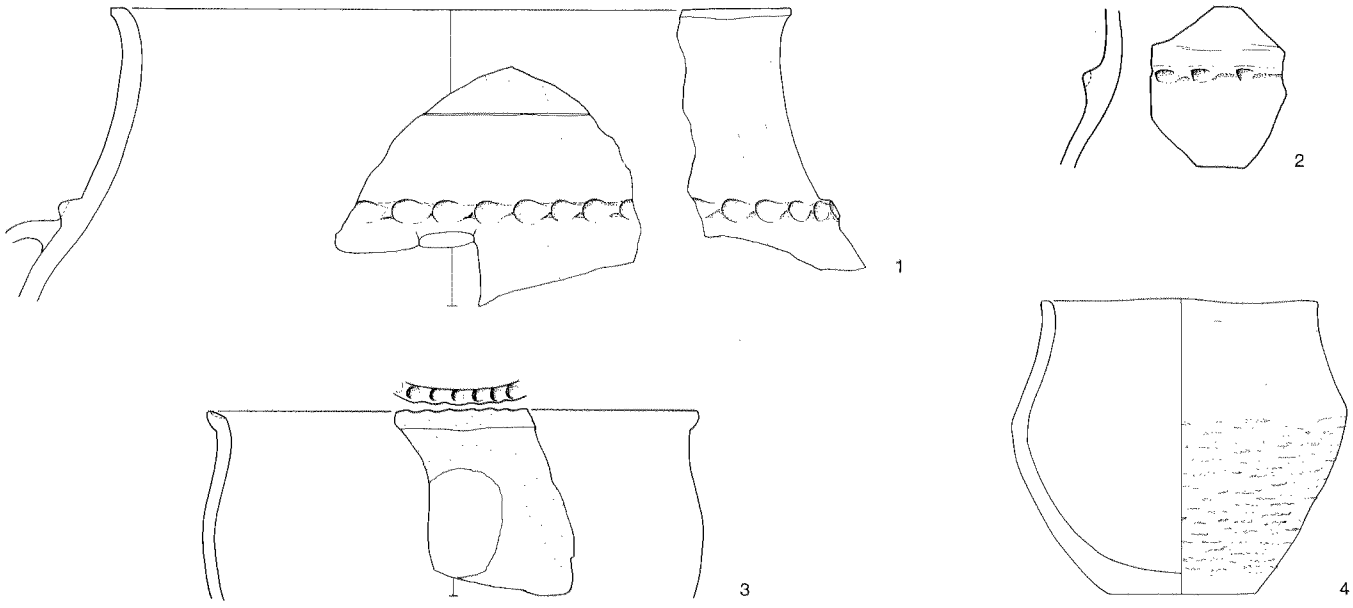

Abbildung 41 Westergo: eisenzeitartige Keramik. 33: 3; 119: Rest.

– (Abb. 41: 3): Ein Randfragment aus Lutjelollum mit Fingertupfeneindrücken oben auf dem Rand. Form wie Typ V1, jedoch sehr harte, fast mittelalterliche Ware. Magerung: feiner Gesteinsgrus oder Sand. Oberfläche: graubraun, fühlt sich wie Sandpapier an.
– Inv. Nr. FM 82a-141 (Abb. 41: 2): Schulterfragment mit Tupfenleiste. Ziemliche harte Ware.
– Inv. Nr. RMO a1913/11.131 (Abb. 41: 1): Randfragment mit Tupfenleiste und einem Henkelchen. Rand facettiert. Waagerechte Rille (unterbrochen). Harte Ware. Oberfläche matt; Farbe grau und orange.
– Inv. Nr. FM 82a-328 (Abb. 41: 4): Doppelkonisches Gefäß. Harte Ware. Oberseite glatt, Unterseite zeigt feinen Schlickbewurf. Farbe: graubraun.

2.7.2 Kaiserzeit (Abb. 42–44)
– (Abb. 43: 5,7): Acht *streepband*-Fragmente weisen Facettierung der Mündung auf.
– (Abb. 43: 6): Halslose Keramik ist ebenfalls mit *streepband* – oder mit einzeln eingeritzten Linien – ausgestattet (neunmal). Die meisten Fragmente zeigen ausgebogene, einfache Ränder.
– Inv. Nr. FM 1976/VIII-8 (Abb. 42: 2): Ein Gefäß mit langem, hervorstehendem Rand, mit Henkeln auf der Schulter und mit einem Bauchknick. Gemagert mit Gesteinsgrus. Graue Farbe.
– Inv. Nr. FM 82a-246 (Abb. 42: 4): Randfragment mit kurzem, hervorstehendem, scharf facettiertem Rand und Henkeln auf der Schulter. Geglättete Ware, von grauer Farbe; gemagert mit Gesteinsgrus.
– Inv. Nr. FM 71-2 (Abb. 42: 1): Zeigt hybride Merkmale: zwar zwei Henkel am Rand, aber ziemlich massiv, dazu ein Bauchknick. Ziemlich glatte Oberfläche, graubraun. Organische Magerung. Kochreste an der Innenseite.
– Inv. Nr. RMO a1913/11.130 (Abb. 43: 1): Randfragment mit Wellenmuster. Form wie Variante V4b, jedoch *gesmoorde* Ware.
– Inv. Nr. FM 74g-..? (Abb. 43: 2): Randfragment mit Wellenmuster und einem Henkel.
– (Abb. 43: 8): Ein halsloses Randfragment aus Franeker mit zwei waagerechten Linien (kein *streepband*).
– (Abb. 43: 3): Randfragment aus Hichtum. Form wie Variante Gw6a oder Gw7a, jedoch mit Gesteinsgrus gemagert. Matte, dunkle Oberfläche.
– Inv. Nr. RMO a1912/3.209+211 (Abb. 42: 5): Hervorstehender Rand. Gemagert mit Gesteinsgrus. Glatte, dunkle Oberfläche.

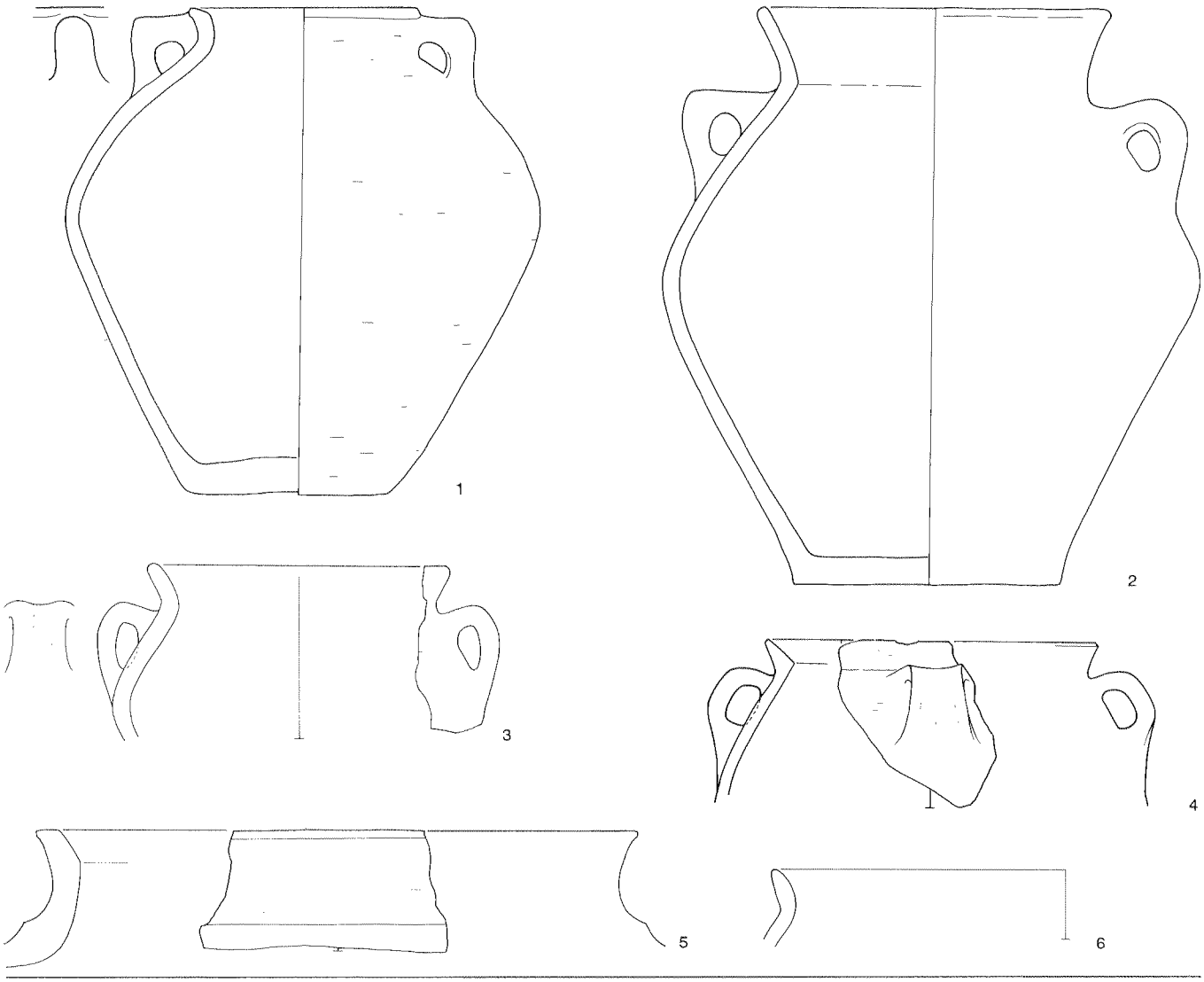

Abbildung 42 Westergo: Sonderformen Kaiserzeit (G/V-Keramik). 3: 2; 6: 1; 56: 3; 70: 5; 80: 6; 119: 4.

– (Abb. 43: 4): Randfragment aus Barkwerd. Hervorstehender Rand. Organische Magerung. Glatte, dunkle Oberfläche.
– (Abb. 42: 3): Randfragment aus Ludum. Hervorstehender Rand. Vermutlich zwei Henkel auf der Schulter.
– (Abb. 42: 6): Randfragment aus Barkwerd. Randform mit Variante Gw6b vergleichbar. Rippe auf der Schulter.
– Inv. Nr. FM 82b-13 (Abb. 44: 1): Eine vollständige *Situla* mit hervorstehendem Rand, kurzer flacher Schulter und scharfem Knick zum eingezogenen Bauch. Die Ware ist identisch mit der des Typs K4.
– (Abb. 44: 2–8): Sieben Randfragmente. Ebenfalls mit Zickzackprofil. Gleiche Ware (einmal Keramikgrus).
– Inv. Nr. RMO a1912/3.112 (Abb. 44: 9): Ein winziges Situlenfragment mit einer Randlippe. Harte Ware, gemagert mit feinem Gesteinsgrus. Geglättet. Farbe: grau.

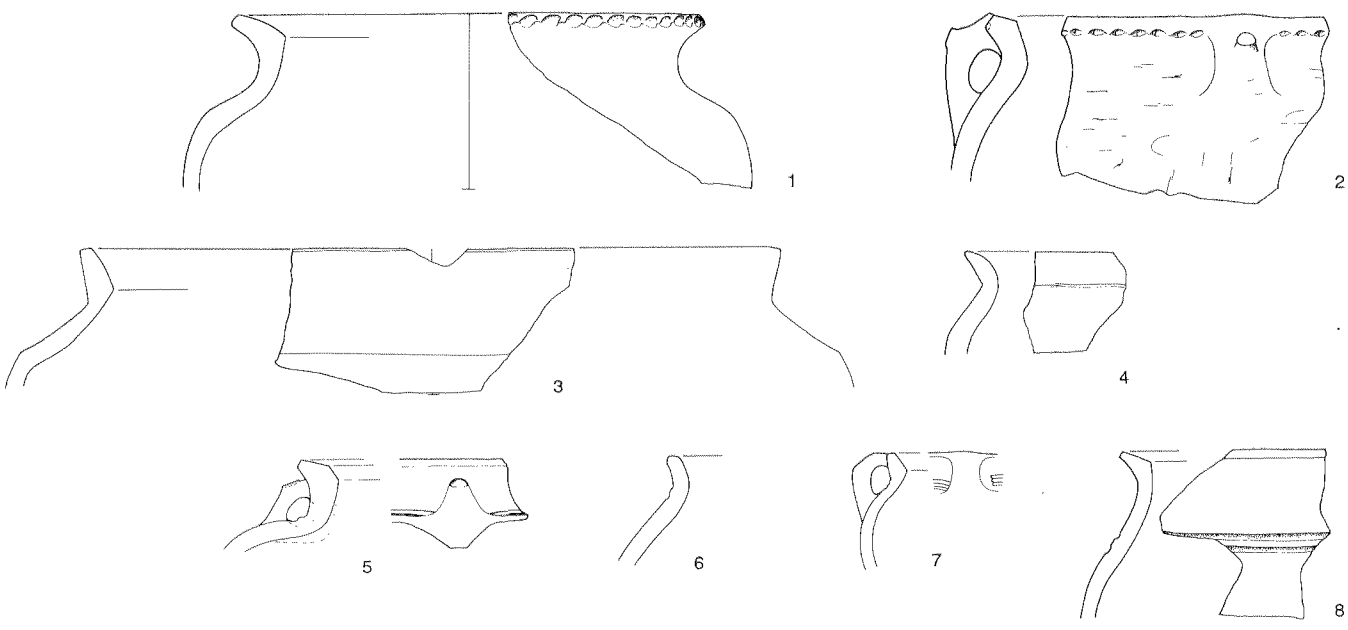

Abbildung 43 Westergo: Sonderformen Kaiserzeit (G/V-Keramik), Fortsetzung. 7: 8; 66: 5–7; 80: 1, 4; 119: 3; 131: 2.

– Inv. Nr. RMO a1912/3.185 (Abb. 44: 10): Ein zweigliedriges Situlenfragment mit facettiertem Rand. Ware wie bei Typ K4.
– Inv. Nr. FM 186-47 (Abb. 44: 21): Ziemlich schlankes Gefäß mit zwei Henkeln auf der Schulter. Violett/graue Farbe. Matte Oberfläche. Keramikgrusmagerung.
– Inv. Nr. FM 87a-17[100] (Abb. 44: 16): Kleines Gefäß mit K4-ähnlichem Oberteil, jedoch mit rundem Boden und einem Henkel. Ware wie bei Typ K4.
– Inv. Nr. FM 131-89[101] (Abb. 44: 17): Halsloses Gefäß mit breiter Rippe an der Innenseite und zwei Durchbohrungen unter dem Rand. Auf der Wand befinden sich schmale Rippen. Keine Magerung wahrgenommen. Farbe: graugelb. Rußspuren an der Außenseite.
– Inv. Nr. FM 123-86 (Abb. 44: 15): Randfragment mit verdicktem Rand. Geometrische Verzierung (hängende Bögen). Ziemlich harte, geglättete Ware; reduzierend gebrannt. Magerung: Sand mit Muschelgrus.
– Inv. Nr. RMO a1912/3.200 (Abb. 44: 12): Wandfragment mit waagerechten Rillen und Tupfenreihen. Organische Magerung.
– (Abb. 44: 11): Randfragment einer Trichterschale, aus Ludum. Waagerechte Rillen. Gesteinsgrusmagerung.
– Inv. Nr. FM 82a-81 (Abb. 44: 14): Breiter Standfuß. Gemagert mit Sand und Muschelgrus.
– Inv. Nr. FM 71a-1 (Abb. 44: 13): Hohler Standfuß mit Rippe. Gesteinsgrusgemagert. Oberfläche: grau, glatt.
– Inv. Nr. FM 74g-3 (Abb. 44: 20): Zweihenkliges, schlankes Gefäß. Organisch gemagert. Oberfläche: rauh, ocker.
– Inv. Nr. FM 80f-19 (Abb. 44: 19): Zweihenkliges, schlankes Gefäß. Keine Magerung wahrgenommen. Oberfläche: matt, graugelb.
– Inv. Nr. FM 1963/IV-29 (Abb. 44: 22): Einhenkliges, bauchiges Gefäß. Organische Magerung. Oberfläche: rauhwandig, lilarot.
– Inv. Nr. FM 65-15 (Abb. 44: 18): Kumpfartiges Gefäß. Rand an sieben Stellen leicht ausgezogen. K4-Ware.

100 Fundstelle unbekannt.

101 Wurt Gerns bei Witmarsum, außerhalb des Stichprobengebietes.

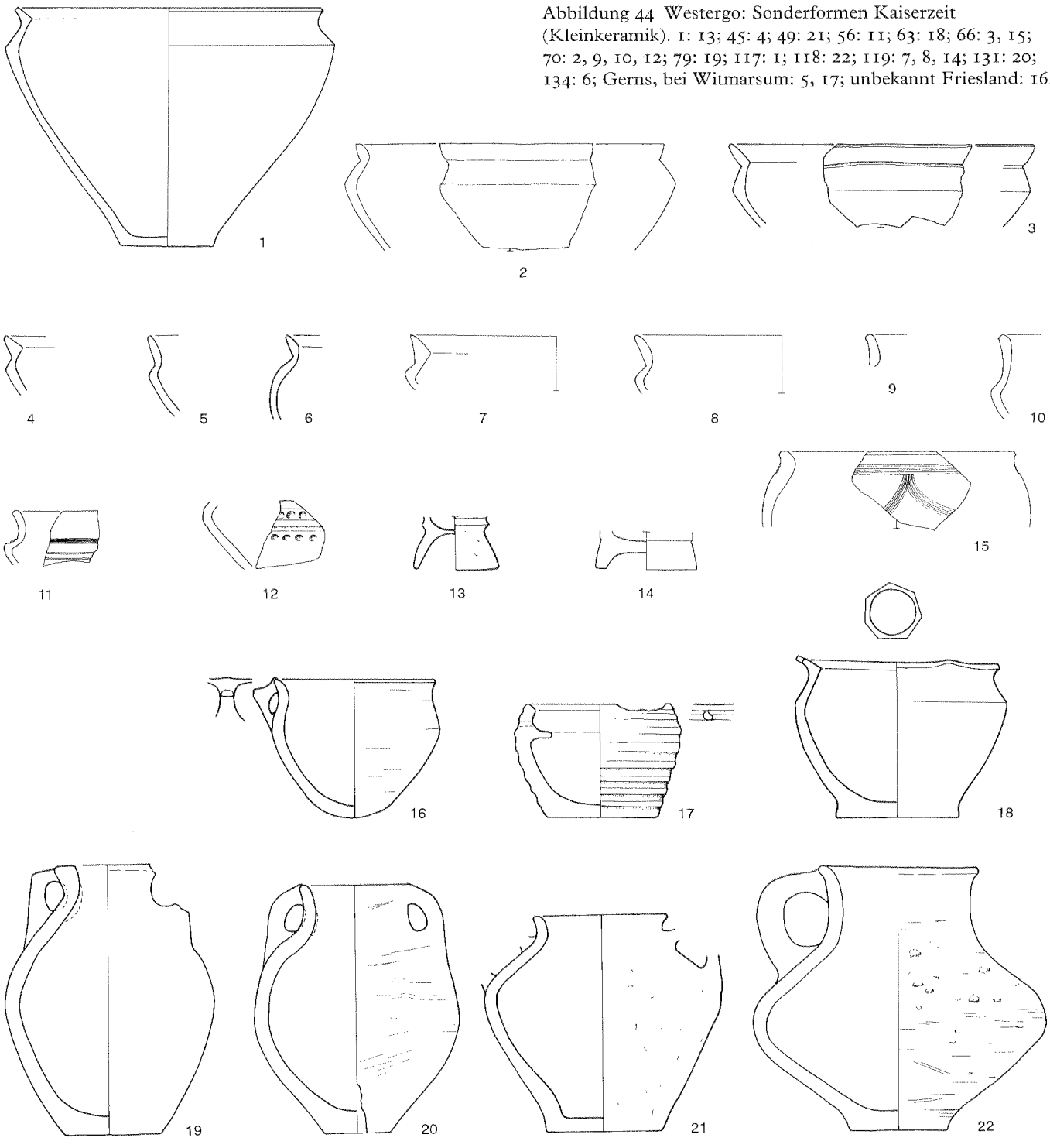

Abbildung 44 Westergo: Sonderformen Kaiserzeit (Kleinkeramik). 1: 13; 45: 4; 49: 21; 56: 11; 63: 18; 66: 3, 15; 70: 2, 9, 10, 12; 79: 19; 117: 1; 118: 22; 119: 7, 8, 14; 131: 20; 134: 6; Gerns, bei Witmarsum: 5, 17; unbekannt Friesland: 16.

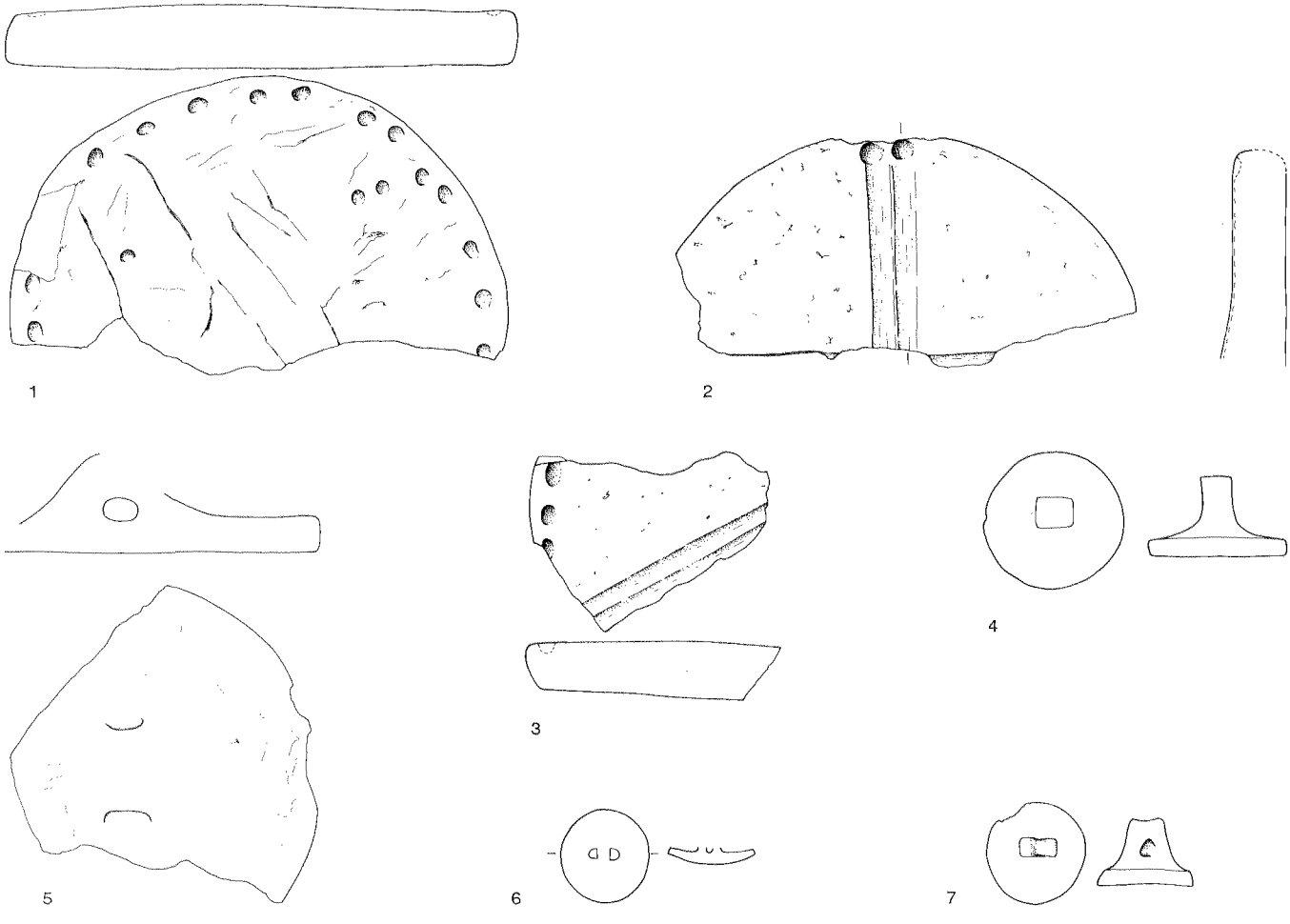

Abbildung 45 Westergo: Deckel und Platten. 45: 5; 56: 7; 86: 4, 6; 94: 1, 2; 95: 3.

2.8 Diverse

2.8.1 Deckel und Platten (Abb. 45)
Ein Dutzend Funde dürfte als Deckel oder – die Minderheit – als Platten, ohne erkennbare Funktion, bezeichnet werden. Der Durchmesser variiert von 5 bis 28 Zentimeter. Sie sind öfters mit Eindrücken und »Fingerstrichen« verziert. Der Griff besteht aus einem Knopf oder Henkel. In einem Falle ist ein Loch mit einem Stehkragen angebracht.
Die Ware ist im allgemeinen weich. Organisch gemagert oder ohne Magerung hergestellt. Die Oberfläche ist auf beiden Seiten rauh bis matt.

2.8.2 Siebe und »Käseformen« (Abb. 46)
Die »Käseform« (Abb. 46: 2, 4) ist im Prinzip eine runde oder längliche Platte mit einem trichterförmigen Aufbau. Innerhalb des Aufbaus gibt es eine oder mehrere Durchbohrungen des Bodens. Die Platte ist manchmal zusätzlich mit einem Stehkragen ausgestattet.
Siebe sind Schalen und Kümpfe mit Löchern im Boden.

2.8.3 Rasseln (Abb. 47)
Die Rasseln bestehen meistens aus zwei zusammengesetzten hohlen Kegeln, gefüllt mit einigen Murmeln.

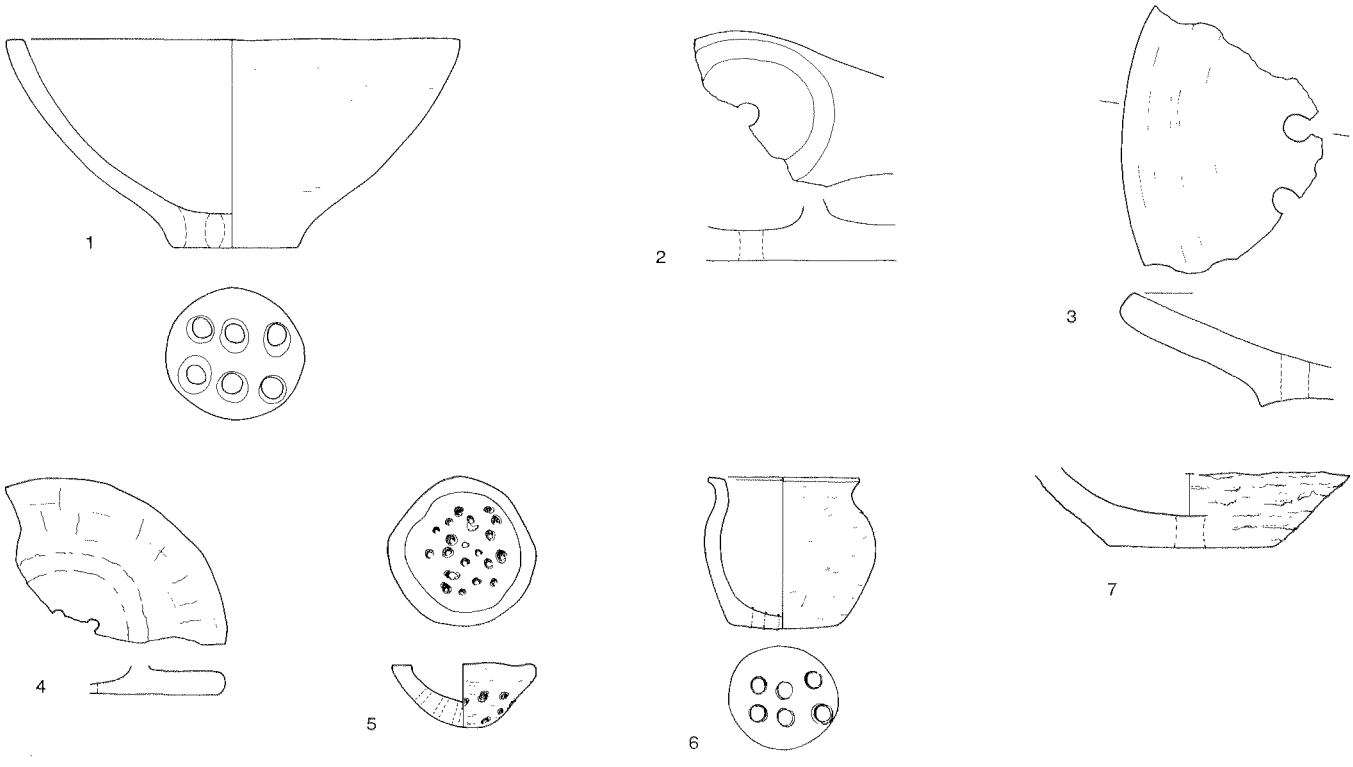

Abbildung 46 Westergo: Siebe und »Käseformen«. 30: 4; 45: 3; 49: 1; 66: 5; 73: 7; 119: 2; Umgebung Oosterend: 6.

Sie dürfen wohl als Spielzeug bezeichnet werden. Die Ware ist mäßig hart. Die Außenseite ist matt oder glatt. Die Magerung ist variabel.
Ein Exemplar mit abgerundeter Form, aus Sieswerd (117), ist mit einem geometrischen Muster verziert.

2.8.4 Spinnwirtel
Die Sammlung Spinnwirtel des Fries Museum ist recht umfangreich. Weil es keine Vergesellschaftung mit anderen Fundkategorien gibt, getraute ich mich nicht, sie zu beschreiben und auf irgendeine Weise einzuordnen.

2.8.5 Spinnscheibe und Spielscheibe
Ziemlich häufig stößt man bei Grabungen auf mehr oder weniger runde, 3–5 cm große Scheiben, offenbar aus Wandscherben von Gefäßen hergestellt. Ob die durchbohrten Exemplare die gleiche Funktion wie Wirtel hatten, ist fraglich.

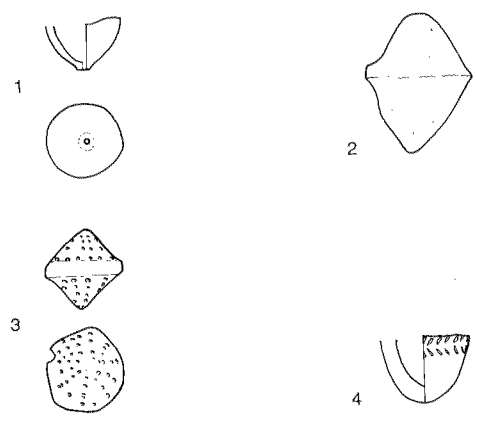

Abbildung 47 Westergo: Rasseln. 63: 3; 66: 1; 82: 2, 4.

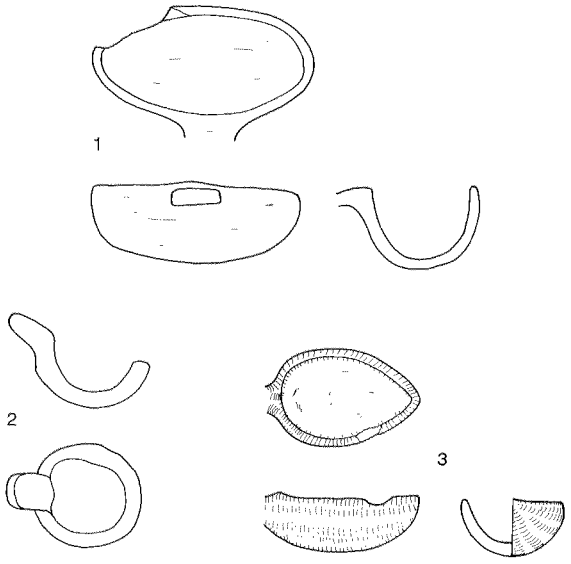

Abbildung 48 Westergo: Löffel. 66: 1; 80: 2, 3.

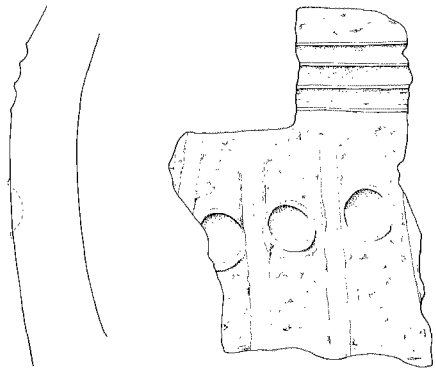

Abbildung 49 Westergo: dickwandige Keramik. 94: 1.

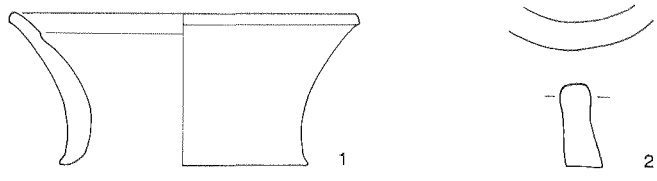

Abbildung 50 Westergo: Standringe. 31: 2; 95: 1.

2.8.6 Tongewichte
Für Gewichte gilt Ähnliches wie für Spinnwirtel. Weil die Gewichte des Fries Museum – einige hundert – neu numeriert und zu diesem Zweck alle ausgelegt wurden, habe ich eine kurze Übersicht zusammenstellen können. Es gibt vier Hauptformen:
1 dreieckig, mit drei Durchbohrungen der schmalen Seiten;
2 dreieckig, mit drei Durchbohrungen der flachen Seiten;
3 abgeplattet kegelförmig, mit einer Durchbohrung;
4 ringförmig.
Die Ware ist weich. Magerung fehlt. Die Formen sind ziemlich roh. Farben: graugelb, graubraun.
Die Varianten 3 und 4 sind am meisten vertreten.

2.8.7 Schmelztiegel
Näpfe, einigermaßen verglast, mit roten und grünen Farbtönen.

2.8.8 Löffel (Abb. 48)
Bei den Löffeln handelt es sich um ziemlich gute Ware, deren Form für die Konsumierung von Flüssigkeiten nicht ungeeignet ist. Die meisten sind leicht oval, mit einem kurzen Griff an einer langen Seite. Der Griff ist platt und manchmal durchbohrt. Andere Löffel sind nahezu rund und mit einem Stielchen ausgestattet. Es wurden keine Löffel mit Gesteins- oder Muschelgrusmagerung angetroffen.
Verwandt mit den Löffeln sind einige ovale Schälchen. Ein Exemplar weist eine Schnuröse auf, ein anderes eine Art Omphalos.

2.8.9 Dickwandige Keramik (Abb. 49)
Einige Bruchstücke gehören zu großen, dickwandigen Keramikformen. Weiche Ware, oxidierend gebrannt.

2.8.10 Standringe (Abb. 50)
Ringförmige Gegenstände, die vermutlich zur Unterstützung dienten.

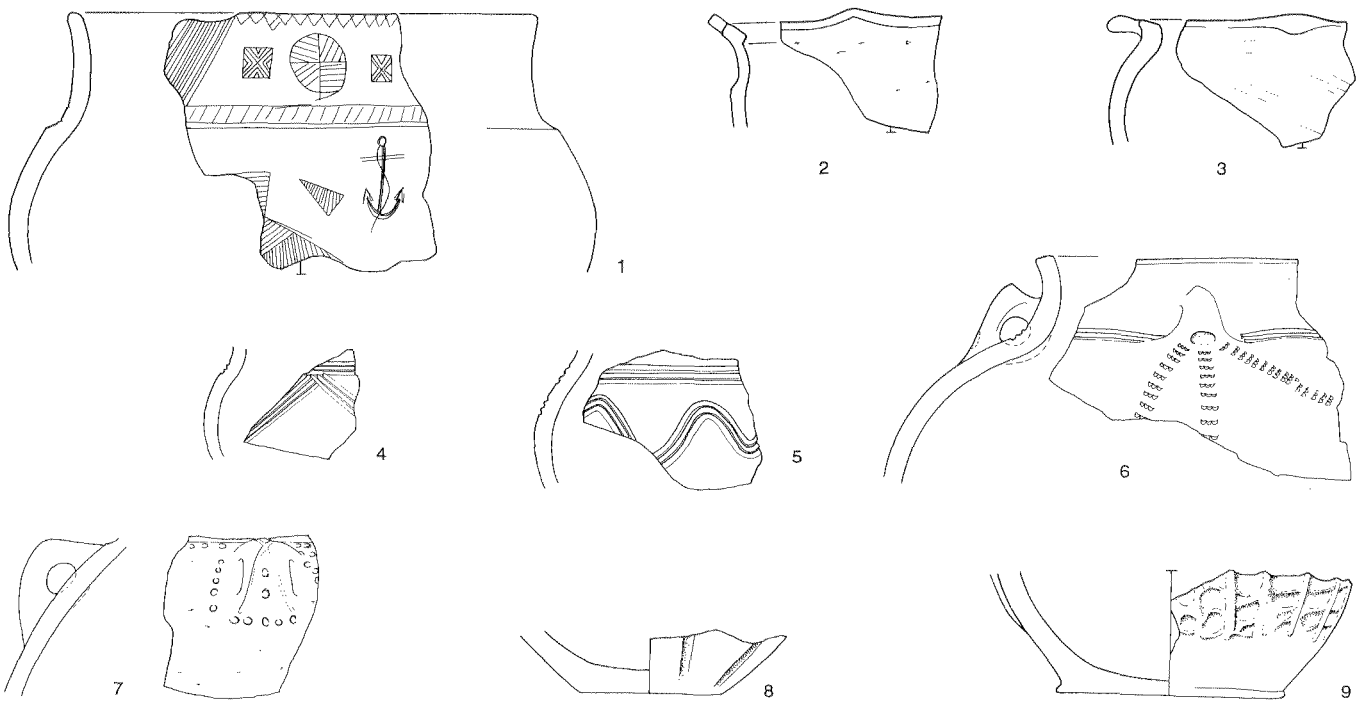

Abbildung 51 Westergo: Verzierung und andere Merkmale.
19: 9; 57: 5; 80: 4, 7; 89: 6; 95: 8; 97: 2, 3; 119: 1.

2.9 Verzierung und andere Merkmale

2.9.1 Rand
Randverzierung besteht meistens aus Fingertupfeneindrücken. Bei V1 und V2 sind sie auf dem Rand, bei V3 und V4 auf der Seite des Randes angebracht. Nageleindrücke sind selten. Dagegen treffen wir bei den Varianten V2b und V3b ziemlich oft Kerben an. Beim Typ V2 sind die Eindrücke manchmal gruppiert.
Verzierung sowohl oben auf dem Rand als auch an der Seite ist manchmal bei den Typen V3a (Eindrücke und Kerben) und V4 (Wellenrand und schräge Furchen) vorhanden. Manchmal ist die Innenseite mit einer Rille (für einen Deckel?) ausgestattet (V- und G-Keramik).

2.9.2 Hals bis zum Anfang der Schulter (Tab. 8)
Der Übergang vom Hals zur Schulter ist in der Eisenzeit meistens durch einen Absatz oder/und durch Ritzlinien markiert. Bei V-Keramik gehört eine waagerechte Reihe Eindrücke gleichfalls zu den Möglichkeiten. Bei V1 sind sie einmal auf einer Rippe angebracht. Ein geometrisches Muster kommt manchmal (nur?) beim Typ G2 vor.

2.9.3 Wand (Tab. 9, Abb. 13 und 51)
Verzierung der Wand in Form geometrischer Muster ist vor allem bei den Typen G1 bis G3b angebracht. Die Linien wurden vor dem Brennen eingeritzt. Manchmal ist ein Rest Muschelgrus vorhanden.[102] Beim Typ G1 ist die dekorierte Zone ziemlich schmal, auch in den Fällen, in denen ein Bauchknick fehlt. Das vermutlich älteste Muster besteht aus mehreren waagerechten Linien mit Zickzackbändern darunter.
Ein G1-Fragment (Abb. 51: 1) zeigt ein Paul Klee-ähnliches Muster von schwebenden Drei- und Vierecken

102 J.N. Lanting (BAI) hat die Inkrustation von Trichterbecher- und eisenzeitlicher Keramik überprüfen lassen. Die Ritzlinien der TRB-Ware sind mit Knochenpulver inkrustiert.

nebst einer Randverzierung aus Mausezähnchen. Von Boeles nicht abgebildet,[103] aber deutlich auf der Bauchwandung anwesend, ist ein Anker! Boeles hielt dieses Tätowierungsmuster selbstverständlich für eine rezente Hinzufügung. Er übersah jedoch, daß auch die anderen Figuren auf die gleiche Weise eingeritzt waren, durch den Ruß hindurch. Zuletzt ist mit einem Bleistift versucht worden, den Linien ein bißchen Patina mitzugeben.
Ein interessantes G1-Randfragment mit fein schraffierten recht- und dreieckigen Mustern und einer Delle (?) ist zur Zeit nicht zugänglich.[104]
Bei G1 und vor allem G2 ist die Variationsbreite ziemlich groß: Girlanden, Punktlinien, Leitern. Typ G3 weist am häufigsten geometrischen Dekor auf; die Verzierungsart ist aber recht stereotyp (kreuzende Bänder, Dreiecke und Rauten). Diese Muster wurden von Blöckchen mit Eindrücken abgelöst.
Bei den Typen V2 und V3 sind ebenfalls Eindrücke auf der Schulter angebracht. Ein kurzlebiges Phänomen bilden bei den Typen V2a und V3a auftretenden grobe Ritzlinien vom Rand bis zum Bauch.
Typ G4 zeigt einige Male Girlanden (*streepband*), und bei zwei Fragmenten – vermutlich eines einzigen Gw4c-Topfes – sind konzentrische Kreise eingeritzt.
Auf Typ K4 sind ein- oder zweimal Zickzacklinien angebracht.
Auf der Unterseite der Wand sind bei den Typen G1 bis G3 manchmal senkrechte, polierte *gleren* vorhanden. Spätere G-Keramik zeigt ebenfalls senkrechte »Fingerstriche« auf einer Unterlage von Schlickbewurf (Abb. 15: 5; 18: 1, 4).
Einige Male ist knapp über dem Boden eine waagerechte Linie Nageleindrücke angebracht. Es könnte sich um Keramik des 3. oder 2.Jahrhunderts v.Chr. handeln.[105]
Kratzer, öfters mit wechselnder Orientierung, sind vermutlich Bearbeitungsspuren. Man sieht sie insbesondere bei kaiserzeitlicher Keramik.
Plastische Verzerrung der Oberfläche, meistens im Form grober, senkrechter Rippen, kommt sehr selten vor (Abb. 51: 9 und 31: 7).
Im Stichprobengebiet sind drei bemalten Scherben gefunden worden.[106]

2.9.4 Boden
Die meisten Typen – Typ Ge6 bildet eine Ausnahme – sind mehrheitlich durch Randfragmente vertreten. Über ihren Böden läßt sich wenig aussagen. Zu den Funden gehören jedoch auch 169 Böden, die keinem Typ zuzuordnen sind. Die übergroße Mehrheit dieser Fragmente weist eine flache Bodenplatte auf und sieht späteisenzeitlich oder jünger aus.
146 Exemplare besitzen einen Durchmesser von über 6 cm, dürfen also G- oder V-Töpfen zugerechnet werden. Der Durchschnittswert ist 10,4 cm; 74,6% der Böden liegen im Bereich 8–12 cm. Zum Vergleich: beim Typ Ge6 liegen alle Böden (n=24) im Bereich 8–10 cm; der Durchschnittswert ist 9.0 cm.
Vier große Böden (13–15 cm), aus einer kaiserzeitlichen Wurt bei Herbaijum stammend, sind mit Muschelgrus gemagert (vgl. Magerung des Typus V4).
Die Außenseite sieht wie folgt aus: 2,8% poliert, 14,5% glatt, 27,6% matt, 34,5% rauh und 20,7% mit Schlickbewurf (n=146). Überdies zeigen 15,8% der Böden Kratzer, 2,1% senkrechte Rillen und 2,8% senkrechte »Fingerstriche«. Bei den Fragmenten mit Kratzern überwiegt organische Magerung oder wurde keine Magerung festgestellt. Eine kaiserzeitliche Datierung ist nicht fehl am Platze.

2.9.5 Henkel, Knopf, Schnuröse (Tabellen 10 und 11)
Die Entwicklung der Henkel läuft von Bauch- und Schulterhenkeln mit einem gerundeten Profil bis zu Henkeln am Rand mit einem spitzen Profil. In der Eisenzeit liegen sie einigermaßen in der Schulter oder dem Hals versenkt, bei kaiserzeitlicher Keramik ist dies kaum der Fall. Bei den Typen G6 und G7 ist auf der Krümmung ein Knöpfchen angebracht; beim Typ G4 sieht man hier manchmal eine Facette.
Dekorierung des Henkels in Form einiger Eindrücke oder Rillen ist bei eisenzeitlicher Keramik ziemlich normal. Bei eckigen Henkeln ist die Verzierung aufgeteilt (z.B. Rille–Tupfen–Rille).
Knöpfe (Typ G1) sind oft mit Dellen verziert. Manchmal ist der Knopf wie ein Schnurrbart gezwirbelt.

2.10 Maße und Volumen (Tabellen 2 und 3)
Anhand der in Paragraph 2.1 erwähnten Formel zur Berechnung des Volumens habe ich versucht, den Inhalt der verschiedenen Typen zu schätzen. Zwar verfüge ich kaum über komplette Gefäße, aber man darf annehmen, daß die Randfragmente zu Töpfen gehört

103 Boeles 1951, Fig. 24: 2.
104 Boeles 1951, Fig. 24: 1.
105 Pers. Mitt. P.J. Woltering.
106 Waterbolk 1961b.

haben, die ungefähr gleich ausgesehen haben. Die Höhe kann dann geschätzt werden. Bei großen Gefäßen ist diese Methode fragwürdig, denn insbesondere von V-Keramik der Kaiserzeit kenne ich die Form nicht.

2.10.1 G-Keramik
Bis einschließlich Typ G3a ist die Rede von kleinen Gefäßen. Der Inhalt variiert, ungeachtet der Abweichungen, von 2–6 l. Ab Typ G3b wächst der Inhalt bis durchschnittlich 10 l und wird dann im Laufe der Kaiserzeit wieder geringer. Typ Ge6 ist der einzige, der durch viele vollständige Gefäße (24 Stück) vertreten ist. Die Serie variiert von 3–11 l, der Durchschnittswert liegt bei 6–7 l.
Ein Gw5d-Randfragment mit einem geschätzten Bauchdurchmesser von 57 cm dürfte zu einem Gefäß von etwa 65 l gehört haben. Die normale Obergrenze liegt jedoch bei ungefähr 40 l.[107]

2.10.2 V-Keramik
Keramik mit Randverzierung ist von Anfang an durchschnittlich größer als G-Keramik. Typ V1 kann durchschnittlich 10 l enthalten, V3b etwa 18 l. Variante V4d dürfte den gleichen Inhalt gehabt haben. Die anderen V-Varianten der Kaiserzeit sind jedoch kleiner, um 14 l. Ein V4c-Gefäß, dessen Bauchdurchmesser ungefähr 58 cm beträgt, dürfte ursprünglich dahingegen 65 l enthalten haben.

2.10.3 K-Keramik
Kleinkeramik konnte ungefähr 0,4 bis 1,8 l enthalten. Durchschnittlich mißt K1 und K2 ca. 0,5 l, K3a, K3b und K4 ca. 1 l.

2.11 Kochspuren (Tabelle 12)
Während der Beschreibung der Keramikfragmente wurde auf Gebrauchsspuren, d.h. Ansatz an der Außen- und Innenseite, Ruß an der Außenseite (meistens eine Zone auf dem Bauch und am Rand) und dunkelbraune Tropfen oder Flecken an der Außen- oder Innenseite geachtet.

Letztgenannte Kategorie wurde in der Vergangenheit als Verzierung angesehen. Hierfür spricht, daß manchmal eine Art Muster, z.B. in Form einiger Streifen oder Tropfenschnüre ab Rand und/oder ab Boden, zu erkennen ist.[108] Beim Stichprobenmaterial ist dies nur ein- oder zweimal der Fall. Meistens handelt es sich um individuelle Flecken. Bemerkenswert ist, daß sie manchmal auf der Bruchfläche einer Scherbe sichtbar sind, was auf ein späteres Entstehen hinweist – ein Zeichen dafür, daß derartigen Flecken vermutlich verschiedene Ursachen zugrunde liegen. Tabelle 12 zeigt, daß Flekken kaum einen Zusammenhang mit den anderen Spuren aufweisen.
Ruß und Ansatz zeigen keine Präferenz für bestimmte Formate. Oben habe ich G- und V-Keramik als »Kochtöpfe« bezeichnet, aber auf Kleinkeramik finden sich diese Spuren ebenfalls. Ähnliches gilt für sehr große Töpfe,[109] obwohl V2b, V3b und auch Gw4d ziemlich niedrige Zahlen aufweisen.
Im allgemeinen finden sich Gebrauchsspuren öfter auf G- als auf V-Keramik. Engmündige Keramik bildet eine Ausnahme. Die Zahlen bei weitmündigen G-Töpfen mit Henkeln sind ebenfalls niedriger.[110] Insbesondere kann auf Gw4 hingewiesen werden: 26,9% der Henkelfragmente zeigen Kochspuren, dagegen 41,0% der henkellosen Fragmente.
Auf glattwandiger, reduzierend gebrannter Ware sind Kochspuren seltener, vor allem auf kaiserzeitlicher Keramik (Gw7, Ge7 und K4). Fragmente dieser Gattungen dürften nach Erwerb etwas zu kräftig gereinigt worden sein, aber eine beschränkte Benutzung für Kochzwecke scheint mir doch eine bessere Erklärung zu sein.
In der Zukunft wird Spektralanalyse von Kochspuren uns vermutlich zu neuen Ansichten über die wirkliche Funktion der verschiedenen Gattungen verhelfen. Darüber hinaus ist Ansatz ebenfalls für ^{14}C-Datierungen brauchbar. Versuchsweise ist eine G3a-ähnliche Randscherbe aus Antum (Groningen) analysiert und datiert worden. Die Kochreste zeigten einen hohen Stickstoffgehalt (Fisch?).[111]

107 Vgl. Kramer 1984, fig. 8: 3. Dieses Gw4d-Gefäß ist – ohne Hals – 41 cm hoch und 48 cm breit. Der errechnete Inhalt beträgt 39 l.
108 Van Es 1968, fig. 42, 52, 53 und 76; Bloemers 1978, Abb. 167: 184/5362.
109 Von 42 Fragmenten mit einem (geschätzten) Bauchdurchmesser von mehr als 45 cm weisen neun Gebrauchsspuren auf.
110 Zwischen Fragmenten mit und ohne Henkeln gibt es in bezug auf andere Merkmale (Randform, Magerung, Format u.s.w.) keine Unterschiede.
111 Analyse von G.J. van Klinken, CIO Groningen; inoffiziell datiert (2200–2300 BP) im ^{14}C-Laboratorium in Uppsala.

3 VERBREITUNG, BEMERKUNGEN UND DATIERUNG

3.1 Vorbemerkungen

In dieser ersten Teilstudie möchte ich die Sachlage in den Nachbargebieten nicht detailliert schildern, denn es hat wenig Sinn, in den jeweiligen Fortsetzungen das Bild jedesmal wiederholen, ergänzen und ändern zu müssen. Im abschließenden Teil ist eine ausführliche Darstellung der Bedeutung der Keramikformen der vier Stichproben- und ihrer Nachbargebiete vorgesehen.
Tabelle 14 gibt eine Übersicht über die Typen pro Fundstelle.

3.2 Größere Gefäße mit glattem Rande

Typ G1 (Abb. 8–9, 52)
Innerhalb des Stichprobengebietes sind 14 Fundorte vorhanden. Bei weitem die meisten Funde stammen aus der Wurt Hichtum. Zwei weitere gut vertretene Fundstellen sind Wommels (Dorf) und die Wurt Walperd, nördlich von Wommels. Ein von Halbertsma abgebildetes »*streepband*«-Gefäß aus Walperd, in der Sammlung Mensonides, mit zwei Schnurösen und einem einfachen geometrischen Motiv versehen, gehört vermutlich ebenfalls zum Typ G1.[112] Die Funde aus Walperd, mehrere vollständige Gefäße, waren für Waterbolk Anlaß zur Namengebung des Typs Ruinen-Wommels.
In ganz Westergo gibt es ungefähr 19 Fundorte. Die Verbreitung erstreckt sich von der Linie Pingjum–Baarderburen–Tritsum–Winsum aus in südlicher Richtung. Der südlichste Fundort ist Sions (Zyns). Aus Winsum-Bruggeburen stammt ein einzelnes, kompletttes G1-Gefäß mit Verzierungsmerkmalen des Typs G2 (Rille unter dem Rand, senkrechte Punktlinien auf dem Hals, Girlanden auf dem Bauch).[113]
Aus Oostergo sind nur eine Rand- und 3 bis 4 Wandscherben bekannt, und zwar aus Hoogebeintum, Vaarderburen und Oosterbeintum. In Noord-Holland ist G1-ähnliche Keramik ebenfalls nicht unbekannt. Es gibt Fundstellen auf Texel,[114] bei Opperdoes,[115] Limmen[116] und – weniger überzeugend – bei Assendelft (*site* Q).[117]
Der Typ RW 1 ist in Groningen in kleinen Mengen gefunden worden, und zwar in NW-Groningen[118] und Middelstum.[119] Weiter östlich gibt es Funde am westlichen Emsufer.[120] Die RW 1-Keramik aus Drenthe ist zahlenmäßig den friesischen und groningschen Marschenfunden und -fundstellen weit überlegen. In Siedlungen nahm der Typ eine prominente Stellung ein.

Anders als bei den späteren Keramikformen im Stichprobengebiet ist beim Typ G1 von einer »bodenständigen« Entwicklung nicht oder kaum die Rede. Der Typ wurde von den ersten Marschensiedlern mitgenommen von ...ja, von woher? Es braucht nicht unbedingt nur ein Herkunftsgebiet zu geben. Der Form nach kommt das ganze Gebiet westlich der Weser in Betracht (Typen Nienburg,[121] Dötlingen und Gristede,[122] Hatzum-Boomborg HB 1a/1b,[123] RW 1 in Drenthe und Groningen).
Geometrische Ritzmuster sind in NW-Deutschland geläufig, fehlen dagegen in Drenthe fast vollständig. In diesem Punkt jedenfalls läßt sich der Typ RW 1 aus Drenthe vom Wurtenmaterial unterscheiden. »The relative austerity of the Zeijen Culture when compared with Lower Saxony and Westphalia is striking«, bemerkte Kooi in seiner Urnenfelder-Dissertation.[124] Die wenigen von ihm abgebildeten verzierten Gefäße, keineswegs alle zum Typ RW 1 gehörend, aber vermutlich schon zeitgleich,[125] stammen nicht zufällig aus dem Osten und Südosten der Provinz.
Ringabrollung, konstatiert in Hatzum, Middelstum-Boerdamsterweg und Hoogebeintum, fehlt in Westergo, wird aber auch im Emsgebiet nur selten angetroffen.[126] Derartige Ringabrollungen sind im Wesergebiet nicht ungewöhnlich.[127]
Knöpfe und Schnurösen sind in Drenthe, Henkel dagegen im Gebiet östlich der Ems ziemlich häufig.

112 Halbertsma 1963, Fig. 7.
113 Elzinga 1973, 146.
114 Pers. Mitt. P.J. Woltering.
115 Woltering 1980, Afb. 6.
116 Van Regteren Altena 1969.
117 Brandt 1983, fig. 5.
118 Miedema 1983, Typ IVF1.
119 Waterbolk & Boersma 1976.
120 Löbert 1982, Tab. 9.
121 Tuitjer 1987.
122 Nortmann 1983a.
123 Löbert 1982.
124 Kooi 1979, 146.
125 Kooi 1979, fig. 39.
126 Löbert 1982, Tab. 10. Stromaufwärts gibt es einen Fund bei Leschede, im Emsland (Fröhlich 1988, Taf. 7A: 1).
127 Tuitjer 1987, 9–15, Karten 4 und 5.

Schnurösen mit schnurrbartähnlichen Rippen wurden in Hichtum, Middelstum-Boerdamsterweg, Hatzum,[128] Eelde[129] und Rhee angetroffen.[130]
Alles in allem sieht der Typ G1 der Keramik von Middelstum-Boerdamsterweg und Hatzum-Boomborg oder auch Texel ähnlicher als der aus Drenthe. Der Vorschlag Van Giffens, die Andeutung »Ruinen-Wommels« in »Hatzum-« oder »Jemgum-Wommels« umzutaufen,[131] ist im nachhinein gar nicht so übel. In jüngeren Siedlungen wie Tritsum und denen in NW-Groningen fehlt geometrische Verzierung. Haben sich hier vielleicht Siedler aus Drenthe niedergelassen?
Der Typ G1 kann selbstverständlich nicht früher angesetzt werden als seine vielen Onkelchen im Hinterland. Das Gründungsdatum der ganzen Familie ist, gelinde ausgedrückt, ziemlich unklar. Nach Nortmann ist der Typ RW 1 eine Ableitung vom Typ Gristede, der wiederum aus dem »früheisenzeitlichen« Typ Dötlingen hervorgegangen sein soll.[132] Eine Datierung vor der Latènezeit hält er für unwahrscheinlich. Niederländische Autoren scheuen hingegen vor einer Anfangsdatierung um 650[133] oder gar 700 v.Chr. nicht zurück.[134]
^{14}C-Datierungen helfen uns in erster Instanz nicht weiter. Daten zwischen 2400 und 2550 BP sind anscheinend nicht genauer zu kalibrieren als 800–400 cal. BC. Wenn wir alle Datierungen mit RW 1 oder HB 1 vergesellschafteter Proben auf einen Haufen werfen, dann ergibt sich folgendes Bild: einige Daten über 2500 BP, die meisten zwischen 2400 und 2500 BP, und wiederum einige jünger als 2400 BP. Ein Blick auf die Kalibrationskurve[135] lehrt uns, daß Datierungen zwischen 2400 und etwa 2460 BP eine größere Chance haben, der Periode 800–700 cal. BC oder der Periode 550–400 cal. BC anzugehören als der Periode 700–550 cal. BC. In unserem Fall kann die Periode vor 700 außer Betracht bleiben. Dann können wir obige statistische Überlegung vielleicht auswerten und die RW 1-Datierungen im Bereich 2400–2460 BP vorsichtig im Zeitabschnitt 550–400 cal. BC ansetzen. Die Datierungen über 2460 BP gehören wahrscheinlich dem 6. Jahrhundert an. Für das

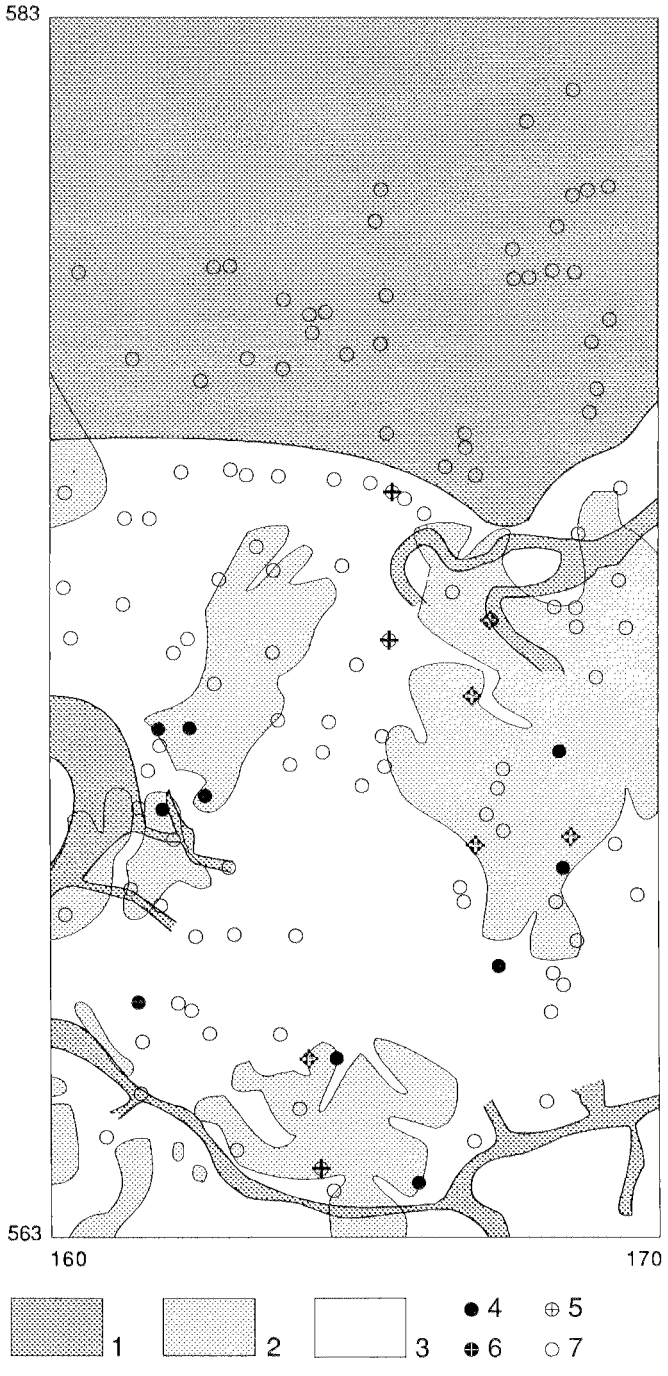

Abbildung 52 Westergo, Stichprobengebiet: Verbreitung der Typen G1 und G2. Legende: 1, 2, 3 wie Abbildung 4; 4 Fundstelle Typ G1; 5 Fundstelle Typ G2; 6 Fundstelle der Typen G1 und G2; 7 übrige Fundstellen.

128 Löbert 1982, Taf. 14: 216; 55: 1003.
129 Harsema 1974b, Fig. 2: 3.
130 Waterbolk 1977, fig. 63: 5.
131 Van Giffen 1973, 72–4.
132 Nortmann 1983a, 23.
133 Waterbolk 1977, 103.
134 Kooi 1979, 137.
135 Stuiver & Pearson 1986; Pearson & Stuiver 1986.

höchste Alter, eine Holzprobe aus der ersten Siedlungsphase in Middelstum-Boerdamsterweg, 2555±35 BP (GrN-7902), ist eine Datierung vor 550 cal. BC nahezu sicher. Drei andere Proben aus Middelstum (siehe Tabelle 15) stammen vermutlich aus dem 6.Jahrhundert.
Leider ergaben die Proben aus Hatzum-Boomborg wenig hilfreiche Zahlen.[136] Die Serie zeigt uns deutlich die Schwächen der ^{14}C-Methode. Die Proben des untersten Siedlungshorizontes SH 1a lieferten ebenso wie die der SH 3 und 4 Daten zwischen 800 und 400 cal. BC, nebst einigen erheblich jüngeren Zahlen (siehe Tab. 15). Die SH 1 und 2 bilden zusammen den »älteren Fundhorizont«, gekennzeichnet durch geometrisch (Ritz- und Ringabrollungmuster) verzierte RW 1- (HB 1a-)Keramik. Erst in SH 4 treten RW 11-Formen (HB 2a und 2b) auf, während HB 1a stark zurücktritt. Den »älteren« und »mittleren« Fundhorizonten (SH 4-5) zusammen ist eine Reihe von Typen zuzuordnen: unverzierte RW 1- (HB 1b-)Keramik, Harpstedt-ähnliche Formen (HB 3a und 8), bikonische Formen (HB 6c) und Zeijen-Schalen (HB 12a). SH 5 war von einer sterilen Tonschicht (»D 1«) abgedeckt, auf der sich eine Rasendecke entwickelt hatte.
Ein Fragment eines Pfostens des ältesten Hauses in Jemgum 1[137] wurde 1953 in Groningen datiert: 2335±70 BP (GrN-129). Weil es eine der ersten Messungen betraf, wurde die Auskunft nicht sehr ernst genommen. Neulich stieß ich im Groninger Labor zufällig auf den Rest der Probe. Auf den Vorschlag J.N. Lantings wurde sie abermals datiert: 2310±40 BP (GrN-17408), das heißt um 400 cal. BC. Wiederum ein junges Alter! Aufgrund der Keramik ist Löbert der Ansicht, daß die Siedlung mit dem ältesten Fundhorizont in Hatzum-Boomborg ungefähr zeitgleich war.
Aus Drenthe stammt ein mit RW 1 vergesellschaftetes ^{14}C-Datum, das kalibriert vermutlich ins 6.Jahrhundert gehört, und zwar von einer Probe aus einem Quadratgraben im Urnenfeld von Ruinen (2510±50 BP, GrN-6867). Die meisten Datierungen aus Drenthe sind jedoch nicht genauer als 800–400 cal. BC einzuordnen, einige sind sogar jünger.
Von einer bronzenen Vasenkopfnadel (Montelius v?) in Jemgum 1 abgesehen[138] gibt es keine Metallfunde, die eine archäologische Datierung der frühesten Marschensiedlungen erleichtern könnten. Bei Zierstücken gibt das Anfertigungsdatum überdies oft nur einen *terminus post quem*. Im Falle von Jemgum 1 scheint dies ziemlich klar. Negativen von Arm- und Brustringen begegnet man, wie schon erwähnt, in der Form von Eindrücken auf Keramik. Der Typ Abrollung, der in Hatzum, Middelstum[139] und Hoogebeintum[140] an G1-ähnlicher Keramik angetroffen wurde, kann nach Tuitjer[141] in die Phasen Hallstatt C und Hallstatt D1 datiert werden. Dem Negativ eines Steigbügelarmringes an einem kleinen RW 1-Gefäß in Zeijen, von Waterbolk Hallstatt D datiert,[142] wird von Nortmann, der die RW-Typologie gerne auf die Latènezeit beschränken möchte, ein jüngeres Datum gegönnt.
Alles in allem scheint mir das (frühe) 6.Jahrhundert als Untergrenze des Auftretens G1-ähnlicher Keramik im Marschengebiet eine akzeptable Wahl zu sein. Die vergleichbaren Keramiktypen im Hinterland sind vermutlich nicht viel älter. Mit einigen Chronologieschemata, z.B. Harcks Übersicht,[143] reimen solche Daten sich übrigens schlecht. Löbert datiert den Anfang der Siedlung Hatzum-Boomborg in Harcks Eisenzeit 1b, das heißt etwa Nortmann Horizont 2,[144] Latène A oder Jastorf a, jedenfalls nach 500 v.Chr. Im abschließendem Aufsatz werde ich diese Frage wieder aufgreifen.
Die Obergrenze der Benutzungsperiode liegt vermutlich in der ersten Hälfte des 4.Jahrhunderts. In Westergo gibt es jedenfalls keine Überlappung mit G3a (siehe unten). Die meisten ^{14}C-Daten, übrigens alle aus anderen Gegenden, deuten auf ein Enddatierung um 400 cal. BC. Kalibrierung der jüngsten Datierungen, aus Drenthe,[145] läßt jedoch die Möglichkeit einer Datierung ins 4. oder sogar 3.Jahrhundert offen.

Typ G2 (Abb. 10, 52)
Die Stichprobe hat sieben Fundstellen ergeben, und zwar Hichtum, Tolsum, Klein Gietens, Tritsum, Wommels-Walperd, Klaverbloem bei Tzum und Bolsward. Die Verbreitung ist kaum ausgedehnter als die von G1 und V1. In Westergo sind weitere Funde aus Gerns (Witmarsum), und aus drei Wurten in Menaldu-

136 Haarnagel 1965; 1969; Löbert 1982, 96.
137 Haarnagel 1957.
138 Haarnagel 1957.
139 Die entsprechenden Fundstücke wurden mir freundlicherweise von J.W. Boersma gezeigt.
140 Waterbolk 1959, Fig. 3: 10.
141 Tuitjer 1987, 9–15.
142 Waterbolk 1961c.
143 Harck 1972.
144 Nortmann 1983a.
145 Eursinge 2350±70 (GrN-10968) und 2250±60 BP (GrN-10969).

madeel (Umgebung von Engelum und Marssum) bekannt.
In Oostergo und NW-Groningen sind bisher keine eindeutigen G2- (oder RW II-)Funde gemacht worden. Miedemas Typ IVF2 (»Ruinen-Wommels II«) enthält G3b und schwer unterzubringende Formen. Eine Randscherbe aus De Brillerij[146] dürfte jedoch der RW II-Tradition angehören.
Für verwandte Keramikformen in Hatzum-Boomborg (Typ HB 2a/b) und Middelstum-Boerdamsterweg sind länglich verdickte Ränder, Gesteinsgrusmagerung und das Fehlen von Verzierung charakteristisch. Eine Rille unter dem Rand[147] ist seltener als in Friesland. Gelegentlich sind Henkel angebracht. Weiter östlich finden wir fast ausschließlich hervorstehende Ränder (Jastorf-b Profil).
In Noord- und Zuid-Holland gibt es einige Fundstellen, von denen bisher nur Santpoort-Spanjaardsberg ordentlich publiziert ist.[148] Die Südgrenze bildet das Rijnmond-Gebiet.[149]
Obgleich Waterbolks Typenbezeichnung eine Art Gleichgewicht in der Verbreitung auf der Marsch und dem Sandgebiet suggeriert, sind in Drenthe kaum Beispiele für den Typ G2 nachweisbar. Der Fundkomplex in Norg-De Vledders[150] zeigt Ähnlichkeit mit G2. Ein Gefäß ist jedoch mit Henkeln ausgestattet. Bei Funden aus Eursinge[151] und Gees[152] ist die Verwandtschaft schon zu einem dünnen Faden geworden.

Anders als beim Typ G1 beschränkte sich die Entwicklung des Typs G2 oder RW II auf das Küstengebiet. Die Zahl der Funde und Fundorte ist recht bescheiden, und ähnliches trifft für die Gebrauchsperiode zu. Konventionell[153] wird der Typ G2 als eine Abzweigung von RW I angesehen – Hybridformen sind nicht selten –, mit demselben Enddatum. Die Grabung in Hatzum-Boomborg beispielsweise bestätigt dieses Bild: in den Siedlungshorizonten 4 und 5 wurden G2-ähnliche Formen (HB 2a/b) mit G1-Scherben zusammen aufgefunden. Eine kurzfristige Besiedlungslücke, vermutlich infolge einer Überschwemmung,[154] nimmt uns leider die Möglichkeit, den 'natürlichen' Ablauf der Benutzungsperiode dieser Keramikformen kennenzulernen.
Ich bin der Meinung, daß der Typ G2 in Westergo jedenfalls lokal länger benutzt worden ist als G1. In einigen Wurten (Engelum, Tolsum, Bolsward-Sportplatz) bildet G2 die älteste Keramik. In Tritsum wurden nur G2, wenn auch selten, und G3a mit geometrischen Ritzmustern ausgestattet. Im Falle von Gleichaltrigkeit wäre der Unterschied in der Magerung (Gesteins- bzw. Muschelgrus) und Verzierungsmustern zwischen G1 und G2 schwer zu erklären.
Die ^{14}C-Daten der frühesten Besiedlungsphase in Santpoort, wo G2 mit V1-artiger Keramik den ältesten Fundkomplex bildet, lassen eine Gebrauchsdauer bis ins 4.Jahrhundert vermuten.[155] Zwei Datierungen der folgenden Siedlungsphase, mit G3a neben G2, weisen auf das 4. bis 3.Jahrhundert (siehe Tab. 15).
Eine nähere Betrachtung des Randes und Halses des Typs G2 zeigt folgende charakteristische Merkmale:
1 länglich verdickter Rand (oder/und)
2 hervorstehender Rand;
3 Rillen unter dem Rand.

Die Merkmale 2 und 3 werden hin und wieder, wenn auch weniger ausgeprägt, bei G1 angetroffen, während Typ G3a sie sehr oft zeigt. Rillen unter dem Rand begegnen wir gelegentlich auch bei V1 (Wommels, Tritsum).
Rillen unter dem Rand und geometrische Muster sind die augenfälligen Merkmale der friesischen Keramik. Östlich von Westergo begegnet man bloß unverzierten Formen, die nur gelegentlich mit Rillen ausgestattet sind. Die Variabilität der Verzierung ist größer als bei G1 und G3a, obwohl Wandscherben sich meistens einer Typisierung entziehen. »Girlanden« auf der Schulter und sogar dem Hals[156] sowie Punktlinien[157] sind Muster, die bei G3a nicht auftreten.

Typen G3a und G3b (Abb. 11–12, 53)
Im Stichprobengebiet gibt es bis heute etwa 28 Fundorte des Typs G3a, eine erhebliche Zunahme also im

146 Miedema 1983, fig. 44: 2.
147 Waterbolk & Boersma 1976, Afb. 1: Mitte-links.
148 Modderman 1960–61.
149 Van Heeringen 1988, 88–9.
150 Waterbolk 1977, fig. 72.
151 Lanting 1977, fig. 9.
152 Waterbolk 1959, Fig. 4: 5.
153 Lanting & Mook 1977, 149–55.
154 Löbert 1982, 103, Abb. 13.
155 Santpoort: 2275±30 (GrN-11486) und 2315±30 BP (GrN-11488). Datierungen aus Velsen bestätigen das Bild (pers. Mitt. R.M. Van Heeringen): 2240±40 BP (GrN-11493) und 2280±35 BP (GrN-11283).
156 Waterbolk 1962, Abb. 30: 2.
157 Abb. 13: 10 und 11; Modderman 1960–61, Afb. 14.

Vergleich zum vorigen Zeitabschnitt. Die Karte zeigt eine geringe Ausbreitung in nördlicher und nordwestlicher Richtung.

In ganz Westergo beträgt die Zahl der Fundorte mindestens 65.[158] Die große Mehrheit befindet sich dicht beisammen im Dreieck Bolsward-Baard-Harlingen. Im Nordosten Westergos, in der Gemeinde Menaldumadeel, gibt es 8 Fundorte. Etwas südlicher liegt Jellum, ziemlich isoliert.

In der Wurt Tolsum wurden mehr als Tausend Fragmente, meist Splitter, mit geometrischen Ritzlinien geborgen, das heißt mehr als aus dem ganzen Rest von Westergo. Von dieser Menge habe ich nur einen Teil in der Stichprobe verarbeitet.[159]

Außerhalb von Westergo ist G3a-ähnliche Keramik (RW III) in kleinen Mengen, und nur selten verziert, in Oostergo, Groningen, dem Weser-Emsgebiet,[160] Noord- und Zuid-Holland,[161] Drenthe[162] und Utrecht (Baambrugge) angetroffen worden.[163]

Die Zahl der Fundstellen mit Keramik vom Typ G3b ist beachtlich geringer, was, zusammen mit der bescheidenen Fundzahl, darauf hinweist, daß die Benutzungsperiode nur kurz gewesen ist. Die Ausdehnung der Verbreitung, in Westergo wie auch außerhalb, ist jedoch der des Typs G3a kaum unterlegen (u.a. Santpoort,[164] Oostergo, NW-Groningen, Middelstum-Boerdamsterweg,[165] Jemgumkloster[166] und Dalen (Südost-Drenthe).[167] Innerhalb des Stichprobengebietes gibt es 17 Fundorte, in ganz Westergo etwa 25.

Die geographische Verbreitung des *cannelure*-Merkmals als solches ist, weil es auch manchmal bei G4-Keramik auftritt, größer als die des Typs G3b. Im deutschen Küstengebiet sind keine weiteren Funde bekannt.[168] Insgesamt gibt es in Westergo etwa 30–35,

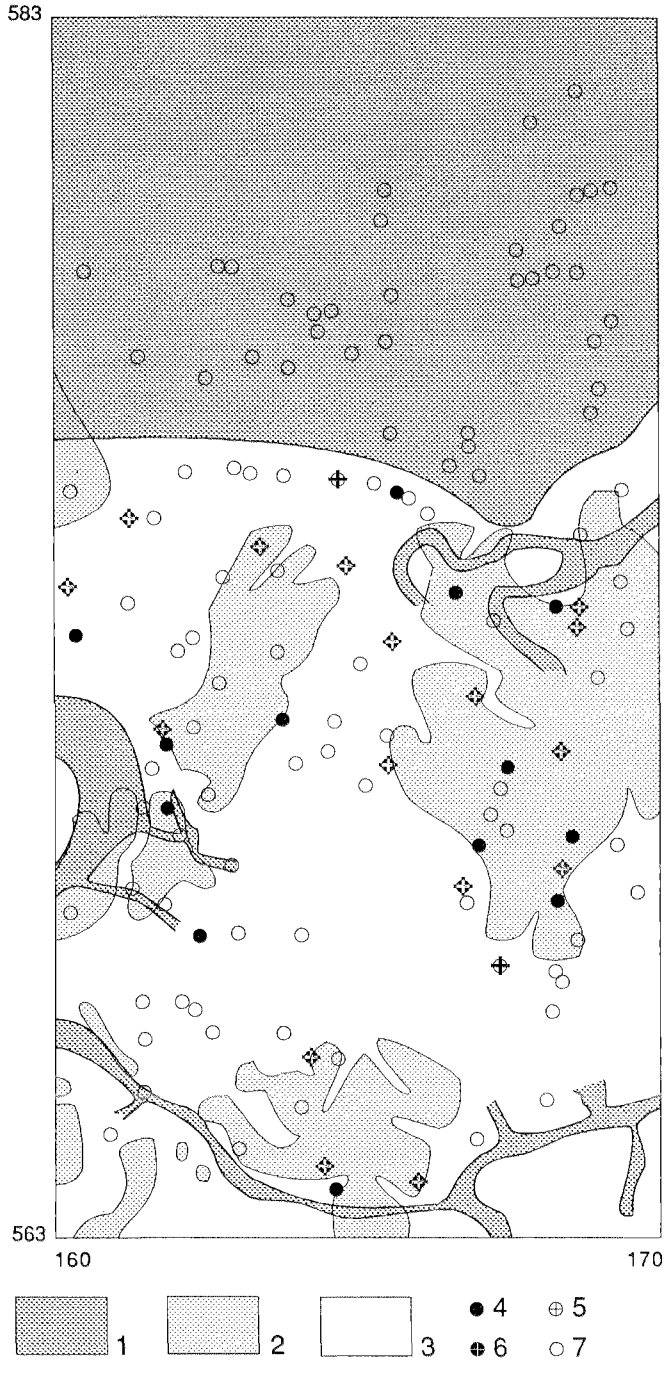

Abbildung 53 Westergo, Stichprobengebiet: Verbreitung der Typen G3a und G3b. Legende: 1, 2, 3 wie Abbildung 4; 4 Fundstelle Typ G3a; 5 Fundstelle Typ G3b; 6 Fundstelle Typen G3a und G3b; 7 übrige Fundstellen.

158 Eine Schätzung, basierend auf Listen der geometrischen Ware (Boeles 1951; Kramer 1984), mit Ergänzungen (unverzierte Ware) und Korrekturen.
159 Die totale Ernte von Randscherben betrug achtmal G2, etwa 80-mal G3a und zehnmal G3b.
160 Löbert 1982, Var. HB 1c/d. Die Übereinstimmung mit Funden in Einswarden (Schmid 1957, 80, Taf. 6) ist fraglich.
161 Van Heeringen 1988.
162 Verzierte Keramik nur in Rhee (Waterbolk 1977, fig. 67: 2).
163 De Zwarte 1982.
164 Modderman 1960–61, Afb. 25: 10.
165 Waterbolk & Boersma 1976, Afb. 1: Mitte-rechts.
166 Brandt 1972, Abb. 9: 5.
167 Waterbolk 1965, Abb. 10: 13.
168 Löbert 1982, 91.

außerhalb von Westergo etwa 12–15 Fundstellen dieses Merkmals.

Nach dem recht bunten Intermezzo des Typs G2 tritt bei G3a eine Art Normierung auf. Die Herleitung vom erstgenannten Typ steht fest: Rillen unter dem Rand, geometrische Muster, Muschelgrusmagerung. Die Gleichförmigkeit der G3a-Gefäße in und außerhalb von Westergo deutet auf einen recht engen Kontakt zwischen den einzelnen Teilen Frieslands. Nuancen in Herstellung, Form und in Verzierung zeigen, daß von zentraler Herstellung keine Rede war.
Während viele[169] G3a-Töpfe mit geometrischen Mustern versehen sind, ist die Variation indessen nicht sehr groß: gerade Linien, laufend auf 180, 90 oder 45 Grad, Dreiecke, Rauten oder Zickzacklinien bildend, und damit hat sich's.
Im 4.Jahrhundert war Muschelgrus die populärste Magerung, zu Anfang der späten Eisenzeit war es Keramikgrus geworden. Man könnte deshalb erwarten, während der Gebrauchsperiode des Typs G3a und seiner jüngeren Variante G3b neben dem Wechsel der Magerung auch noch andere Änderungen wahrzunehmen, z.B. Wechsel oder Abnahme der geometrischen Muster oder Format-Änderungen. Zu meinem Erstaunen ist dies kaum der Fall. Bei mit Muschelgrus gemagerten Gefäßen sind die Hälse durchschnittlich etwas höher als bei Töpfen mit Keramikgrus, sind Ritzlinien am Hals und auf der Wand etwas häufiger und sind die Farben nur ausnahmsweise hell, aber sonst nichts.
Typ G3b gehört, unter Berücksichtigung der Form und – zum Teil – der Verzierung, zwar der mittleren Eisenzeit an, aber der Unterschied zu den jüngeren G4-Gefäßen mit breiten Riefen ist nicht sehr groß. Zwischen beiden Typen gibt es einen fließenden Übergang. Der Typ G3b repräsentiert keinen selbständigen Fundhorizont. Deshalb ist es nicht verwunderlich, daß er zunächst falsch datiert wurde. Der Fund eines bemalten Fragments in einer tiefen Schicht der Wurt Tritsum war für Waterbolk Anlaß, diese Keramik dem Typ RW II zuzuordnen.[170] Bei näherer Betrachtung des Tritsummaterials stellte sich jedoch heraus, daß diese breite Riefe erst am Ende der mittleren Eisenzeit (wieder)[171] in Mode gekommen war.
Der Anfang der G3a-Periode wird ungefähr bei 350 v.Chr., vielleicht etwas später, gelegen haben. Eine Überlappung mit G1 gibt es jedenfalls nicht. ^{14}C-Daten aus den mittleren und westlichenen Niederlanden[172] deuten auf ca. 350–200 cal.BC.
Die Einführung des *cannelure*-Motivs (G3b) erfolgte vermutlich im Laufe des 3.Jahrhunderts, als das reduzierende Brennverfahren, die Benutzung von Muschelgrus und Linienverzierung noch in Ehren gehalten wurden. Im Laufe dieses Jahrhunderts müssen sich die Sitten sehr schnell geändert haben: hellere Farben, Abschied vom Muschelgrus, Wiederkehr von Henkeln, engmündige Töpfe, Eindrück- statt Linienverzierung.
In Ezinge wurden G3a-, G3b- und V2b-ähnliche Scherben in einer Mistschicht gefunden, zusammen mit einer »mittellatènezeitlichen« Fibel.[173] Von Harck wurde eine solche Fibel der Eisenzeit II a–b, d.h. dem 2.Jahrhundert v.Chr., zugewiesen.[174] Die Gebrauchsperiode dieser Typen könnte also bis ins 2.Jahrhundert angedauert haben.

Typen Gw4 und Ge4 (Abb. 14–15, 54)
In der Stichprobe sind Gw4-Funde von 51 Fundorten verarbeitet. Insgesamt gibt es 78 Fundstellen von *streepband*-Keramik. Das Kartenbild zeigt ein Vorrücken in nördliche Richtung bis Franeker und Schalsum. Westlich davon sind weitere *streepband*-Funde bekannt, und zwar aus Midlum und Harlingen.[175] Angeblich sollen ziemlich weit nördlich, in der Gegend von Sexbierum, tief unter der Oberfläche ebenfalls *streepband*-Scherben angetroffen worden sein. Von diesem Gebiet wird angenommen, daß es erst in der Merowingerzeit besiedelt wurde, aber wir sollten die Möglichkeit eines späteisenzeitlichen Aufenthalts nicht ausschließen.[176]

169 In der Stichprobe etwa 2:3; in Kimswerd etwa 1:3 (Kramer 1984).
170 Waterbolk 1961b; 1962, Abb. 30: 7 und 11; 1965, Abb. 10: 11–13.
171 Bei Urnenfelderkeramik trifft man gelegentlich Rippen und Riefen an der Halsbasis an.
172 Velsen 2210±70 (GrN-5505) und 2180±40 (GrN-11491); Baambrugge 2200±50 BP (GrN-6408); Santpoort 2190±30 (GrN-11487) und 2180±25 BP (GrN-11489).
173 Van Giffen 1931, Afb. 32: 451, 467, 469 und 506.
174 Lanting & Mook 1977, 10, 150 und 172.
175 Pers. Mitt. E. Kramer (FM).
176 Ein von Van Es *et al.* (1988) angezeigter Fundort bei Wier beruht auf einer falschen Anzeige in der Kartei. Im Wurtenbuch Boeles' ist von einem *Wier* (=Wurt), und zwar Wijlaarderburen bei Leeuwarden, die Rede.

Der engmündige Typ Ge4 weist innerhalb der Stichprobe 33 Fundorte auf. Außerhalb Westergos wurde der Typ in NW-Groningen angetroffen.[177]
Die Verbreitung von *streepband*-Keramik ist sehr groß: die Marschen von Friesland an erster, von Groningen an zweiter Stelle. Für Nordwest-Groningen konstatierte Miedema die häufige Verwendung von Muschelgrusmagerung. Weitere Funde sind aus Noord- und Zuid-Holland, Utrecht, Overijssel, Drenthe und aus dem deutschen Küstengebiet bekannt. Im römischen Lager der augusteischen Periode in Vechten (Utrecht) sind einige Gw4-Scherben gefunden worden.[178]

Die Keramik der späten Eisenzeit zeigt mehrere Änderungen. Die Außenseite der Gefäße ist oft orange bis rötlich. Ränder sind an der Außenseite häufig abgestrichen. Die Skala der Maße ist erheblich größer; durchschnittlich ist die Keramik größer. Das Formenrepertoire zeigt eine Ausdehnung im Vergleich zu den vorigen Perioden. Wie sich schon bei G3b ankündigte, gibt es engmündige Gefäße neben den normalerweise ziemlich weitmündigen Formen. Einhenklige Kümpfe oder Becher (Kleinkeramik) sind relativ häufig.
Die Zahl der *streepband*-Funde in Westergo ist im Vergleich zu den Nachbargebieten derart groß, daß kein Zweifel darüber bestehen kann, daß, wie bei G3a und G3b, das Zentrum dieser Entwicklung in dieser Gegend gesucht werden muß.
Oberflächlich gesehen könnte man die Frage des Herkunftgebietes außer Betracht lassen. Der Form nach ist es klar, daß *streepband* eine Weiterentwicklung der *cannelures* des Typs G3b ist. *Streepband* ist jedoch nicht geglättet; gewöhnlich besteht das Muster aus drei 2–3 mm breiten Rillen, die gleichzeitig, angeblich mit einem gezahnten Spatel,[179] über die ziemlich feuchte Oberfläche gezogen wurden. Die Ritzlinien wurden angebracht, nachdem die Henkel angeheftet waren, denn sie hören bei den Henkeln auf. Sind diese mit *streepband* verziert, dann ist das gleiche Gerät benutzt worden.[180]
Es gibt Übergangsformen: Gefäße mit schmalen Riefen, eine Art geglättetes *streepband*. Diese Keramik ge-

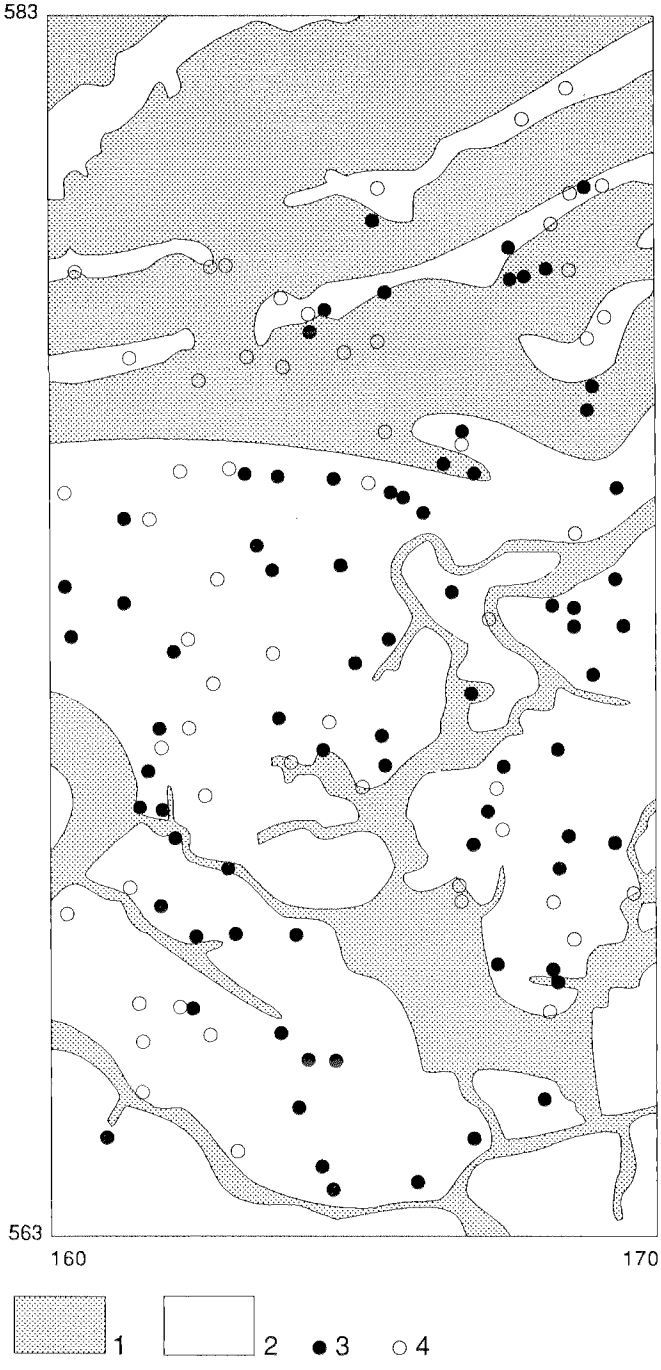

Abbildung 54 Westergo, Stichprobengebiet: Verbreitung der *streepband*-Keramik (Typen G4 und K3a, und Wandscherben). Legende: 1, 2 wie Abbildung 5; 3 Fundstelle von *streepband*-Keramik; 4 übrige Fundstellen.

177 Miedema 1983, fig. 48 und 50.
178 Halbertsma 1953, 248, Afb. 65: 7 und 8. Die Ware ist übrigens durch und durch violett und rot, was ich sonst nur aus Torfsiedlungen bei Sneek und Schraard kenne.
179 Abb. 51: 6 zeigt Spateleindrücke.
180 Jede Rille zeigt ihrerseits ein feines Relief. Glatte »Zähne« sind fast nie benutzt worden.

hört normalerweise der späten Eisenzeit an. Nur ein Gefäßfragment aus der von Van Giffen untersuchten Wurt Hatsum II (bei Dronrijp) zeigt dieses Merkmal und ist zugleich auf altertümliche Weise, das heißt reduzierend gebrannt und mit Muschelgrus gemagert, angefertigt worden.[181]

Streepband-Keramik wird während ihrer langen Karriere vermutlich nicht immer gleich ausgesehen haben, aber die Unterschiede zwischen späteisenzeitlichen und frühkaiserzeitlichen Vertretern sind nicht besonders auffallend. Es ist wohl nicht unangemessen, einfache, unverdickte Ränder (Gw4a) oder solche mit einer kurzen hervorstehenden Randlippe (Gw4c), früher zu datieren als zweifach facettierte Ränder (Gw4d) – der wohl typischste Vertreter der *streepband*-Keramik.[182]

Ein Vergleich zwischen diesen Gattungen ergibt jedoch nur einen großen Unterschied, und zwar in der Frequenz der Henkelfragmente: Töpfe mit einfachen Rändern sind offensichtlich häufiger oder mit mehr Henkeln ausgestattet worden als diejenigen mit facettierten Rändern. Bei vollständigen Gefäßen der letztgenannten Gattung findet man tatsächlich oft nur einen Henkel.[183]

Der zweihenklige Typ Ge4 ist fast immer mit einem einfachen Rand ausgestattet.

Die früheste Gw4-Keramik stammt vermutlich aus dem 2.Jahrhundert v.Chr.[184] Mit G3a-Keramik gibt es sicher keine Überlappung, mit G3b möglicherweise schon.

In einem – künstlich zusammengesetzten – Gebrauchsgeschirr in Assendelft, anhand römischen Imports auf 40–70 n.Chr. datiert, ist Gw4 noch immer vertreten.[185] Funde im *castellum* in Valkenburg bestätigen ein frühkaiserzeitliches Alter.[186] Bei den Paddepoel (PP)-Typen IVC und IVD, beide datiert 0–200 n.Chr., ist nur in einem Prozent der Fälle *streepband* angebracht.[187] Es kann angenommen werden, daß dies nur in der Anfangsphase geschah. In Westergo weist die geringe Menge an *streepband*-Keramik mit G6-ähnlichen Randformen (siehe Par. 2.7 und 3.7) auf eine sehr kurze Überlappung mit diesen jüngeren Typen hin. Datierungen bis 200 n.Chr.[188] erscheinen mir reichlich übertrieben.

Bei *streepband*-Keramik der Kaiserzeit verschwand der Hals allmählich, und die Rillen wurden auf der Schulter, öfters einzeln, angebracht. Vermutliche Enddatierung der Verzierung: Anfang 2.Jahrhundert n.Chr. Für die regulären Varianten des Typs Gw4 gilt ein früheres Ende, vielleicht Ende 1.Jahrhundert n.Chr. Typ Ge4, alles in allem eine späteisenzeitliche Erscheinung, wurde vielleicht schon Mitte des 1.Jahrhunderts von Ge5a abgelöst.

Typen Gw5 und Ge5 (Abb. 16–18, 55)

Typ Gw5 ist innerhalb des Stichprobengebietes allgemein vertreten. Acht Fundstellen, von insgesamt 59, liegen nördlich von Franeker. Die Zahlen sind etwas geringer als die von Typ Gw4. Die Variante Ge5a zählt 24 Fundstellen, ab Schalsum südwärts. Die jüngere Variante Ge5b ist in 23 Siedlungen vertreten.

Mit Typ Gw5 vergleichbare Keramikformen sind längs der ganzen niederländischen Küste angetroffen worden, von Zuid-Holland bis einschließlich Groningens. Fundorte im Westen sind zum Beispiel Rijswijk[189] und Assendelft.[190] In Groningen gibt es Funde in Grijpskerk,[191] NW-Groningen[192] und Paddepoel.[193] Der Typ fehlt in Leeuwarden-Oldehove.

Die Variante Ge5a, mit Henkeln am Hals, ist andernorts nicht deutlich nachweisbar. In Rijswijk, Assendelft und NW-Groningen sind runde, engmündige Gefäße meistens mit Henkeln von der Schulter bis zum Rand ausgestattet. Die schlankere Variante Ge5b kennt mehr Gegenstücke: Typ IIIB in Rijswijk, in Assendelft[194] und in Oostergo. In Groningen fehlt sie.

Landeinwärts sind gelegentlich vergleichbare Stücke gefunden worden, z.B. in der befestigten Siedlung Zeijen 1.[195] Der am weitesten entfernte und zugleich am

181 Ein weiteres Fragment mit Muschelgrusmagerung, jedoch oxidierend gebrannt, stammt aus Spannum-Heechhiem (62).
182 Vgl. Waterbolks Umschreibung seines Typs RW IV (Waterbolk 1977).
183 Vgl. Ezinge (Van Giffen 1936, Beilage 5, Abb. 1: 919, 1429a und 1518a).
184 Paddepoel 2125±35 BP (GrN-5592); Sneek 2130±30 BP (GrN-15834); Assendelft-32 2110±50 BP (GrN-8336) und 2125±25 BP (GrN-8685).
185 Brandt 1983, fig. 7.
186 Van Giffen 1944, 245, Afb. 52: 8.
187 Van Es 1968, 251–2.
188 Bloemers 1978, 386; Miedema 1983, 113.
189 Bloemers 1978: einige Varianten der Typen IV und V.
190 Brandt 1983, fig. 7: 5a, 11 und 16 (alle ohne Henkel!).
191 Van Giffen 1964, fig. 11, 12.
192 Miedema 1983, Varianten des Typs IV.
193 Van Es 1968, Typ IVE (Exemplare ohne *streepband*).
194 Brandt 1983, fig. 7: 9 (nur ein Henkel).
195 Waterbolk 1977, fig. 24: 8, 26: 14 (Gw5); fig. 25: 2 (Ge5b).

meisten die Phantasie anregende Fundort ist bis jetzt Haltern an der Lippe. Im römischen Lager (augusteischer Zeit) wurden zwei »friesische« Randscherben angetroffen, und zwar ein Ge5a- (vielleicht Ge4-)Fragment[196] und der Rand eines Gw5-ähnlichen Gefäßes.[197] Eine östlichere Herkunft (chaukisches Gebiet) ist jedoch nicht auszuschließen.

Jeder Typ stellt seinen Ausdenker vor neue Aufgaben. So hatte ich mir den Typ G5 als zeitgleiches Gegenstück zum *streepband*-Typ G4 gedacht. Von der Verzierung abgesehen habe ich beim Hervorrufen aus dem Datenbestand die gleichen Kriterien benutzt wie bei Typ G4. Ein Vergleich der anderen Merkmale zeigte aber, daß es ziemlich große Unterschiede gibt: durchschnittlich kleineres Format, öfter organische Magerung, weniger oft Henkelverzierung. Sind diese chronologisch zu deuten oder zum Teil funktionell? Jedenfalls kommt es mir unwahrscheinlich vor, daß in der späten Eisenzeit nur G-Keramik mit *streepband*-Ornament angefertigt wurde.[198]
In zeitlicher Hinsicht muß Typ Gw5 den ebenfalls weitmündigen Gw4 überlappen, denn einen größeren »Zwischenraum« zwischen Typ Gw4 und den Typen Gw6 und Gw7 gibt es nicht. Lokale Präferenzen spielen offensichtlich keine Rolle: die Verbreitung von Typ Gw5 stimmt nahezu mit der des Typs Gw4 überein. Aber was soll man vom Zahlenverhältnis beider Typen in Tolsum denken: Gw4 114 Stück, Gw5 nur ein einziges! Ist in Tolsum selektiv gesammelt worden, oder ist Gw4 dort vielleicht bis zur »Introduktion« des Typs G6 in Gebrauch geblieben?[199]
Die einfachste Lösung ist: die Keramikformen änderten sich zwischen dem 2.Jahrhundert v.Chr. und dem Ende des 1.Jahrhunderts n.Chr. kaum. Typ Gw4 zeigte sich auch schon störrisch, als es auf eine chronologische Unterteilung ankam. Die Friesen waren offensichtlich zufriedene Leute.
Nach der späten Eisenzeit verschwand der Halsabsatz mehr und mehr. Ein Vergleich zwischen den Varianten der Typen Gw4 und Gw5 erbrachte ein Kuriosum: Die

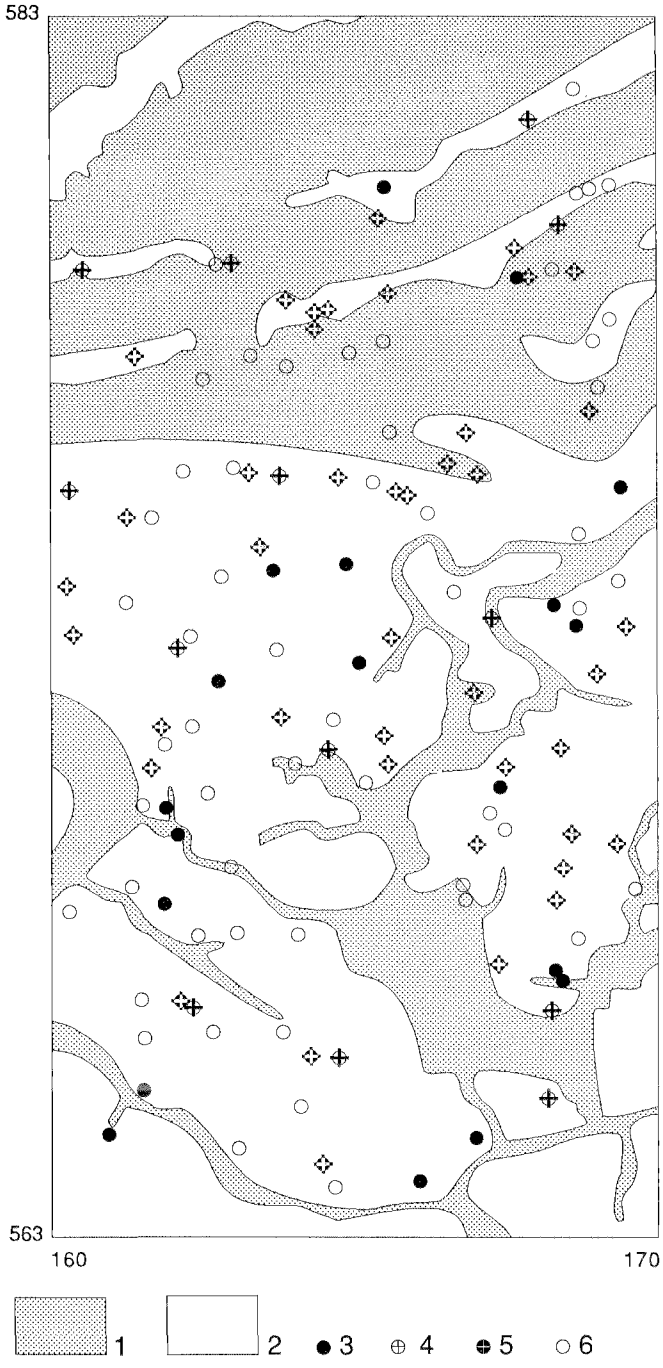

Abbildung 55 Westergo, Stichprobengebiet: Verbreitung der Typen G5 und G6. Legende: 1, 2 wie Abbildung 5; 3 Fundstelle Typ G5; 4 Fundstelle Typ G6; 5 Fundstelle Typen G5 und G6; 6 übrige Fundstellen.

196 Boeles 1951, 184.
197 Bloemers 1973.
198 Ein Holzfragment in einem Brunnen der Wurt Felsum ergab als Datierung 2060±35 BP (GrN-1673). Der Brunnen enthielt keine Keramik mit *streepband*.
199 Aus Tolsum sind einige »späte« Randfragmente (Abb. 43: 5–7) erhalten geblieben.

Unterschiede der Varianten untereinander sind ungefähr die gleichen!

Halsabsatz vorhanden bei (in Prozenten):
Gw4a 41,1 Gw4b 33,9 Gw4c 59,5 Gw4d 47,3
Gw5a 28,1 Gw5b 19,5 Gw5c 45,2 Gw5d 34,2

Gab es also einen zeitunabhängigen Zusammenhang zwischen Rand- und Halsform, oder spielt der blinde Zufall uns wieder mal einen Streich?
Die Variante Ge5a sieht Ge4 sehr ähnlich. Die Unterschiede sind gering: etwas dickere Wandung, abweichendes Magerungsspektrum und, am deutlichsten, nur selten Verzierung der Henkel. Trotz der Ähnlichkeit gehört der Typ vermutlich ins 1.Jahrhundert n.Chr. In Fundkomplexen der mittleren Kaiserzeit wie Schagen: Lagedijk[200] und Zathe Truurd bei Tzum[201] fehlt der Typ.
Obgleich der Unterschied zwischen Henkeln am Hals und solchen am Rand von nebensächlicher Bedeutung zu sein scheint (und oft gar nicht eindeutig festgestellt werden kann), gibt es zwischen den Varianten Ge5a und Ge5b erhebliche Unterschiede (Bauchdurchmesser, Magerung, Randform). Einige Höhenmeßwerte suggerieren für Typ Ge5b eine schlankere, höhere Form. Der Übergang zu Ge6 ist fließend. Ein Gefäß aus Assendelft, datiert 40–70 n.Chr.,[202] zeigt jedoch die herkömmliche niedrige Form.
Boeles bezeichnete die Henkelgefäße als die typischsten Vertreter der friesischen Keramik aus der römischen Zeit.[203] Seine Beschreibung der Entwicklung wurde von mir bestätigt. Es kommt mir hin und wieder so vor, als sei die vorliegende Studie nur eine ausführliche Anmerkung zu seiner Arbeit.
Van Es bezweifelte die von Boeles vertretene Ansicht. Seiner Meinung nach[204] kamen in Friesland im 2. und 3.Jahrhundert alle Formen (groß und klein, eng- und weitmündig, schlank und gewölbt) gleichzeitig vor. Zur Unterstützung dieser Behauptung wies er auf zwei von Boeles abgebildete[205] Gefäße hin: beide mit ausgezogenen Henkelspitzen, das eine schlank, das andere weitmündig. Ich pflichte seiner These bei, daß sie beide in diese Periode gehören (siehe Variante Ge7 bzw. Gw7b), aber das Vorkommen oder Fehlen von gewölbten Formen erklärt sie nicht.
In der von Bloemers untersuchten einheimischen Siedlung Rijswijk-De Bult sind sowohl gewölbte als auch schlanke Formen gefunden worden.[206] Nach Bloemers, der Van Es mit Zustimmung zitiert, gab es in der Siedlung zwischen beiden Varianten keinen chronologischen Unterschied: schlanke Formen schon im 1.Jahrhundert, gewölbte bis um 200 n.Chr.[207] Nun ist Rijswijk schon vom Gesichtspunkt der Keramik her keine typisch friesische Siedlung gewesen. Bloemers' Betonung der Übereinstimmung mit Gefäßformen in Friesland[208] möchte ich nicht unterschreiben. Die Formen in Rijswijk sehen im allgemeinen etwas altmodisch aus – wie Auswanderer, die, völlig unbeabsichtigt, ihre Muttersprache ab Stunde Null über mehrere Generationen konservieren: konkave Hälse, Henkelverzierung, kaum hervorstehende Ränder, kaum Wellenrand, kaum 3-fach facettierte Ränder,[209] dagegen *streepband*-ähnliche Verzierung bis 200 n.Chr. Die allmähliche Bevorzugung römischer Bräuche und Ware[210] hat die Einwohner offensichtlich von den Entwicklungen in den nördlichen Regionen jenseits der Grenze abgelenkt.

Typen Gw6, Ge6, Gw7 und Ge7 (Abb. 19–24, 55–56)
Die Stichprobe zählt 41 bzw. 35 Fundstellen der hellfarbigen Typen Gw6 und Ge6. Der weitmündige, reduzierend gebrannte Typ Gw7 ist weniger verbreitet – etwa 17 Fundstellen –, während die engmündige Variante Ge7 in nur 9 Siedlungen vertreten ist. Insgesamt 15 Fundstellen liegen nördlich der 577 km Y-Koordinate (zum Vergleich 6 bzw. 12 Fundstellen der in größeren Zahlen vorhandenen Typen Gw4 und Ge4, und Gw5 und Ge5).
Lokale Präferenzen für Drei- oder Zweigliedrigkeit (mit bzw. ohne Hals) sind aus dem Verbreitungsbild nicht abzulesen. Die engmündigen Typen sind im nördlichen Teil des Stichprobengebiets unterrepräsentiert.
Die (publizierte) Keramik der Provinz Noord-Holland sieht der von Westergo sehr ähnlich. Man könnte fast

200 Diederik 1981.
201 Amateurfunde von 1988, wurden nur flüchtig durchgesehen.
202 Brandt 1983, 128, fig. 7: 13.
203 Boeles 1951, 180–1.
204 Van Es 1965–66, 47.
205 Boeles 1951, Pl. XXV: 7 und 11.
206 Bloemers 1978, Abb. 161 und 162.
207 Bloemers 1978, 385.
208 Bloemers 1978, 392.
209 Bloemers 1978, 101, Abb. 35 und 36.
210 Bloemers 1978, Abb. 31.

an gemeinsame Produktionsvorschriften denken. Vergleichbare Formen sind z.B. in Schagen[211] und Texel[212] angetroffen worden. In Oostergo sind schlanke Henkelgefäße dieser Gattung nicht selten, in Groningen fehlen sie hingegen.

Nachdem das *streepband*-Ornament seine Popularität verloren hatte, die zugehörigen Gefäßformen jedoch noch weiterhin in Gebrauch waren, entstand etwa Ende des 1.Jahrhunderts n.Chr. ein ganz neues Formenrepertoire, das durch einen verdickten, mehrfach abgestrichenen, hervorstehenden Rand und einen kurzen oder fehlenden Hals gekennzeichnet ist. Dies gilt sowohl für glattrandige Keramik als auch für Gefäße mit Randverzierung.
Der Bauchdurchmesser wurde durchschnittlich geringer. Engmündige Zweihenkelgefäße, bis zu diesem Zeitpunkt wie ein Kürbis aufgeblasen, wurden allmählich höher und schlanker. Ein weiteres, obgleich weniger zahlreiches Phänomen betrifft einen bald scharfen, bald schwachen Umbruch von der leicht konkaven oder flachen Schulter zur konvexen Wandung. Keramik mit einem Zickzackprofil bildete eine kleine Minderheit (siehe Par. 3.7).
Die Henkel, ziemlich breit und dünn, wurden ausschließlich am Rand befestigt. Dabei wurden sie nicht länger in der Hals-Schulterpartie versenkt, sondern ziemlich weit vom Gefäßkörper abstehend angebracht. Im Profil sind sie stumpfeckig bis spitz; die Spitze wurde oft mit einem Knöpfchen oder einer schmalen Fläche akzentuiert. Letztgenanntes Merkmal konnte teilweise schon bei älteren Formen beobachtet werden.
Alle diese Merkmale finden sich »in extremis« zusammen bei der sogenannten *gesmoorde*, d.h. reduzierend gebrannten Keramik. In Westergo sind es vor allem kleine Schalen und Fußbecher dieser Art (Typ K4) gewesen, die man sich beschaffte, aber auch Henkelgefäße waren nicht selten. Die Ware macht einen ziemlich einheitlichen Eindruck. Magerung ist, mit bloßem Auge jedenfalls, selten zu erkennen (in diesen Fällen: organisch). Die Oberfläche ist oft poliert. Nur in der Formgebung zeigt sich Variabilität. Fließbandproduktion dieser »Luxuswaren« kommt nicht in Frage, aber beschränkte Herstellung in einigen Zentren ist schon glaubhaft. Interessant ist, daß die Oberfläche der zeit-

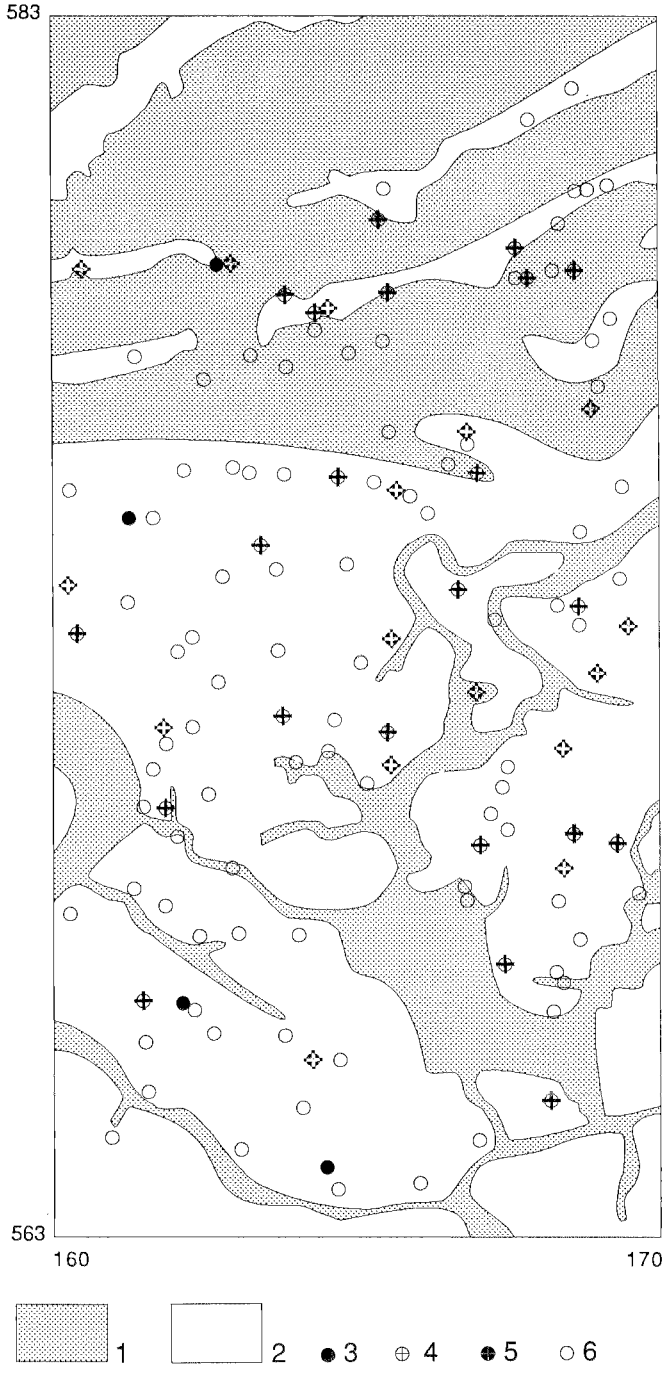

Abbildung 56 Westergo, Stichprobengebiet: Verbreitung der Typen G7 und K4. Legende: 1, 2 wie Abbildung 5; 3 Fundstelle Typ G7; 4 Fundstelle Typ K4; 5 Fundstelle Typen G7 und K4; 6 übrige Fundstellen.

211 Diederik 1981; Abbink & Therkorn 1988, fig. 4.
212 Pers. Mitt. P.J. Woltering.

gleichen, oxidierend gebrannten G-Gefäße (dementsprechend) schlechter behandelt wurde.
Facettierung des Randes fing in der späten Eisenzeit an. Von Verdickung war kaum die Rede. Dieses Verfahren trat erst zu Anfang unserer Zeitrechnung in Erscheinung, und zwar beim Typ Paddepoel IVA:[213] ein tropfenförmiger, 3- oder 4-fach abgestrichener Rand, kein Hals, Gefäßkörper oft geometrisch verziert. Auf Flügeln dieses östlichen, ursprünglich vielleicht langobardischen Einflusses[214] sind in Friesland nur einige kleine Henkelbecher mit verdicktem, übrigens kaum facettiertem Rand und mit Girlanden-Muster gelandet (Abb. 44: 15). Der Impuls für die Formgebung der Typen G6 und G7 muß vermutlich nur zum Teil in dieser Richtung gesucht werden. Im 1.Jahrhundert n.Chr. blieben die altertümlichen Formen der späten Eisenzeit noch geläufig.
Aufgrund der prägnanten Merkmale könnte die reduzierend gebrannte Keramik die treibende Kraft hinter der Formgebung lokaler, oxidierend gebrannter und mehr durch verschwommene Züge gekennzeichneter Keramik gewesen sein. Dies würde aber bedeuten, daß sie ziemlich früh angesetzt werden muß, ein keineswegs lockender Gedanke. Das Umgekehrte ist jedoch kaum anzunehmen.
Die Polyphonie der Diskussion dehnt sich weiter aus, wenn die Situlen einbezogen werden. Das gelegentlich auf ihnen angetroffene Ritzmuster[215] kann dem »chaukischen« Repertoire entliehen sein. Angesichts der historischen Berichte über chaukische Aktivitäten entlang der Nordseeküste braucht man sich hierüber nicht zu wundern. Auf Gw7 und Ge7 fehlt übrigens Verzierung.[216]
Mehrfache Facettierung des verdickten Randes kann auf das gleiche Konto geschrieben werden, obwohl der Zeitunterschied einer unanfechtbaren Beziehung im Wege steht. Für andere Merkmale (Brennverfahren, Schulterknick, nachgeahmte Drehscheibenrillen am Innenrand) dürfte römische Ware – aber welche? – als Modell gedient haben.
Die Produktion der Typen Gw7 und Ge7 hat zweifelsohne später angefangen als die der ersten Situlen (Variante K4a). In Schagen-Muggeburg,[217] Schagen-Witte Paal[218] und Schagen-Lagedijk werden beide Typen ins 2. und 3.Jahrhundert datiert. Die Gefäße mit hohem Schulterknick sind sicherlich zeitgleich mit den identisch ausgeführten Situlen der Variante K4b. Funde aus Noord-Holland[219] und Großbritannien, wo eine cuneus Frisiorum[220] am Hadrians Wall gelagert war,[221] machen ebenfalls eine Datierung ins 2.und 3.Jahrhundert glaubhaft.
Ein Enddatum der Typen G6 und G7 läßt sich schwer geben. Vermutlich zog in Westergo im Laufe des 3.Jahrhunderts, vielleicht schon früher,[222] Keramik mit verdickten, facettierten Rändern im Vergleich zu Töpfen mit langen, ausgezogenen Rändern den kürzeren. Diese Entwicklung fiel mit dem Räumen vieler Siedlungen zusammen, so daß deutliche Beweise leider fehlen.

3.3 Größere Gefäße mit verziertem Rande

Typ V1 (Abb. 25, 57)
Innerhalb des Stichprobengebietes gibt es zehn Fundorte. Ganz Westergo in Betracht ziehend, kommen vier Fundorte hinzu (Pingjum, Kimswerd, Engelum, Marssum). Weil es um winzige Scherben geht, ist für einige Fragmente eine jüngere Datierung nicht auszuschließen. Eigentlich ist nur für Hichtum, Wommels und Tritsum die Anwesenheit des Typs gesichert.
Im Marschengebiet sind vergleichbare Funde aus NW-Groningen,[223] Middelstum-Boerdamsterweg und vom linken Emsufer (Hatzum-Boomborg[224] und Jemgum 1[225]) bekannt. Auf der Geest sind Gefäße dieser Art in Siedlungen und Urnenfeldern ziemlich allgemein.[226] In

213 Van Es 1968, fig. 43; Miedema 1989, fig. 15: 6 und 7.
214 Schmid 1958.
215 Laad en Zaad, Texel, Wierhuizen.
216 Wenskus 1981, 394–8.
217 Abbink & Therkorn 1988, afb. 4.
218 Woltering 1981, Afb. 8.
219 Diederik 1981.
220 Inschrift, datiert 222–235 n.Chr.
221 Bloemers 1980; Jobey 1979. Die archäologische Datierung der Funde ist jedoch unklar.
222 Im deutschen Küstengebiet, vermutlich auch in Groningen, werden länglich ausgezogene Ränder ins 2.Jahrhundert datiert (Schmid 1988, Abb. 8 und 9; Van Es 1968, fig. 77).
223 Miedema 1983, Typ IIA (teilweise).
224 Löbert 1982, HB 8 und teilweise HB 3a.
225 Haarnagel 1957, Tafel II: 3–5.
226 Waterbolk 1962, Abb. 22.

Noord-Holland sind ebenfalls einige Fundstellen bekannt, z.B. Huiswaard,[227] Santpoort[228] und Texel.[229]
Typ V1 gehört zur heterogenen Formengruppe, die seit Schumacher, Stampfuß und vor allem Tackenberg[230] unter den Namen »Harpstedter Stil« bekannt ist. Verlinde bevorzugt die neutralere Bezeichnung »Rauhtöpfe«.[231] Fingertupfeneindrücke auf dem Rand, eine weite Mündung und ein ungegliederter Aufbau sind die wichtigsten Merkmale.
Der Typ war schon lange Zeit vor der ersten Besiedlung der Marsch in Gebrauch. Aufgrund einiger ^{14}C-Datierungen[232] könnte sogar ein erstes Auftreten im frühen 8.Jahrhundert, also während Hallstatt B, in Erwägung gezogen werden.
Eine Reihe Fingertupfen oder eine Tupfenleiste (*stafband*) auf der Schulter, vorgefunden in Hichtum, wird von Van Heeringen zwischen 700 und 500 v.Chr. datiert.[233] In Drenthe und im deutschen Nachbargebiet[234] ist eine derartige Verzierung ebenfalls bekannt. Von einigen derartigen Rippenfragmenten aus Hichtum dürften übrigens zwei oder drei der mittleren oder späten Kaiserzeit angehören (siehe Par. 3.7). Die Härte der Ware und die helle Farbe lassen eine Datierung in die frühe Eisenzeit fraglich erscheinen. Aus Pingjum, außerhalb des Stichprobengebietes, stammt ein weiteres eisenzeitliches Rippenfragment.
Bemerkenswert ist das nahezu komplette Fehlen von Muschelgrus als Magerungssubstanz. Es kann angenommen werden, daß die Benutzung dieses Typs in Westergo früher ein Ende nahm als die des Typs G1. Eine Ausnahme bildet ein mit Muschelgrus gemagertes und mit einer Rille unter dem Rand versehenes Fragment aus Ludumerterp (Abb. 25: 5). Außerhalb des Stichprobengebietes, in Kimswerd, kann auf ein V1-ähnliches Randfragment mit Muschelgrusmagerung, mit vermutlich gruppierten – vergleiche V2b – Tupfen

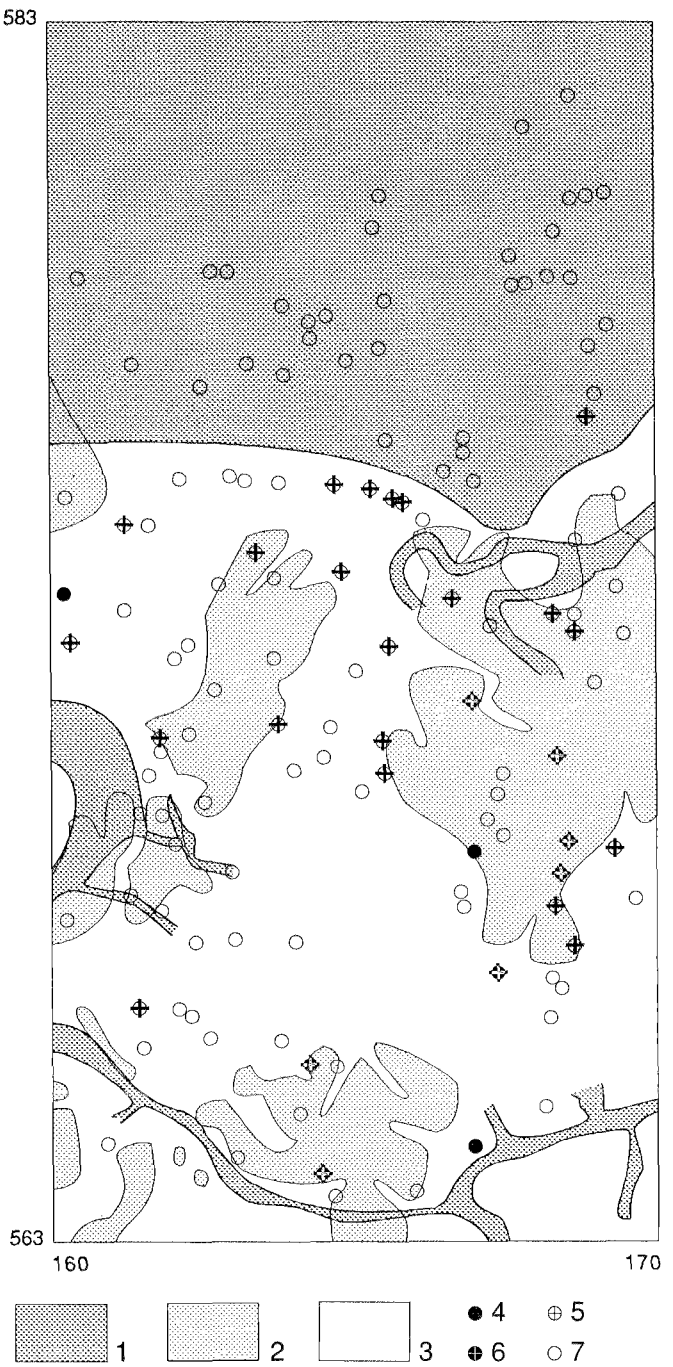

Abbildung 57 Westergo, Stichprobengebiet: Verbreitung der Typen V1 und V2. Legende: 1, 2, 3 wie Abbildung 4; 4 Fundstelle Typ V1; 5 Fundstelle Typ V2; 6 Fundstelle Typen V1 und V2; 7 übrige Fundstellen.

227 Van Heeringen 1986, Fig. 9.
228 Modderman 1960–61, afb. 12: 14, 15 und 20, 19: 7.
229 Pers. Mitt. Woltering.
230 Tackenberg 1934.
231 Verlinde 1985, 342–9.
232 Urnenbestattungen in Schwalmen, 2675±55 BP (GrN-7420), Eersel, 2515±50 BP (GrN-1531) und Wapse, 2580±40 BP (GrN-6868), sowie ein mit Kalenderbergverzierter Keramik vergesellschafteter Siedlungsfund in Einbeck, 2590±60 BP (Hv-1388).
233 Van Heeringen 1986, 33, Fig. 9.
234 Nortmann 1983a, Taf. 32: 7 und 15.

auf dem Rande, in einem Kontext von G3a- und jüngerer Keramik hingewiesen werden.[235]
Die jüngsten ^{14}C-Daten, die aus Eursinge und Santpoort stammen (siehe Tabelle 15), deuten auf eine Benutzungsdauer bis ins 4.Jahrhundert v.Chr.

Typ V2 (Abb. 26–27, 57)
Die Variante V2a wurde innerhalb des Stichprobengebietes an 22 Stellen angetroffen, die Variante V2b an 17 Stellen. Insgesamt gibt es 28 Fundorte im Gebiet von der Wurtenreihe *op* Holprijp im Norden bis Bolsward im Süden, das heißt, daß die Verbreitung beider Varianten mit der Verbreitung der Typen G3a und G3b vergleichbar ist. Nur eine einzige V2b-Scherbe ist weiter nördlich, und zwar bei Welsrijp, gefunden.
Die Verbreitung von V2a-ähnlicher Keramik ist in den nördlichen Provinzen ziemlich allgemein, aber die Stückzahl ist gering. Nach Osten hin wurde Fingertupfenverzierung angeblich weniger gewürdigt als in Westergo. Eine V2a-Randscherbe aus De Brillerij wurde von Miedema abgebildet.[236] Tupfenverzierung auf dem Rand, offensichtlich mit *streepband*-Keramik vergesellschaftet, kommt in Paddepoel[237] und in Zeijen 1 vor.[238]
In Noord-Holland lieferte Texel einige Beispiele für diese Keramik.
Für die Variante Typ V2b können außerhalb des Stichprobengebietes noch folgende Fundorte erwähnt werden: Kimswerd,[239] Harkezijl, Deinum[240] und Hatsum.[241] In anderen Himmelsrichtungen gibt es Fundorte wie Ezinge[242] und Baambrugge (Utrecht).[243]

Während der Typ V1 seine Wurzeln noch im spätbronzezeitlichen Formenrepertoire (Doppelkoni) hatte, gehört die Variante V2a deutlich der mittleren Eisenzeit an: Gliederung des Halses und der Schulter und gerundetes Profil. Was die Rand-Schulterpartie anbelangt, ist die Ähnlichkeit mit den glattrandigen Typen ziemlich groß. Leider gibt es keine vollständigen Gefäße.[244]
Die frühesten Exemplare der Variante V2a, mit Gesteinsgrus gemagert und einem ziemlich hohen Hals ausgestattet, sind vermutlich zeitgleich mit G1 und G2,[245] die letzten stammen vom Anfang der *streepband*-Periode. Die Benutzungsdauer umfaßt also mehr als 200 Jahre.
Die Variante V2b dürfte etwa zeitgleich mit G3b sein, das heißt zwischen 300/250 und 200/150 v.Chr. Anders als V2a, dessen Form und Verzierung allgemein sind, ist V2b vermutlich nur eine regionale Variante. Bei Grabungen (Tritsum, De Vlaren und Kimswerd) sind mehrere Exemplare zum Vorschein gekommen, sonst ist dieser Typ eine seltene Erscheinung.
Beim Tritsummaterial gab es einige V2b-Fragmente mit senkrechten Rillen ab dem Rand, der eine Ausbiegung wie für einen Deckel zeigte. Eine mehr als lokale Bedeutung hat diese Variante aber nicht. An anderen Fundorten sind senkrechte Rillen oder flache »Fingerstriche« am Halse nur von V2a- und V3a-Gefäßen bekannt. Das Merkmal gehört vermutlich dem 3. und 2.Jahrhundert v.Chr. an.
Der Größenunterschied zwischen den Varianten V2a und V2b ist bemerkenswert, obwohl die geringe Zahl der V2b-Fragmente einer genauen Auswertung im Wege steht. Bei V3a und V3b ist jedoch von einem vergleichbaren Unterschied die Rede.

Typ V3 (Abb. 28–29, 58)
Die Stichprobe zählt 52 Fundorte (V3a: 34; V3b: 42). Die nördlichsten Fundorte der Variante V3a liegen, wie es auch bei Gw4 der Fall ist, auf der Wurtenreihe Herbaijum–Peins, nördlich von Franeker. Der nördlichste Fundort der Variante V3b liegt auf der Wurtenreihe Wijnaldum–Ried. Überraschend viele Scherben (49 Stück) stammen aus einer der Wurten *op* Holprijp (42). Außerhalb von Westergo bildet Keramik mit Fingertupfen an der Seite des Randes eine ganz normale Erscheinung.

Eine Verschiebung der Verzierung von der Ober- zur Außenseite des Gefäßrandes ist ein Phänomen, das sich im Übergang von der mittleren zur späten Eisenzeit vermutlich ringsherum erblicken ließ. Westergo unterscheidet sich in dieser Hinsicht kaum von anderen Ge-

235 Kramer 1984, Fig. 6: 6.
236 Miedema 1983, fig. 44: 7.
237 Van Es 1968, fig. 38, 51, 55 und 59.
238 Waterbolk 1977, fig. 27.
239 Kramer 1984, Fig. 6.
240 Halbertsma 1953, Afb. 66: oben-rechts.
241 Van Giffen 1922, Afb. 1: 37; 1924, Afb. 12: unten-rechts, 13: 81.
242 Van Giffen 1931, Afb. 32: 469n.
243 De Zwart 1982.
244 Ein Topf aus Zeijen könnte als Beispiel dienen (Waterbolk 1977, fig. 24: 3).
245 Vgl. Rhee, vergesellschaftet mit RW 1 (Waterbolk 1977, fig. 63: 2).

genden. Während einiger Zeit wurde doppelte Verzierung (oben auf dem und seitlich vom Rand) angebracht. Die Variante V3a geht in V4a über. Kerbenverzierung verschwand hingegen, vielleicht im Laufe des 1.Jahrhunderts n.Chr.?

Typ V4 (Abb. 30–33, 58)
Es gibt 59 Fundstellen von Wellenrand-Keramik. Der Unterschied zwischen den V4-Varianten mit und ohne Hals ist vielleicht nur von lokaler Bedeutung. In Hichtum ist zum Beispiel V4c relativ zahlreich, in Tolsum und Holprijp namentlich V4a. Die Zahl der Fundstellen stimmt für beide Varianten nahezu überein (V4a: ca. 41, V4c: ca. 45); auch das Verbreitungsbild beider Varianten deckt sich.
Während V4b eine Forschungshybride mit Merkmalen von V4a und V4c ist, ohne überregionale Parallelen, kann die Variante V4c, mit trichterförmigem Rand, in anderen Gegenden ebenfalls angetroffen werden. Ohne Randverzierung ist die Form im ganzen Norden verbreitet. Mit Wellenrand ist sie zum Beispiel in Sneek, Leeuwarden, Schagen und Alkmaar gefunden worden.[246] Übrigens zeigen G-Gefäße mit hervorstehendem Rand (Gw6a, Gw7a) häufiger einen Schulterknick als V4c-Exemplare. Bei V4-Keramik fehlt das Zickzackprofil.
Innerhalb der Stichprobe stammt etwa die Hälfte der V4d-Fragmente aus Hichtum. Von 9 anderen Stellen kommen etwa 20 Scherben hinzu. Weitere Fundorte sind Leeuwarden (Typ IVb), Schagen und Alkmaar. Wellenrandverzierung ist in Groningen, Drenthe und dem Emsgebiet[247] kaum bekannt.

Wellenrand, während der römischen Kaiserzeit in Westergo mehr oder weniger üblich, erschien nicht wie vom Himmel gefallen. Schon beim Typ V1 wurde diese Verzierung ab und zu angebracht, verschwand aber, um erst nach mehreren Jahrhunderten wieder aufzutauchen. In Noord-Holland begegnen wir ihr zum Beispiel in Assendelft 32. Hier wurden Wellenrandscherben, manchmal zusätzlich mit *streepband* auf der Wand, bei einem Hausgrundriß angetroffen.[248] Zwei ^{14}C-Datierungen (Holz) von 2110±50 BP (GrN-8336) und 2125±25 BP (GrN-8685) bestätigen ein späteisenzeitliches Alter.

246 Cordfunke 1982.
247 Löbert 1982, Taf. 44: 746.
248 Stoof 1983, fig. 10.

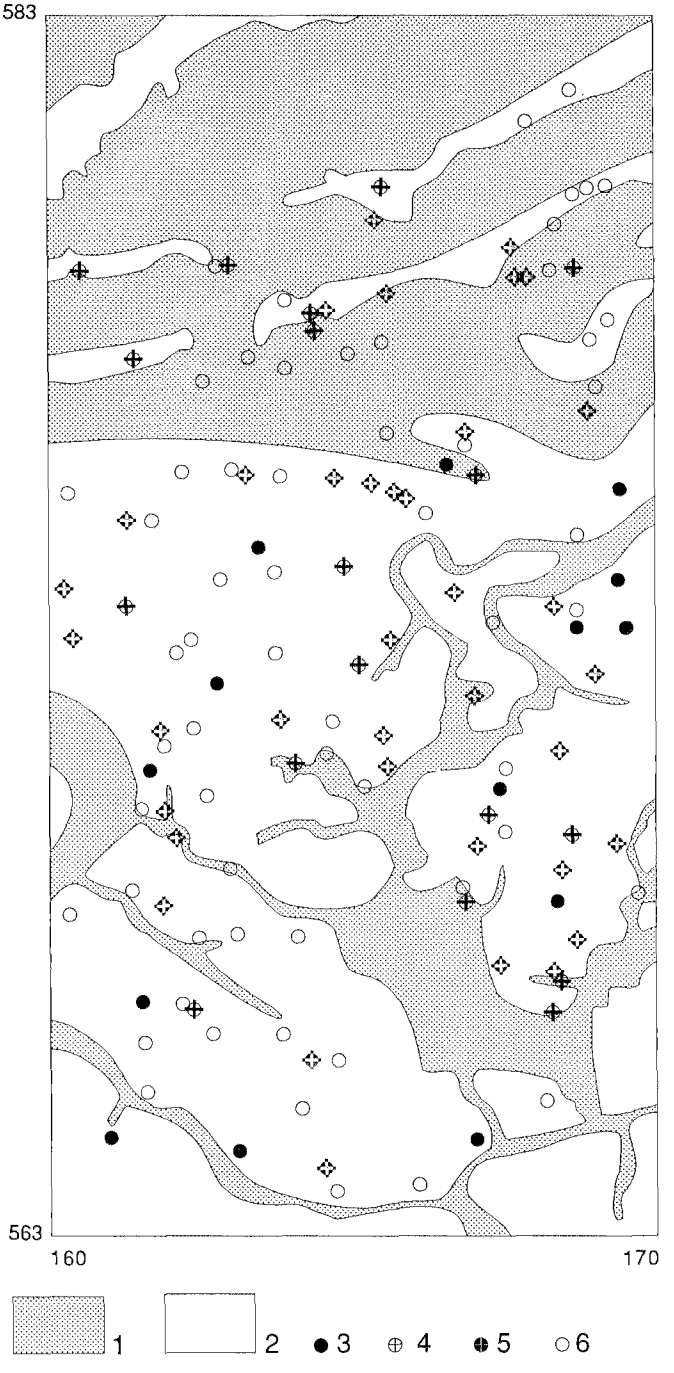

Abbildung 58 Westergo, Stichprobengebiet: Verbreitung der Typen V3 und V4. Legende: 1, 2 wie Abbildung 5; 3 Fundstelle Typ V3; 4 Fundstelle Typ V4; 5 Fundstelle Typen V3 und V4; 6 übrige Fundstellen.

Für Westergo gibt es keine Anzeichen für ein Auftreten von Wellenrand vor dem Beginn u.Z. Die oben erwähnte Kombination von Rand- und Wandverzierung ist in Westergo nur ganz ausnahmsweise angetroffen worden (bei der Variante V3b). Falls eine überzeugende Vergesellschaftung zwischen Fundgruppen festgestellt werden konnte (z.B. Tritsum, Zathe Truurd), ist Typ V4 ungefähr zeitgleich mit G5, G6 und G7. Zusätzliches Beweismaterial kommt wiederum aus Noord-Holland, aus der Gegend von Alkmaar[249] und Schagen.
In Westergo fehlen vollständige Gefäße. Die Höhe, die Form und auch die Ausführung des größten Teiles der Keramik bleibt deshalb außer Betracht. Komplette Gefäße außerhalb des Stichprobengebietes geben Auskunft. Ein V4c-ähnliches Gefäß aus Sneek[250] zeigt eine hohe, runde Schulter und ein straff eingezogenes, gerauhtes Unterteil. Die Höhe übertrifft den Bauchdurchmesser um 15%. Bei einem V4b-Gefäß aus Schagen[251] ist das Unterteil etwas hohl eingezogen. Bei einem Durchmesser von etwa 36 cm beträgt die Höhe ungefähr 44 cm. Ein zweites vollständiges (oder jedenfalls rekonstruierbares) Exemplar (V4d) mißt 44 bzw. 38 cm.[252] Die beim Typ Ge6 erwähnte Tendenz zu schlankeren und höheren Formen ist also auch bei V4 vorhanden. Ein Rückgang des Volumens, wie von mir in einem anderen Aufsatz vermutet wurde,[253] ist aufgrund der vertikalen Ausdehnung fraglich.
Die vorhandenen Randscherben lassen sich aufgrund der Hals- und Randform in vier Varianten unterteilen. Diese Varianten unterscheiden sich leider nur aufgrund der gewählten Kriterien, in den anderen Merkmalen weichen sie kaum voneinander ab. Chronologischen Wert hat die Unterteilung nur in sehr beschränktem Maße. Variante V4a war zum Beispiel der direkte Nachfolger von V3, blieb vermutlich aber lange in Gebrauch, neben halslosen Formen. Auch der Bauchdurchmesser, der denen der anderen V4-Varianten ähnlicher sieht als dem der Variante V3a, weist darauf hin. Einen weiteren Hinweis auf die Gleichzeitigkeit der vier Varianten bildet die erneute Verwendung von Muschelgrus als Magerungssubstanz. Dieser kommt, wenn auch in geringer Frequenz, bei allen Varianten vor. V4c-Stücke mit langgezogenem Randprofil (Abb. 32: 5, 7) bilden vermutlich eine späte Entwicklung (vgl. Wijster IIIA1).
Das entscheidende Kennzeichen der Variante V4d ist das drei- oder vierfache Abstreichen des Randes: oft einmal an der Außenseite, ein- oder zweimal an der Oberseite und einmal in der Mündung. Die Variabilität ist ziemlich groß (vgl. Gw6). Die anderen Merkmale weisen auf einen geringen Unterschied mit V4a–V4c hin: engmündiger, größeres Format, härtere Ware, »feinerer« Wellenrand. Letztgenanntes Merkmal ist freilich eine spätere Entwicklung.

3.4 Kleinkeramik

Typ K1 (Abb. 34: 1–5)
Diese Becher und Miniterrinen sind in sieben Wurten gefunden worden. Der einzelne Henkel aus Beijum, ziemlich weit im Norden, ist der einzige früh- oder mitteleisenzeitliche Fund in dieser Wurt.
Die Form ähnelt der des Typs G1. Es gibt keine überzeugende Übereinstimmung mit Funden in anderen Gegenden. Becher in Urnenfeldern weisen zum Beispiel keinen Hals auf.[254] Eine Datierung kann nicht genauer als früh- oder mitteleisenzeitlich sein.
Die weitmündigen Randfragmente 82a-197 (Abb. 34: 4) und 82a-239 ähneln dem spätkaiserzeitlichen Typ Wijster ID. Die Ware ist jedoch eisenzeitlich.

Typ K2 (Abb. 34: 6–8)
Es liegen Funde aus 13 Siedlungen vor. Die Verbreitung stimmt mit der der mitteleisenzeitlichen Typen G3a und V2 überein. Die Form ist gut mit der des Typs G3a vergleichbar. Die Mehrheit zeigt ebenfalls geometrische Verzierung. Anders als bei G3a gibt es öfters einen Henkel. In anderen Gegenden gibt es keine deutlichen Gegenstücke.[255]

Typ K3a (Abb. 35, 54)
Kleinkeramik mit *streepband*-Muster war offensichtlich beliebt, denn es gibt Funde aus 34 Siedlungen. In NW-Groningen gibt es ebenfalls welche.[256]

249 Zwei Fundkomplexe mit Gw6, Gw7, V4b und V4c wurden datiert 2040±30 BP (GrN-12756) und 1910±20 BP (GrN-12757). Die erste Zahl ist zu alt, die zweite ist kalibriert etwa 100 n.Chr. (Cordfunke 1982, fig. 7 und 8).
250 Elzinga 1962, fig. 5: 9.
251 Diederik 1981, fig. 10: 10.
252 Diederik 1981, fig. 12: 11.
253 Vgl. Taayke 1988, 59.
254 Kooi 1979, fig. 94 und 95.
255 Eine Ausnahme bildet ein Exemplar aus einem Urnenfeld (Kooi 1979, fig. 32: 485).
256 Miedema 1983, fig. 47: 1, 2 und 14.

Die größten Exemplare sind auch die zahlreichsten: 34 Stück besitzen einen Wanddurchmesser von 17 oder 18 cm. Der Übergang zu G4 ist fließend.
Die Datierung dürfte mit der des Typs G4 übereinstimmen: 2.Jahrhundert v.Chr. bis Anfang 2.Jahrhundert n.Chr.

Typ K3b (Abb. 36)
Kleinkeramik ohne *streepband* bildet eine bunte Sammlung. Die Bezeichnung »Typ« ist etwas übertrieben. Es handelt sich um alle Kleinkeramik, die jünger als K3a ist und nicht zum Typ K4 gehört. Einhenkelgefäße überwiegen, aber es gibt ebenfalls kleine Zweihenkelgefäße. Der Becher aus Peins (Abb. 36: 4) zeigt Ähnlichkeit mit Keramik aus Groningen.[257] Knöpfe sind selten.
Innerhalb des Stichprobengebietes wurden Funde aus nicht weniger als 51 Siedlungen gesammelt.

Typ K4 (Abb. 37, 56)
Die Stichprobe lieferte 38 Fundstellen. Ein Vergleich der Verbreitung der drei Varianten gibt keinen Hinweis auf lokale Unterschiede. Die Variante K4c dominiert.
Auf regionaler Ebene sieht die Sache anders aus: außerhalb von Westergo, das heißt in Oostergo und SO-Friesland, erweist sich K4a-ähnliche Keramik als die wichtigste Variante, und das gleiche kann über Groningen (Paddepoel IA) gesagt werden.
In Noord-Holland sind K4b-ähnliche Formen anscheinend ziemlich zahlreich (z.B. Texel, Schagen, Assendelft, Santpoort[258]). In Drenthe und dem westlichen Teil Niedersachsens sind mir keine vergleichbaren Funde bekannt.

Während vollständige K4a-Schalen einen flachen oder nur leicht abgesetzten Boden besitzen (Kimswerd,[259] Leeuwarden-Kalverdijkje, Leeuwarden-Hoogterp, Goutum und Laad en Zaad[260]) und diese Variante bei den Randscherben in der Überzahl ist, sind bei den vom Museum gesammelten Bodenscherben des Typs K4 Standfüßchen weitaus in der Mehrheit. Diese Diskrepanz dürfte auf eine selektive Sammelwut zurückzuführen sein, aber bei Grabungen (Tritsum, Leeuwarden-Oldehove) sah die Sache nicht anders aus. Vielleicht ist K4a nicht immer mit flachem Boden ausgestattet. Nach der Meinung von Van Es war Typ PP IA, die Groninger Zwillingsschwester der Variante K4a, vermutlich mit einem Standfuß versehen.[261]
Variante K4a ist zweifelsohne der älteste Vertreter der Situlen. Obwohl diese Variante bisher nicht östlich von Groningen angetroffen wurde, stammen die bildenden Elemente (doppelkonische Form mit scharfem Bauchknick; kurzer Rand; gelegentlich geometrische Linienverzierung) vermutlich aus dem Elbe-Wesergebiet oder von weiter östlich, wo diese schon im 1.Jahrhundert v.Chr. von Töpfern eingeführt worden waren. Die Varianten K4b und K4c sind bodenständige Entwicklungen des Gebiets von Noord-Holland bis einschließlich Oostergo.
Typ PP IA wurde von Van Es ins 1. bis 2.Jahrhundert n.Chr. datiert.[262] Andere Funde in der Provinz Groningen, vermutlich mit PP IVC und IVD vergesellschaftet, bestätigen, unterstützt von ^{14}C-Daten, eine Datierung ins 1.Jahrhundert.[263] Ein der Variante K4a sehr ähnliches Exemplar stammt aus Wierhuizen, bei Appingedam.[264]
In Friesland müssen wir uns mit Fundvergesellschaftungen begnügen. In Laad en Zaad, südöstlich von Bolsward, war eine geometrisch verzierte K4a mit kurzem, abgesetztem Fuß von Keramik und einer Augenfibel des 1.Jahrhunderts begleitet.[265] In einem Brunnen(?) in Goutum wurden außer einer halben K4a-Schale Scherben der Typen K3 und G5 angetroffen. In Tritsum taucht K4a zum ersten Mal in der Periode VIa auf,[266] die ungefähr dem 1.Jahrhundert v.Chr. bis zum 1.Jahrhundert n.Chr. entspricht.
Die Varianten K4b und K4c sind sicherlich jünger. Van Es und Boeles datierten die Variante K4b mit Vorbehalten ins 3.Jahrhundert, dazu auf eine Fundvergesellschaftung mit einem henkellosen Ge7 in einem Brunnen der Wurt Barkwerd, bei Kubaard, verweisend.[267] Variante K4b zeigt, wie schon erwähnt, Ähnlichkeit mit den Typen Gw6 und Gw7. In Assendelft war die Variante im 2.Jahrhundert vorhanden.[268] Ein Fund in Bir-

257 Van Es 1968, fig. 148 und 164: 35 und 126.
258 Modderman 1960–61, afb. 27: 1.
259 Kramer 1984.
260 Kramer 1987, 185.
261 Van Es 1968, 247–8.
262 Van Es 1968, 262.
263 Streurman & Taayke 1989.
264 Miedema 1989, fig. 2: 4.
265 Kramer 1987, 185.
266 Einteilung nach Praamstra.
267 Boeles 1951, 182; Van Es 1965–66, 47.
268 Brandt 1983, fig. 8: oben.

doswald, in der Nähe von Hadrians Wall, kann vermutlich in die Mitte des 2.Jahrhunderts datiert werden.[269] In Westergo wurden bei einer Notgrabung vom Frysk Wurkferban in der Wurt Zathe Truurd neben Keramik der Typen G5 und vor allem G6 und V4 fast ausschließlich Scherben der Variante K4c angetroffen.
Ein Enddatum läßt sich schwer ermitteln. Vermutlich sind die Varianten K4b und K4c nicht später als ins 3.Jahrhundert, und vielleicht nicht später als um 250 n.Chr. zu datieren. In Leeuwarden-Oldehove stellten Van Es und Miedema fest, daß Oldehove Ia (=K4) in der jüngsten Siedlungsschicht (2. und 3.Jahrhundert) durch Oldehove Id (=Wijster IB oder PP IB) ersetzt wurde. Ihre Argumentation wird aber von den Verbreitungskarten (Typen pro Schicht) nicht eindeutig bestätigt.[270] Es kommt mir vielmehr so vor, als seien hier zwei Formwelten in friedlicher Koexistenz zusammengetroffen. Am Ende hatte die Wijsterform den längeren Atem, aber die Wurt Oldehove eignet sich nicht dazu, dies zu bestätigen.

3.5 Schalen und Kümpfe (Abb. 38)
Nur wenige Schalenfragmente (Par. 2.5.1) lassen sich mit Sicherheit in die Eisenzeit datieren. Die beiden Schalen aus Feins stammen vermutlich aus der mittleren Eisenzeit. Die Stichprobe ergab keine flachen polierten Schalen, wie sie in Tritsum (und Drenthe) geborgen wurden. Das Henkelfragment (Abb. 38: 2) ähnelt Funden aus Tritsum und Paddepoel (Typ PP VA).[271]
Einige Kumpf- und Schalenfragmente mit breitem, facettiertem oft verziertem Rand, gehören der mittleren Kaiserzeit an. Parallelen sind z.B. in Schagen-Lagedijk gefunden worden.[272] Eine Sonderform ist das Randfragment eines Kumpfes mit einer breiten Schulterrippe (Abb. 38: 11). Ähnliche Keramik, manchmal mit Wellenrand, kenne ich aus Tritsum, Pingjum, Zaad en Laad und Aalsum.[273] Einige reduzierend gebrannte Fragmente (Abb. 38: 13–15) zeigen ebenfalls abweichende Formen.

3.6 Kleinstkeramik (Abb. 39)
Miniware gibt es in Hülle und Fülle. Wegen der kompakten Form ist sie die einzige Gattung, die ihre Benutzungperiode und später den langwierigen Aufenthalt im Wurtkörper überleben konnte, ohne zu zerfallen. Innerhalb des Stichprobengebietes wurde Kleinstkeramik in 40 Siedlungen angetroffen.
Eine Datierung ist sehr schwierig. Geometrische Muster und *streepband*-Verzierung fehlen. Ein Teil der Funde dürfte (früh)mittelalterlich sein. Gesteinsgrus ist jedenfalls etwas überrepräsentiert. Für die Tassen 71-11 und 80d-4 ist eine frühmittelalterliche Datierung ziemlich sicher. Für die kleinen Situlen 64-1 und 80f-9 dürfte Ähnliches zutreffen.
Die erwähnten Rippennäpfchen sehen kaiserzeitlich aus.[274] Die Muschelgrusmagerung des einen Exemplars könnte jedoch auf die mittlere Eisenzeit hinweisen. Ein Exemplar in Tritsum ist ebenfalls mit Muschelgrus gemagert.

3.7 Kommentar zu den Sonderformen
(vgl. Paragraph 2.7)

3.7.1 Eisenzeit(-artig) (Abb. 40–41)
– Einige Fragmente stammen offensichtlich von doppelkonischen Gefäßen. Für das engmündige Stück mit hohem Hals (Abb. 40: 3) und das Doppelkonusfragment mit Rille (Abb. 40: 4) ist eine Datierung in die späte Bronzezeit nicht auszuschließen.
– Der schlanke Topf mit Buckeldelle (Abb. 40: 1) ähnelt Keramik aus dem Weser-Elbe Gebiet.[275] Dortige Datierung: Jastorf b.
– Der Topf mit ausschweifendem Rand aus Wommels (Abb. 40: 2) ist mit Keramik im Hinterland, z.B. in Rhee, vergleichbar.[276]
– Die Keramik mit Tiefstichverzierung (Abb. 13: 12) dürfte Trichterbecher-Ware zum Vorbild gehabt haben.[277] Eine Datierung ist nicht möglich.
– Gefäß 82a-328 (Abb. 41: 4) sieht wie ein V1-Topf ohne Randverzierung aus. Der Boden ist jedoch breit, der Schlickbewurf mehr oder weniger fein, und außer-

269 Jobey 1979, 130, fig. 1: 1.
270 Van Es & Miedema 1970–71, fig. 30–2.
271 Van Es 1968, fig. 161: 28, 122 und 186.
272 Diederik 1981, fig. 15: 44 und 66.
273 Nur Aalsum ist veröffentlicht (Miedema 1983, Fig. 20: 1).
274 Vergleiche z.B. »Tintenfaß« (Sonderform Kaiserzeit).
275 Bohnsack 1973, Taf. 27: 14636; Häßler 1976, Taf. 29: 206.
276 Waterbolk 1977, fig. 64: 1 und 2.
277 Der pleistozäne Boden liegt an Ort und Stelle etwa 4–5 m –NAP (Ter Wee 1976). Während der TRB-Periode war die Gegend also schon unbewohnbar.

dem ist die Ware hart und gut behandelt. Deshalb: Völkerwanderungszeit. Eine ähnliche Datierung dürfte für die Fragmente mit Tupfenleiste (Abb. 41: 1–2) und das VI-ähnliche Randfragment aus Lutjelollum (Abb. 41: 3) gelten.
– Das doppelkonische Gefäßchen 182-5 (Abb. 40: 6) entspricht der Begleitkeramik in Urnenfeldern.[278]
– Das (vermutlich) vierhenklige Randfragment gehört in das 3. oder 2.Jahrhundert v.Chr. Drei oder vier Henkel kommen bei den Typen G3b und Ge4 vereinzelt vor.
– Eine ähnliche Datierung trifft für waagerechte Henkel zu.

3.7.2 Kaiserzeit(-artig) (Abb. 42–44)
– Die geringen Mengen von Gw6-artiger Keramik mit (pseudo-) *streepband*-Ornament (Abb. 43: 5–8) machen deutlich, daß es nur eine kurze zeitliche Überlappung dieser Formen gab. Datierung: um 100 n.Chr.
– Gefäße mit hervorstehendem Rand und Henkeln auf der Schulter (Abb. 42: 2–4) sind vermutlich nicht bodenständig (vgl. Wijster IIIA1). Datierung: 3.Jahrhundert.
– Situlen mit Zickzackprofil (Abb. 44: 2–8) sind dem Typ K4 nicht völlig unähnlich, zeigen jedoch der Form nach eine bessere Übereinstimmung mit Keramik aus Drenthe und Groningen, und zwar mit den Typen Wijster IB, Oldehove Id und Paddepoel IB.[279] Die Schale aus Sieswerd weist übrigens auch Merkmale von K4b auf. Größere Keramik dieser Form ist übrigens, nicht sehr konsequent, der Variante Gw7a zugeordnet.
– Randfragment 1912/3.112 (Abb. 44: 9) gehört zu einer Schale Von Uslar Form II[280] oder Wijster IB3. Keine einheimische Ware. Datierung: 3. oder 4.Jahrhundert.
– Randfragment 1912/3.185 (Abb. 44: 10) dürfte wegen der Wijster ID-ähnlichen Form ins 4.Jahrhundert datiert werden.
– Inv. Nr. 131-89 (Abb. 44: 17) zeigt, nach Elzinga, Ähnlichkeit mit einem römischen Tintenfaß. Aus Parrega stammt ein vergleichbares Stück.[281] In Oostum (Gr.) wurde ein glattwandiges Exemplar mit eckigem Profil gefunden.[282] Es gibt jedoch wesentlich größere Keramik mit ebenfalls eingeschnürter Mündung und Durchbohrungen des Randes (z.B. Klaarkamp, Paddepoel[283] und Wierhuizen[284]).
– Inv. Nr. 123-86 (Abb. 44: 15) gehört zu Van Es' Typ Paddepoel IVA. Ähnliche Becher mit Girlanden-Verzierung wurden in Oostergo (Hoogebeintum und Hallum, Wurt Noordermieden) und in Groningen (Antum) gefunden.[285]
– Einige Rand- und Wandfragmente (Abb. 44: 11–13) zeigen Ähnlichkeit mit Wijster-ID. Datierung: 4.Jahrhundert.
– Zwei Standfüße (Abb. 44: 13–14) sind ebenfalls jünger als Typ K4 und dürften zu Trichterschalen gehören. Datierung: 4. Jahrhundert?
– Ausgezogene Ränder (Abb. 44: 18; 51: 2–3) sind in den nördlichen Provinzen ziemlich allgemein. Datierung: 2. und 3.Jahrhundert.
– Das Einhenkelgefäß aus Schettens (Abb. 44: 22) gehört weder ins Keramikrepertoire der Kaiserzeit noch in das der Völkerwanderungszeit. Ein vergleichbares Stück stammt aus De Pankoeken.[286] Datierung: 4.Jahrhundert?
– Der Becher mit rundem Boden (Abb. 44: 16) ist vermutlich mit Typ K4 gleichzeitig.

3.8 Diverse

3.8.1 Deckel und Platten (Abb. 45)
Zahlreich sind Deckel und Platten nicht, aber doch ziemlich allgemein verbreitet.[287] Es zeigen sich kaum gemeinsame Merkmale. Nur die Tupfen- und Streifenverzierung bildet einen Anhaltspunkt für eine Datierung, und zwar in die frühe odere mittlere Kaiserzeit. Das erwähnte Fragment mit einem zentralen Loch hat Gegenstücke in NW-Groningen und Schagen.[288]

3.8.2 Siebe und »Käseformen« (Abb. 46)
Es sind sechs Siebe gefunden worden. Möglicherweise

278 Kooi 1979, fig. 35: 588, 38: 709, 49: 51.
279 Van Es 1964; 1968.
280 Van Es, Miedema & Wynia 1985, fig. 34 und 35; Datierung: 150–300 n.Chr.
281 Elzinga 1974.
282 Van Es 1967, fig. 122: 5.
283 Van Es 1968, fig. 70: 186 (als Standring interpretiert!).
284 Miedema 1989, fig. 38 (vgl. Anm. 283).
285 Van Es 1968, fig. 45: 2 und 3.
286 Ausstellung Rathaus Witmarsum.
287 Van Es 1968, fig. 66 und 67; Van Es & Miedema 1970–71, fig. 26: oben; Miedema 1989, fig. 29.
288 Van Es 1968, fig. 67: 329; Miedema 1983, fig. 56: 10; Diederik 1981, fig. 16: 21.

haben einige Randfragmente von Schalen ebenfalls zu Sieben gehört. Durchbohrte Böden (24 mal) sind vielleicht hinzuzählen. Meistens sind große Töpfe (Abb. 51: 7) benutzt worden, manchmal aber K4-Becher (Abb. 37: 24, 26).
Die »Käseform« ist im Stichprobenmaterial des Fries Museum nur mit zwei Exemplaren vertreten, und zwar aus Felsum und Welsrijp.[289] In Friesland sind verschiedene Exemplare aus Wurten geborgen worden. In Groningen sind sie zum Beispiel in NW-Groningen und Wierhuizen gefunden worden.[290] Eine kaiserzeitliche oder späteisenzeitliche Datierung scheint mir richtig. In der kaiserzeitlichen Siedlung Schagen-Lagedijk wurde ein Exemplar mit einer länglichen Bodenplatte – cf. Felsum – angetroffen.[291] Rußspuren auf der Unterseite sind nicht selten. Sie zeigen, daß die herkömmliche Bezeichnung revisionsbedürftig ist.

3.8.3 Rasseln (Abb. 47)
Alle acht Rasseln stammen aus dem südlichen Teil des Stichprobengebietes. Ähnliche Exemplare wurden unter anderem in Tritsum, Leeuwarden-Oldehove[292] und in NW-Groningen gefunden.[293] Eine große Rassel aus Sieswerd zeigt ein geometrisches Muster à la G3a. Datierung: Eisenzeit-Kaiserzeit.

3.8.4 Tongewichte
Die Form 1 gehört der Eisenzeit an.[294] Funde sind u.a. aus Tritsum und Hatzum-Boomborg bekannt.[295] Die anderen Varianten stammen vermutlich aus der Kaiserzeit.[296] Die Kegel- und Ringformen sind auch aus frühmittelalterlichen Siedlungen bekannt.
Für mittelalterliche Gewichte gilt, daß sie härter gebrannt sind, oft durch und durch rot, und eine andere Form haben: flach, oval bis dreieckig, mit nur einer Durchbohrung. Gewichte mit dieser Form gibt es ebenfalls aus Tuff; einige sind in Seen aufgedreggt worden und dürften als Netzgewicht fungiert haben.

3.8.5 Löffel (Abb. 48)
Alle neun Löffel stammen aus dem Gebiet südlich von Franeker. In der ganzen Provinz sind etwa 40 Stück gesammelt worden, alle im Marschengebiet. In Groningen gibt es Funde in Paddepoel[297] und NW-Groningen.[298] Miedema hat Löffelformen unter den Nenner »Lampe« eingestuft, was für die meisten ihrer Funde sicherlich zutrifft. In Hodorf (Elbegebiet) wurde ein Löffel mit Benutzungsspuren am Griff angetroffen. Haarnagel vermutete die Befestigung eines Holzstiels.[299] Datierung: Eisenzeit–Kaiserzeit.[300]

3.8.6 Dickwandige Keramik (Abb. 49)
In Tritsum und Paddepoel war diese Keramik – immer in Bruchstücken – ziemlich häufig.[301] Die Stichprobe hat jedoch nur wenige Fragmente ergeben. Die Wandstärke variiert, die vermutlichen Ausmaße sind immer beträchtlich. Die Keramik, manchmal durchlöchert, dürfte zu verschiedenen Zwecken benutzt worden sein. Im Falle von Paddepoel schlug Van Es Salzbereitung vor, jedoch ohne Begründung. Van den Broeke bevorzugt die Idee, daß es sich um Feuerroste handelt.[302] In Assendelft wurde ein derartiges Fragment tatsächlich neben einer Feuerstelle gefunden.[303] Hinweise auf Erhitzung gibt es allerdings nicht. Die Verbreitung ist im Küstengebiet sehr viel allgemeiner als im Hinterland. Vielleicht gab es eine Beziehung mit Viehzucht (Milch, Käse,..?).

4 CHRONOLOGIE UND VERBREITUNG DER FUNDORTE

4.1 Einleitung
Der übergroße Teil der Funde stammt aus von jeher bekannten Wurten. Nur 15–20 Fundorte, aus späterer Zeit, dürfen zu der Kategorie »überschwemmte Siedlungen« gerechnet werden. Die Angaben des Friesischen Museums geben oft keine Auskunft darüber, ob

289 In Tritsum wurde ein reduzierend gebranntes Exemplar gefunden (wie bei G7- und K4-Ware).
290 Van Es 1968, fig. 65; Miedema 1983, fig. 57: 2 und 3; Miedema 1989, fig. 33.
291 Diederik 1981, fig. 16: 49.
292 Van Es & Miedema, 1970–71, fig. 126.
293 Miedema 1983, fig. 86.
294 Wilhelmi 1977.
295 Löbert 1982, Taf. 56: 63D.
296 Rijswijk (Bloemers 1978, Abb. 180) und Paddepoel (Van Es 1968, fig. 73).
297 Van Es 1968, fig. 68.
298 Miedema 1983, fig. 71: 6.
299 Haarnagel 1937, 71, Abb. 32.
300 Vermutlich ist die Lebensdauer derartiger Formen sehr viel länger gewesen (Neolithikum, Bronzezeit).
301 Van Es 1968, fig. 69–71.
302 Van den Broeke 1986, Anm. 30.
303 Stolp 1983, 109–11.

es Siedlungen auf gewachsenem Boden oder niedrigen Podien betraf. Aufgrund des Materials sind sie frühestens späteisenzeitlichen Ursprungs.
Natürlich wäre es mir angenehm, die Verbreitungskarten der Fundorte als Siedlungskarten betrachten zu dürfen. Zum Teil ist es erlaubt, denn alle auf der Karte markierten Stellen bezeichnen vermutlich Wohnplätze. Ein solches Bild basiert jedoch auf mehr oder weniger zufälligen Keramikfunden und muß als sehr beschränkt bezeichnet werden.
In großen Zügen kann, nicht ohne Zynismus, behauptet werden: je höher die Fundzahl einer Wurt, desto höher die Zahl der Typen und desto länger die belegte Siedlungsdauer. Das bedeutet, daß Siedlungen, die nur durch wenige Funde repräsentiert sind, scheinbar nur kurz oder nicht kontinuierlich bewohnt gewesen sind. Außerdem darf man nicht vergessen, daß von ungefähr 200 vermutlich eisen- oder kaiserzeitlichen Siedlungen überhaupt keine Keramikfunde vorhanden sind! Die Verbreitungskarten liefern also ein Minimalbild menschlicher Tätigkeit innerhalb einer Zeiteinheit. Die siedlungsgeschichtlichen Schlußfolgerungen werden übrigens erst im abschließenden Aufsatz, zusammen mit den Ergebnissen der anderen Teilstudien, besprochen.
Anhand der zeitlichen Einstufung der Keramikgruppen läßt sich die eisenzeitliche und kaiserzeitliche Besiedlung von Westergo in vier ungefähr gleich lange Perioden aufteilen:
Periode I, repräsentiert durch G1- und V1-Keramik, also vom 6. bis ins 4.Jahrhundert v.Chr.;
Periode II, repräsentiert durch die Typen G2, G3 und V2, von etwa 400/350 bis 200/150 v.Chr.;
Periode III, dargestellt durch die Typen G4, V3 und K3a, von 200/150 v.Chr. bis ins 1.Jahrhundert n.Chr.; und schließlich,
Periode IV, dargestellt durch die Typen G5, G6, G7, V4, K3b und K4, von der Mitte des 1.Jahrhunderts bis zur Mitte des 3.Jahrhunderts n.Chr.

Gut datierbare Sonderformen und Wandscherben mit Verzierung wurden mit einbezogen.

4.2 Periode I, 600–400/350 v.Chr. (Abb. 59)
Anhand der Fundstellen der Typen G1 und V1 lassen sich 17 frühe Siedlungen erkennen, alle im südlichen Teil des Stichprobengebietes gelegen, und zwar in drei Gegenden konzentriert: in der Gegend von Arum, bei Wommels und zwischen Hichtum und Hartwerd. Auf-

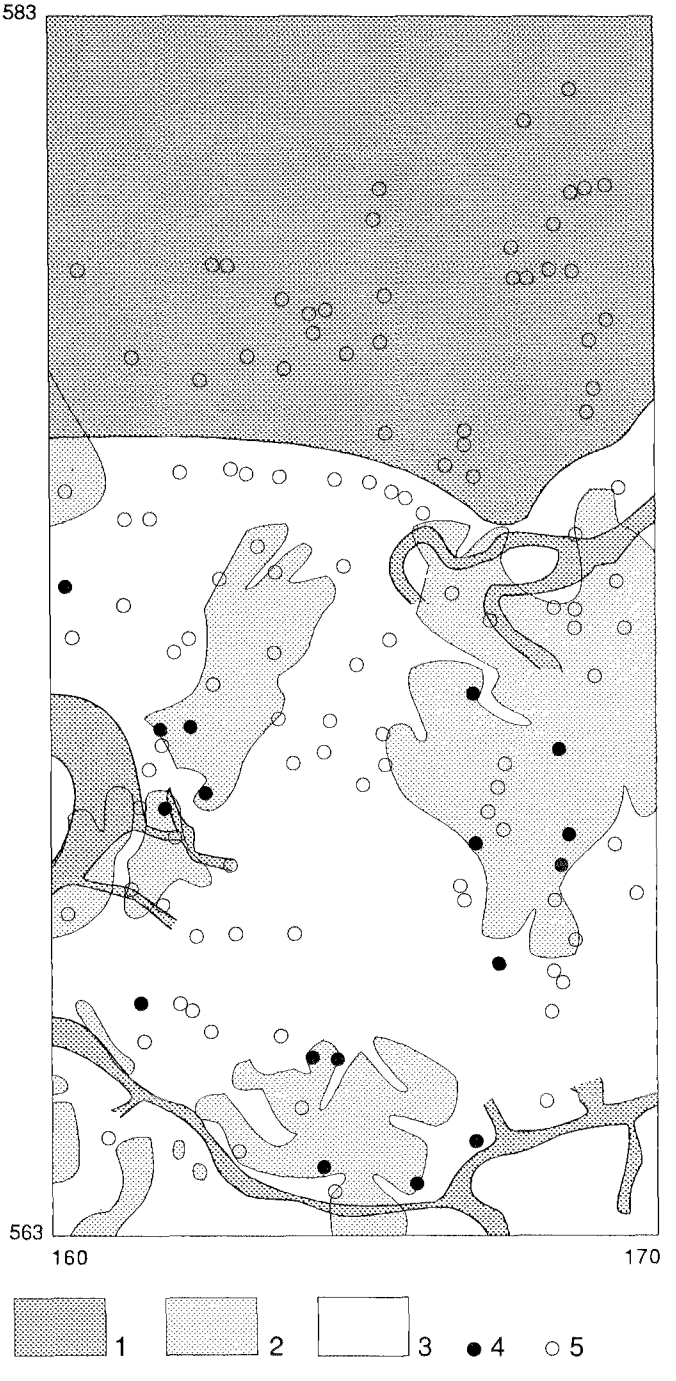

Abbildung 59 Westergo, Stichprobengebiet: Verbreitung der Funde aus Periode I. Legende: 1, 2, 3 wie Abbildung 4; 4 Fundstelle Periode I; 5 Fundstelle anderer Perioden.

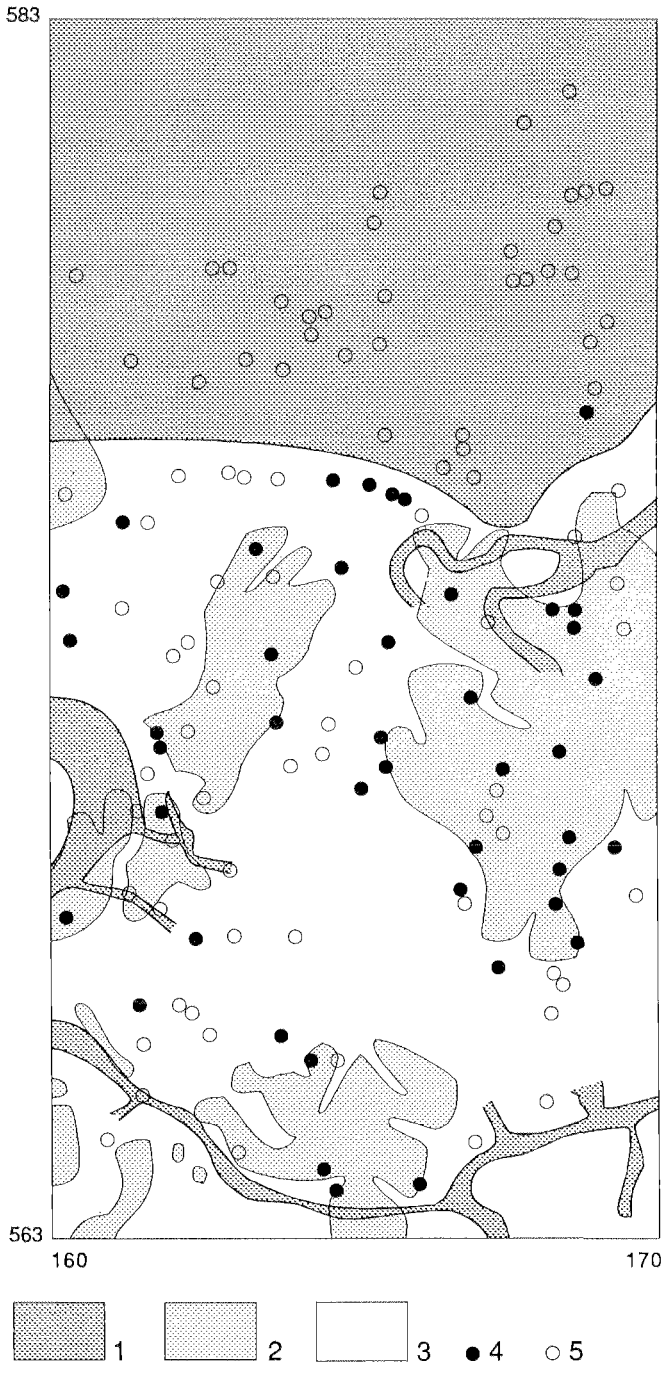

Abbildung 60 Westergo, Stichprobengebiet: Verbreitung der Funde aus Periode II. Legende: 1, 2, 3 wie Abbildung 4; 4 Fundstelle Periode II; 5 Fundstelle anderer Perioden.

grund einer (späten) VI-Scherbe ist die Wurt Ludum mit einbezogen worden, eine Datierung in Periode II halte ich jedoch für wahrscheinlicher.

Die meisten Siedlungen, später alle zu Wurten ausgewachsen, liegen auf Uferwällen an den Rändern ehemaliger Torfinseln (siehe Par. 1.2). Zweifellos gab es Wohnplätze, die im Stadium der Flachsiedlung steckengeblieben sind. Ihre tiefe Lage (abgedeckt von D Ib-, D II- und vielleicht D III-Sedimenten) und ihr geringer Umfang verringern die Chance, entdeckt zu werden. Andererseits gibt es sicherlich Wurten, deren früheste Siedlungsphase verfehlt worden ist. Ähnliches trifft natürlich für Siedlungen der nächsten Perioden zu.

Die Formunterschiede zwischen den verschiedenen Fundkomplexen sind nicht groß. Nur die Wurt Tritsum bildet mehr oder weniger eine Ausnahme (unverzierte, kaum gegliederte GI-Keramik; flache, polierte Schalen). Die geringen Mengen und Ausmaße der Scherben erlauben übrigens keinen genauen Vergleich.

Einige Fragmente aus Hichtum schließen eine spätbronzezeitliche Besiedlung zwar nicht aus, sind aber vermutlich Formrelikte, wie sie auch in anderen eisenzeitlichen Siedlungen zum Vorschein gekommen sind.[304] Sie bestätigen jedoch die auf der gewöhnlichen Keramik basierende Annahme, daß Hichtum eine frühe Siedlung darstellt.

4.3 Periode II, 400/350–200/150 v.Chr. (Abb. 60)

Die Karte zeigt eine beträchtliche Ausdehnung der Zahl der Siedlungen (n=43), und zwar innerhalb des schon bewohnten Teils und weiter nach Norden, auf dem Marschrücken zwischen Tzum und Hitzum. Obwohl die D Ib-Transgressionsphase vermutlich um 400 v.Chr. ihren Höhepunkt erreichte,[305] gibt es in Westergo keine Anzeichen für Siedlungsabbruch oder Hemmung der Neubesiedlung. Funde des Typs G2 zeigen, daß Menaldumadeel, nordöstlich des Stichprobengebietes, gerade in dieser Phase besiedelt wurde. Vermutlich sind Tolsum (66) und Bolsward (127)[306] ebenfalls um 400 v.Chr. gegründet worden. Außerdem hat die Wurt »Klaverbloem« (45), vermutlich auf dem Marsch-

304 Doppelkonische Formen in Hatzum-Boomborg (Löbert 1982, Var. 3a und 6c) und in Middelstum (Boersma 1988a, 32).

305 Siehe Par. 1.3.

306 Die Fundstelle liegt ungefähr 150 m östlich von der St. Maartenskirche, wo Halbertsma gegraben hat (Halbertsma 1956). Vermutlich handelt es sich um ein und dieselbe Siedlung.

rücken NW von Tzum gelegen,[307] eine unverkennbare G2-Randscherbe hergegeben.
Jedenfalls ist klar, daß man weniger an die Uferwälle der »Torfinseln« gebunden war, und daß jetzt auch andere Teile der Marsch für menschliche Besiedlung in Betracht kamen. Im allgemeinen wird es sich um ziemlich kleine Flachsiedlungen oder Kernwurten gehandelt haben, denn bei Grabungen zeigen Funde der mittleren Eisenzeit sich verhältnismäßig spärlich und werden sie nur in den untersten, dünnen Wurtschichten angetroffen.
Die Zentren der ehemaligen »Torfinseln« gerieten jetzt auch dauerhaft in Menschenhand. Sedimentation während der D Ib-Phase und die Bildung von Abflußrinnen verwandelten vermutlich diese bis dahin schlecht dränierte Senken in besiedelbares Areal.
Die Keramik dieser Periode macht einen sehr einheitlichen Eindruck.[308] Form, Ware, Verzierung, alles scheint mehr oder weniger standardisiert gewesen zu sein. Anhand der Keramikformen läßt sich kein Unterschied zwischen »alten« und neuen Siedlungen feststellen. Vermutlich war Kolonisierung eine regionale Angelegenheit.

4.4 Periode III, 200/150 v.Chr.–50 n.Chr. (Abb. 61)
Während der späten Eisenzeit fand eine Verdichtung der Besiedlung statt; die größte Zahl der Neusiedlungen findet man innerhalb des schon vorher besiedelten Gebietes. Daneben deuten Keramikfunde der Typen G4 und V3 aus der Gegend von Franeker und vom Marschrücken Schingen–Schalsum auf eine weitere Ausdehnung des besiedelten Areals hin.
Im Südostteil des Stichprobengebietes, bis dahin fundleer, können jetzt einige Fundstellen verzeichnet werden. Spätere Erosion (D IIIa-Transgressionsphase) dürfte das Siedlungsbild dieser Gegend einigermaßen verwischt haben. Eine alternative Erklärung ist, daß dieses Gebiet durch die Jahrhunderte hindurch unter Überschwemmungen zu leiden hatte und deshalb für Siedler nie anziehend war.

4.5 Periode IV, 1.–3.Jahrhundert n.Chr. (Abb. 62)
Im Laufe der mittleren Kaiserzeit wird der Ruf nach neuem Land keineswegs verstummt sein, denn im Ver-

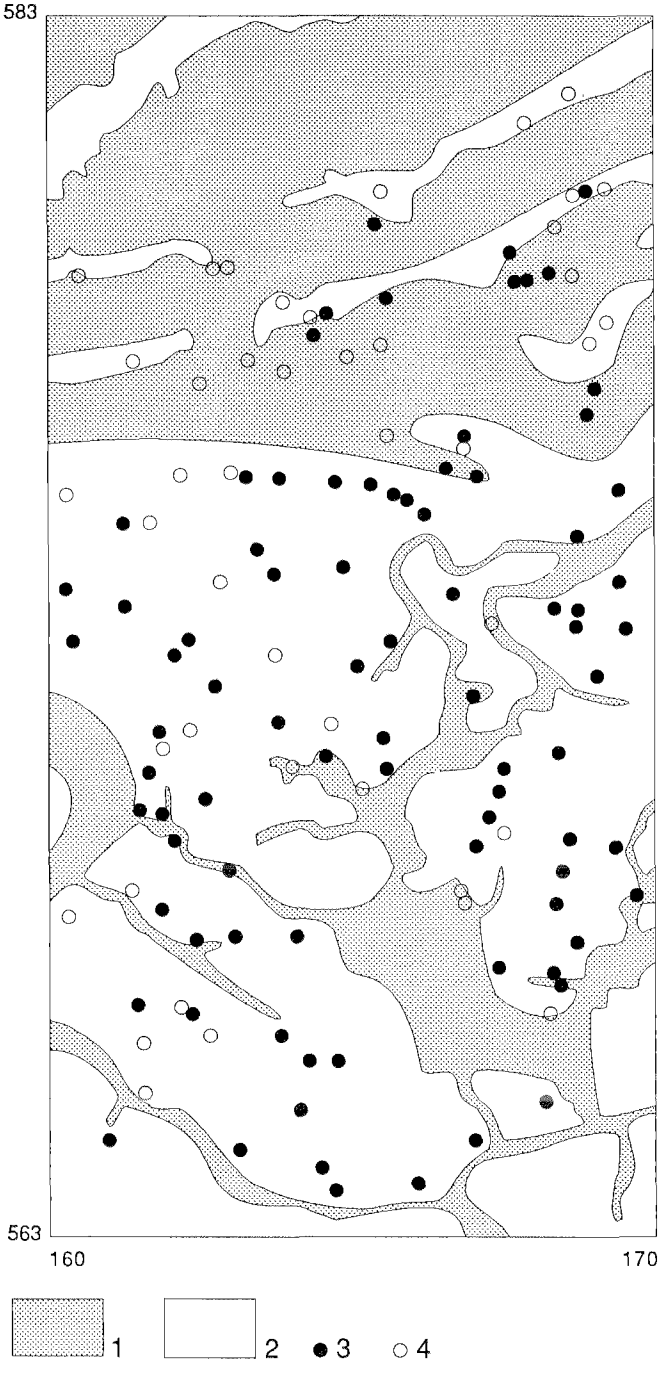

Abbildung 61 Westergo, Stichprobengebiet: Verbreitung der Funde aus Periode III. Legende: 1, 2 wie Abbildung 5; 3 Fundstelle Periode III; 4 Fundstelle anderer Perioden.

307 Ortsbestimmung dieser Wurt nach Angaben von T. Volkers.
308 Eine Ausnahme bilden vielleicht einige G3b-Scherben mit Gesteingrusmagerung.

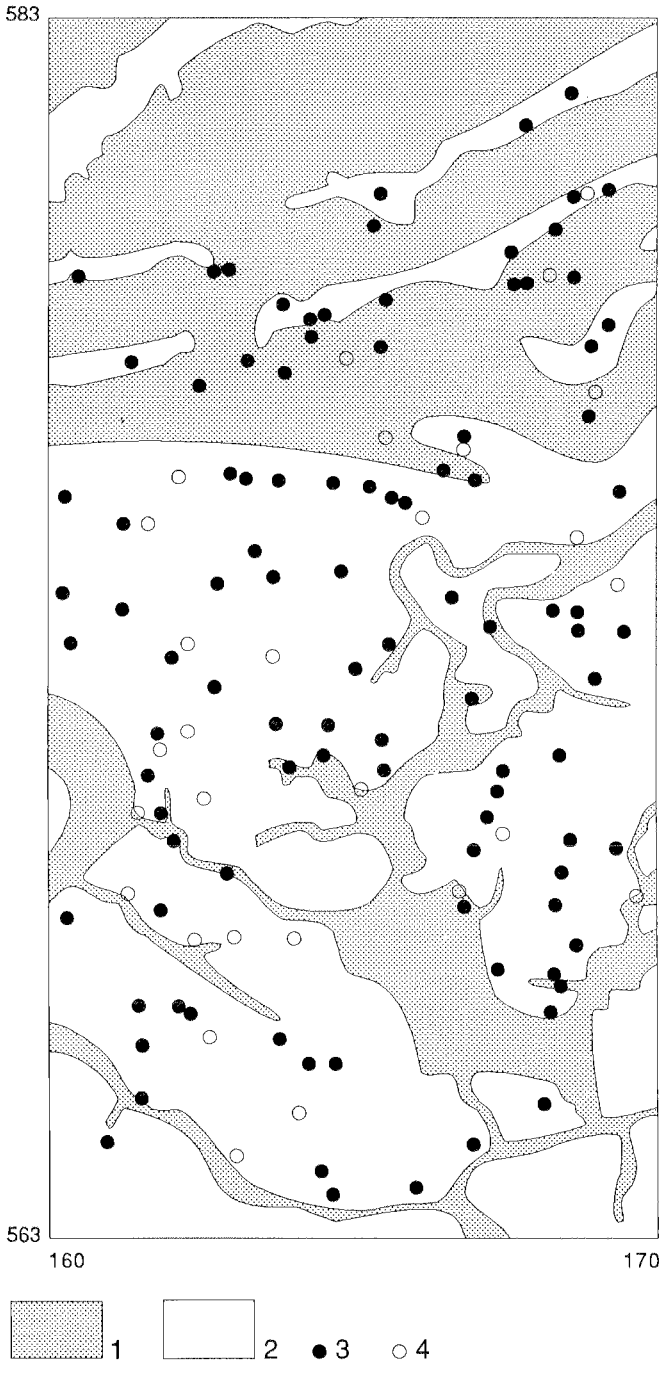

Abbildung 62 Westergo, Stichprobengebiet: Verbreitung der Funde aus Periode IV. Legende: 1, 2 wie Abbildung 5; 3 Fundstelle Periode IV; 4 Fundstelle anderer Perioden.

gleich zur vorigen Periode ist die Zahl der Fundstellen weiter angestiegen, auf 100 Stück.[309] Es ist, unter Berücksichtigung der durchschnittlich geringen Fundzahlen, wohl keine kühne Behauptung, daß auch die Fundstellen, von denen keine kaiserzeitlichen Funde vorliegen – 29 Stück –, damals bewohnt waren (Abb. 63). Man könnte sogar behaupten, daß fast alle 300 Wurten im Stichprobengebiet (Abb. 2) in dieser Periode bewohnt waren, denn rein frühmittelalterliche Wurten sind bisher nur im äußersten Norden festgestellt worden (Marschwall Sexbierum–Minnertsga), und es gibt keine Hinweise auf einen Siedlungsabbruch im Laufe der Eisen- oder frühen und mittleren Kaiserzeit. Der Marschrücken Wijnaldum–Ried zog jetzt auch Neusiedler an, was allerdings anhand der einheimischen Keramik nur schwer nachgewiesen werden kann.[310] Östlich von Franeker sind bei Schingen und Zweins, westlich bei Westerend und Herbaijum neue Wohnplätze zu verzeichnen. Die Mitte des Stichprobengebietes zeigt eine weitere Intensivierung der Besiedlung, und auch im Südosten sind einige Siedlungen hinzugekommen. Glückliche Tage müssen es gewesen sein: jedes Neugeborene schien des Landbesitzes sicher zu sein und konnte – vielleicht auch durch Geschäftsverkehr (Vieh, Häute) mit den Römern – einem Leben in relativem Wohlstand entgegensehen.

Floß angeblich nur Milch und Honig im Land der Friesen, vom 3.Jahrhundert an gab es Überflutungen anderer Art. Man war in dieser Hinsicht schon einiges gewohnt, aber die Lage war schlimmer als zuvor. Die Wohnplätze wurden bedrängt – den Einwohnern selber drohte vermutlich kaum Gefahr – und mußten erhöht werden. Als das Wasser endlich zurücktrat, waren jedenfalls die Wiesen mit einer unbegehbaren Schlammschicht bedeckt (vergleiche Par. 1.3 und Abb. 6). Innerhalb von Jahrzehnten oder vielleicht von Jahren mußten in Westergo hunderte von Quadratkilometern aufgegeben werden. Am Ende des 3.Jahrhunderts war das Stichprobengebiet zum größten Teil in eine mit Geistersiedlungen übersäte Einöde verwandelt. Auf höheren Marschrücken und Uferwällen konnte man sich vermutlich behaupten. Erst ein knappes Jahrhundert später, während der Völkerwanderungszeit, wurden einige der früheren Wohnplätze gelegentlich als Aufenthaltsort benutzt.

309 Außerdem gibt es sechs nicht lokalisierte Fundorte.
310 Die Funde der laufenden Grabung in Wijnaldum (12) bestätigen einen Siedlungsanfang im 2.Jahrhundert.

Ein Rückgang der Siedlungszahl im Laufe des 3.Jahrhunderts ist ein allgemeines Phänomen. Das römische Reich verlor, zentral und in der Peripherie, allmählich seine Spannkraft. Die Völker im freien Germanien traten immer deutlicher in Erscheinung. Seeräuber profitierten mit von dieser Dämmerstunde zwischen *pax romana* und Anarchie und suchten mehrmals die niederländischen Küsten heim.[311] Ich habe jedoch den Eindruck, als seien diese Änderungen in der politischen und wirtschaftlichen Lage Westergos von nebensächlicher Bedeutung im Vergleich zum – ungleichen – Kampf gegen das Meer. Die wenigen Funde in Friesland, die ins 4.Jahrhundert datiert werden können (hauptsächlich römische Ware), stammen fast alle von Uferwällen und Marschrücken.

Obwohl der geologische Aufbau von Noord-Holland von dem Westergos ziemlich abwich,[312] wurden auch dort die Lebensbedingungen in hohem Maße von den Launen des Meeres bestimmt. Der Anstieg des Grundwasserspiegels, mehr als tatsächliche Überschwemmungen, war vermutlich oft erster Anlaß zum Aufgeben von Wohnorten. Grabungen bei Schagen, Uitgeest und Assendelft bestätigen ein Siedlungsende spätestens im 3.Viertel des 3.Jahrhunderts.[313]

Die Zahl einheimischer Keramikfunde, die zwischen etwa 250 und 350/400 n.Chr. datiert werden können, ist sehr gering – es sei denn, daß reguläre Typen wie V4 und G6/7 eine erheblich spätere Enddatierung kannten, als ich für wahrscheinlich halte. Weil im friesischen Gebiet im Laufe der Kaiserzeit ein immer stärker wachsender Einfluß östlicher Keramikformen spürbar wurde, kann die in Drenthe (Wijster, Peelo) produzierte Keramik vielleicht als Maßstab für die Entwicklungen im 3. und 4.Jahrhundert dienen. Die Ernte derartiger Keramik im Stichprobengebiet ist recht bescheiden, etwa 20 Stück aus 10 Siedlungen (siehe Par. 3.7). Die übergroße Mehrheit zeigt Gesteinsgrusmagerung, das heißt ist vermutlich importiert worden.

Ist die geringe Verbreitung von Wijster-ähnlichen Töpfen in Westergo eine »kulturelle« Angelegenheit, oder ist es eine Frage der Chronologie? Zur Verdeutlichung des letzteren: gab es nur noch eine sehr beschränkte Absatzmöglichkeit, als diese Keramik so weit nach Westen gelangte? Nach Absolvierung der anderen

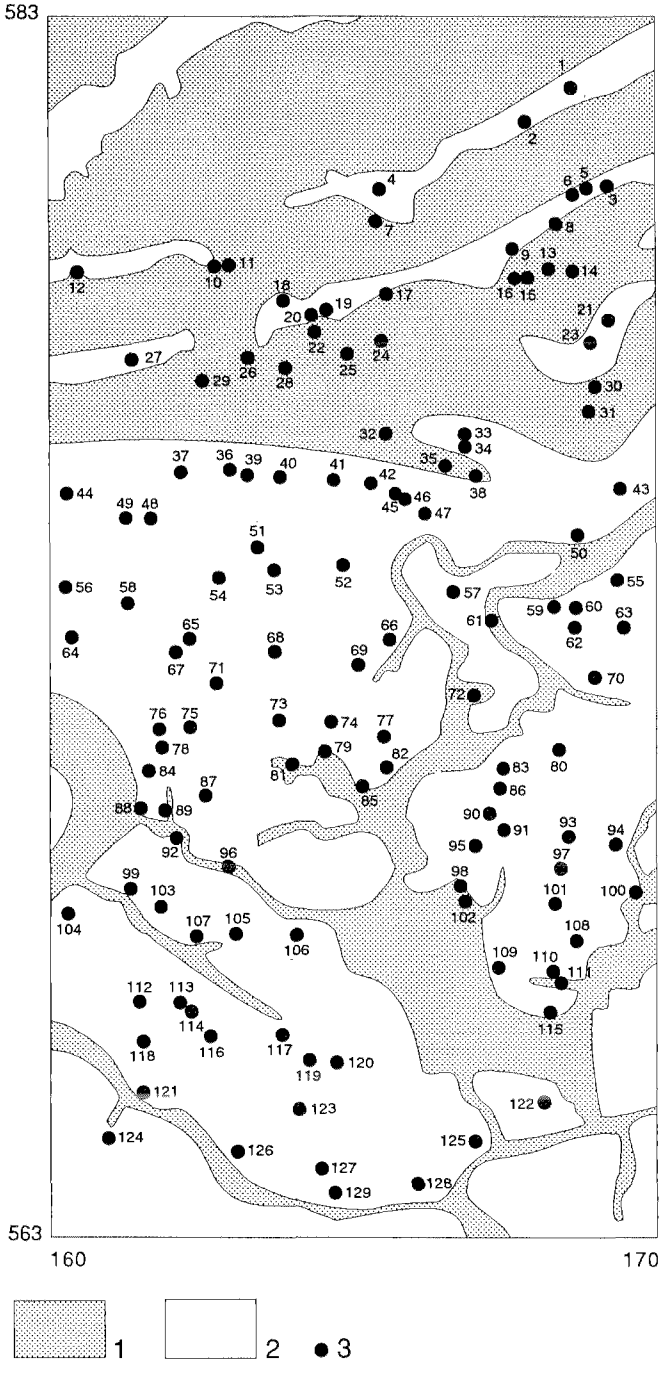

Abbildung 63 Westergo, Stichprobengebiet: Verbreitung aller Fundstellen. Legende: 1, 2 wie Abbildung 5; 3 Fundstelle von Keramik.

311 Van Es 1967, 540–58; Van Es *et al.* 1988, 91 ff.
312 Vgl. De Mulder & Bosch 1982.
313 Datierung aufgrund römischer Importe und unveröffentlichter ^{14}C-Daten.

Teilstudien, und hoffentlich etwas klüger geworden, möchte ich gerne auf diese Fragen zurückkommen.

5 ZUSAMMENFASSUNG

Im Rahmen einer vergleichenden Untersuchung der typologischen Entwicklungen einheimischer Keramik der Eisen- und Kaiserzeit in den drei nördlichen Provinzen wurde in diesem ersten Aufsatz das Marschengebiet Westergo, Provinz Friesland, unter die Lupe genommen.

Aus einem 200 km² großen Stichprobengebiet, von Bolsward bis einschließlich des Marschwalls Wijnaldum–Ried, sind 7052 Keramikfragmente und vollständige Gegenstände beschrieben worden. In der ersten Phase sind zur Abfassung einer Typochronologie die individuellen Merkmalen von 3188 Stücken notiert worden. In der zweiten Phase sind anhand dieser Aufgliederung weitere 3864 Gefäße und Fragmente beschrieben worden.

Die Zahl der lokalisierten Fundstellen – Wurten und überschwemmte Siedlungen – beträgt 129. Innerhalb des Stichprobengebietes hat es bis ins 19.Jahrhundert über 300 Wurten gegeben, vermutlich fast alle mit einem eisen- oder kaiserzeitlichen Kern.

Die Aufmerksamkeit galt an erster Stelle der Keramik von Kochtopfgröße. Es wurde eine Typologie aufgestellt, die sich in erheblichem Maße auf eine Zweiteilung stützt, und zwar in glattrandige, gut behandelte (Henkel)gefäße, oft mit Linienornament (G-Keramik; n=2595) und weitmündige, oft rauhere Gefäße mit Randverzierung (V-Keramik; n=1124). Die erste Gattung ist durchschnittlich kleiner und zeigt seit der späten Eisenzeit eine Teilung in weit- und engmündige Gefäße. Die letzte Gruppe wurde weniger zu Kochzwecken benutzt.

Kennzeichnend für das 6. und 5.Jahrhundert v.Chr. sind dunkle, zum Teil geometrisch verzierte Gefäße mit hohem Hals (Typ G1), und schwach doppelkonische Gefäße mit Tupfenverzierung auf dem Rand (V1). Um 400 v.Chr. wurde der Hals niedriger und wurde Gesteinsgrusmagerung durch Muschelgrus ersetzt (G2, G3, V2). Im Laufe des 3.Jahrhunderts verschwand das Linienmuster und wurde überwiegend Keramikgrus als Magerung benutzt. Im 2.Jahrhundert v.Chr. erschien *streepband*-Keramik (G4, K3a). Zweifache Facettierung des Randes, ein helles Farbenspektrum und Eindrücke seitlich des Randes (V3) setzten sich durch.

Ende des 1. oder Anfang des 2.Jahrhundert n.Chr. verschwand der Hals und auch das *streepband*-Ornament (G5, G6). V-Keramik wurde mit Wellenrand ausgestattet (V4). Oft gehörte eine abgestrichene Mündung dazu. Die Gefäßform änderte sich von niedrig und gewölbt in hoch und schlank. Reduzierend gebrannte, sehr gut gepflegte Ware (G7, K4) bildete eine auffallende Komponente des Geschirrs.

Die älteste Keramik wurde nur im südlichen Teil des Stichprobengebietes, vor allem auf Uferwällen am Rande ehemaliger »Moorinseln«, angetroffen. Es konnten 17 frühe Siedlungen nachgewiesen werden. Die nächsten Jahrhunderte zeigten eine ständige Ausweitung der Besiedlung in nördlicher Richtung und eine Intensivierung im südlichen Teil. Um 100 n.Chr. wurde der Marschrücken zwischen Wijnaldum und Ried erreicht. Die Siedlungszahl betrug damals wenigstens 100 Stück. Das Fehlen spätkaiserzeitlicher Keramik deutet auf massenhafte Beendigung der Besiedlung im Laufe des 3.Jahrhunderts, vermutlich infolge stärkerer Meeresaktivität, hin.

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TABELLEN 1–15

Tabelle 1 Beschreibung und Codierung der Keramik.

1 Einheit
- 1 (nahezu) vollständig
- 2 völlständiges Profil
- 3 Rand bis Wand
- 4 Rand
- 5 Wand
- 6 Wand bis Boden
- 7 Boden
- 8 Henkel
- 9 sonstige (siehe 34)

2 Globale Form
- 1 dreigliedrig
- 2 zweigliedrig mit Randlippe (kein Hals)
- 3 zweigliedrig
- 4 Rand–Hals–Wand (keine Schulter)
- 5 Rand–Wand
- 6 Wand
- 7 Rand–Wand (Schale und dergleichen)
- 8 Wand (Schale und dergleichen)
- 9 sonstige

3 Wandform (bei 2.1–3)
- 1 scharfer Knick: sehr hoch
- 2 scharfer Knick: hoch
- 3 scharfer Knick: mäßig hoch bis niedrig
- 4 schwacher Knick: sehr hoch
- 5 schwacher Knick: hoch
- 6 schwacher Knick: mäßig hoch bis niedrig
- 7 rund: sehr hoch
- 8 rund: hoch
- 9 rund: mäßig hoch bis niedrig

4 Globale Form Rand und Halspartie
- 1 konisch
- 2 konischer Hals und abstehender Rand
- 3 senkrecht
- 4 senkrechter Hals und abstehender Rand
- 5 konkav
- 6 konkaver Hals und abstehender Rand
- 7 hervorstehend
- 8 hervorstehender Hals und abstehender Rand
- 9 sonstige

5 Randform
- 1–19 unverdickt
- 20–29 verdickt, gerundet
- 30–39 verdickt, abgeplattet
- 40–49 dreieckig verdickt
- 50–59 rechteckig verdickt (gerundet)
- 60–69 verdickt, mit zwei Facetten
- 70–79 verdickt, mit 3–4 Facetten
- 80–99 sonstige Formen

6 Innenseite Mündung
- 1 gerundet
- 2 schwach abgestrichen
- 3 scharf abgestrichen
- 4 Rille oder Leiste
- 9 sonstige

7 Boden
- 1 flach
- 2 leicht abgesetzt
- 3 Standfuß mit flacher Bodenplatte
- 4 Standfuß mit hohlem Boden
- 5 »Stengel« (ohne Boden)
- 9 sonstige

8 Randdurchmesser (in cm)

9 Bauchdurchmesser (in cm)

10 Bodendurchmesser (in cm)

11 Höhe (in cm)

12 Höhe Hals und Rand (=Halshöhe) (in mm)

13 Wanddicke (in 0,1 mm)

14 Ware
- 1 sehr weich (»Nagel-weich«)
- 2 weich
- 3 durchschnittlich
- 4 hart (Kugeltopf-Härte)
- 5 sehr hart (Steingut-Härte)

15 Magerung I
- 1 organisches Material
- 2 vermutlich organisches Material
- 3 Muschelgrus
- 4 Keramikgrus
- 5 Gesteingrus
- 6 Sand
- 7 »Körner« (vermutlich Keramikgrus)
- 8 keine Magerung wahrgenommen
- 9 sonstige

16 Magerung II (zusätzlich)
- 0 keine zusätzliche Magerung
- 1 bis 9: wie oben

17 Farbe Außenseite (überwiegend)
- 1 schwarz
- 2 dunkel (schwarzbraun und dergleichen)

3 grau, blaugrau
4 graubraun
5 graugelb
6 ocker (gelbbraun bis rosabraun)
7 orange, rötlich
9 sonstige Farbe

18 Farbe Innenseite wie 17

19 Schlickschicht
1 vorhanden
2 abgeblättert
3 vermutlich vorhanden
4 nicht konstatiert
9 unklar

20 Behandlung Außenseite und Oberteil
1 poliert
2 geglättet
3 matt, etwas rauh
4 rauh
5 Schlickbewurf
9 sonstige

21 Behandlung Außenseite und Unterteil wie 20

22 Behandlung Innenseite wie 20

23 Verzierung oben auf dem Rand
1 Nageleindrücke
2 Kerben (gleichlaufend)
3 Kerben (zickzack, kreuzend)
4 Fingertupfeneindrücke
5 sonstige Eindrücke
6 wellenartig

24 Verzierung auf der Außenseite des Randes
1 Nageleindrücke
2 Kerben
3 Fingertupfeneindrücke
4 grober Wellenrand
5 stilisierter Wellenrand

25 Verzierung auf dem Hals
1 Rille(n) unter dem Rand
2 Rille(n) auf dem Hals
3 1 und 2 kombiniert
4 senkrechte Rillen
5 senkrechte »Fingerstriche«
6 *cannelure(s)*
7 Wölbung(en)
9 sonstige

26 Henkelverzierung
1 Eindrücke auf und /beziehungsweise unter dem Henkel
2 senkrechte Rillen
3 1 und 2 kombiniert
4 *streepband* unter dem Henkel
5 1 und 4 kombiniert
6 2 und 4 kombiniert
9 sonstige

27 Merkmale Hals–Schulter-Übergang
1 einzelne Rillen, mit Absatz
2 *streepband*, mit Absatz
3 einzelne Rillen, ohne Absatz
4 *streepband*, ohne Absatz
5 *cannelure(s)*
6 Wölbung(en)
7 Rippe
8 Absatz
9 sonstwie

28 Verzierung Schulter und Bauch
1 einzelne Eindrücke
2 Dellen, gruppiert (3–4)
3 Blöckchen Eindrücke auf der Schulter
4 waagerechte Reihe Eindrücke
5 einzelne Punkteindrücke
6 Punkteindrücke auf der Schulter
10 einzelne Eindrücke
11 waagerechte Reihe
12 waagerechte Reihe auf der Rippe
20 einzelne Rillen
21 waagerechte Rillen
22 senkrechte Rillen
23 Besenstrich
24 Kammstrich
25 Kratzer
30 senkrechte (siehe p. 129) *gleren*
31 plastisches Muster
40 Zickzackbänder (geometrisches Muster)
41 kreuzende Bänder
42 Dreiecke
43 Rechtecke, Rauten
44 Rechtecke, Rauten und Dreiecke
45 Girlanden
46 Tannenbaummuster
49 ungenügende Information
50–99 zusammengesetzte Muster

Tabelle 1 (Fortsetzung)

29 Zahl der Henkel
- 1 1 von unbekannter Gesamtzahl
- 2 1 von 1 (Gesamtzahl)
- 3 1 von 2
- 4 2 von 2
- 5 2 von 3
- 6 2 von 4
- 7 3 von 3
- 8 3 von 4
- 9 4 von 4

30 Stelle des Henkels
- 1 Schulter bis Rand
- 2 Schulter bis Rand, versenkt
- 3 Schulter bis Hals
- 4 Schulter bis Hals, versenkt
- 5 Schulter
- 6 Bauch, Wand
- 7 Wand bis Rand
- 9 sonstige

31 Henkelprofil
- 1 rund, gerundet
- 2 stumpfeckig
- 3 spitzeckig
- 4 ausgezogen (Knöpfchen)
- 5 Knopf
- 6 Schnuröse
- 9 sonstige

32 Datierung
- 1 bis etwa 400 v.Chr.
- 2 400–200 v.Chr.
- 3 200–50 v.Chr.
- 4 50 v.Chr.–100 n.Chr.
- 5 200 v.Chr.–100 n.Chr.
- 6 100–250 n.Chr.
- 7 nach 250 n.Chr.
- 8 nicht datierbar

33 Gewißheit der Datierung
- 1 ziemlich sicher
- 2 schon weniger sicher
- 3 Fragezeichen

34 Bemerkungen, Spezifizierung 1.9
- 1 Näpfchen, Spielzeug
- 2 »Trog«
- 3 Standring
- 4 »Käseform«
- 5 Deckel
- 6 idem oder Backplatte
- 7 Rassel
- 8 »Salzbehälter«
- 9 Hüttenlehm
- 10 Spinnwirtel
- 11 Spinnscheibe
- 12 Spielscheibe
- 13 Gewicht
- 20 ausgezogener Rand
- 30 durchbohrter Rand
- 31 durchbohrter Hals
- 32 durchbohrter Wand
- 33 durchbohrter Boden
- 40 Ruß auf der Außenseite
- 41 Kochreste auf der Außenseite
- 42 Kochreste auf der Innenseite
- 43 42 und (40 oder 41) kombiniert
- 44 Flecken auf der Außenseite
- 45 Flecken auf der Innenseite
- 46 44 und 45 kombiniert
- 50 Rillen in der Halsmündung
- 51 Eindrücke idem

35 Inventarnummer

36 laufende Nummer (Forschung)

37 West-Ost Koordinate

38 Süd-Nord Koordinate

Typ	Randdurchmesser (cm)	Wanddurchmesser (cm)	Halshöhe (mm)	Wandstärke (0,1 mm)	rel. Randdurchmesser	rel. Halshöhe	Mindestzahl
G1	20,6±4,5	24,8±5,1	53,0±12,9	72,4±11,9	0,77±0,08	0,20±0,03	25
G2	19,1±2,6	25,4±4,3	45,4±10,7	67,5±13,9	0,75±0,06	0,17±0,04	9
G3a	20,0±3,6	25,5±4,3	28,6± 4,0	74,6±12,2	0,77±0,05	0,11±0,02	97
G3b	22,6±2,9	29,7±5,6	30,5± 3,6	74,6±15,1	0,77±0,07	0,10±0,01	15
Gw4a	26,5±5,2	31,3±6,1	33,3± 5,9	75,4±13,8	0,84±0,05	0,11±0,02	59
Gw4b	26,4±4,7	30,9±5,2	33,0± 5,8	77,5±14,6	0,85±0,05	0,11±0,02	51
Gw4c	27,1±5,2	32,4±5,4	34,9± 4,5	76,6±13,5	0,84±0,05	0,11±0,02	63
Gw4d	27,6±4,6	32,7±5,2	34,2± 4,8	76,5±14,8	0,85±0,05	0,11±0,02	81
Ge4	18,3±4,2	30,6±5,6	34,2± 7,4	71,1±12,9	0,58±0,08	0,11±0,02	30
Gw5a	23,5±4,1	28,5±4,5	32,4± 6,2	83,1±13,4	0,82±0,04	0,12±0,02	25
Gw5b	25,4±3,2	30,1±3,4	28,8± 4,4	80,0±12,9	0,85±0,04	0,10±0,01	36
Gw5c	26,7±4,9	31,8±5,6	30,7± 7,2	77,7±14,8	0,83±0,05	0,10±0,01	26
Gw5d	26,0±5,2	30,3±5,8	32,9± 6,6	76,9±15,0	0,85±0,05	0,11±0,03	61
Ge5a	18,1±4,7	30,8±7,9	35,0± 7,4	74,2±15,2	0,59±0,05	0,11±0,03	17
Ge5b	13,5±1,9	22,6±1,8	30,7± 7,5	75,6±11,4	0,59±0,08	0,13±0,03	14
Gw6a	25,9±6,8	28,6±6,7	20,8± 5,2	82,1±17,0	0,86±0,05	0,08±0,02	19
Gw6b	25,4±5,2	28,6±4,9	25,0± 7,0	85,4±15,3	0,84±0,04	0,08±0,02	17
Ge6	14,1±2,5	24,1±3,2	25,0± 6,6	76,3±14,3	0,58±0,07	0,10±0,02	25
Gw7a	25,0±6,3	26,4±7,0	26,7± 7,4	77,1±16,8	0,88±0,06	0,09±0,02	12
Gw7b	25,1±3,7	29,2±4,8	21,0± 6,5	67,5±14,6	0,87±0,05	0,08±0,02	12
Ge7	14,5±2,6	24,5±1,9	27,9± 7,9	74,5±16,1	0,59±0,09	0,11±0,04	7
V1	27,5±7,5	31,0±9,4	–	81,1±10,8	0,87±0,05	–	8
V2a	27,6±7,1	31,5±8,2	34,1± 7,9	85,0±14,7	0,85±0,05	0,11±0,04	26
V2b	31,1±6,0	35,6±7,5	33,6± 8,8	89,7±10,3	0,83±0,04	0,09±0,02	8
V3a	31,4±7,9	35,1±8,6	34,9± 7,6	89,9±13,7	0,87±0,04	0,10±0,03	66
V3b	32,1±6,1	36,7±7,3	33,6± 7,0	87,9±14,7	0,88±0,04	0,09±0,02	49
V4a	28,6±5,8	32,5±6,5	32,4± 6,7	91,4±14,8	0,85±0,06	0,10±0,03	37
V4b	28,7±5,7	30,6±7,1	30,6± 5,8	86,5±18,6	0,85±0,06	0,10±0,02	12
V4c	30,2±5,5	34,8±6,9	25,3± 5,8	89,8±17,9	0,88±0,05	0,08±0,02	39
V4d	29,9±4,3	37,6±3,6	25,6± 5,9	81,2±15,0	0,81±0,06	0,07±0,01	12
K1	9,1±2,0	11,4±2,2	29,0±10,7	64,8±12,0	0,82±0,07	0,25±0,06	5
K2	10,1±2,1	13,1±2,4	19,9± 6,6	68,7±13,2	0,76±0,05	0,15±0,04	12
K3a	12,6±2,2	15,8±2,4	24,5± 4,2	62,6±11,6	0,79±0,06	0,16±0,03	69
K3b	11,1±2,8	14,2±3,3	20,8± 6,7	66,1±15,5	0,78±0,08	0,15±0,04	71
K4	14,3±2,2	16,5±2,7	12,7± 4,1	55,4±11,6	0,87±0,06	0,08±0,03	31

Tabelle 2 Westergo: Maße der Keramik.

Tabelle 3 Westergo:
Wanddurchmesser der Keramik.

Typ	%						n
	<25 cm	25–28 cm	29–32 cm	33–36 cm	37–40 cm	>40 cm	
G1	48,9	40,0	4,4	4,4	–	2,2	45
G2	50,0	20,0	30,0	–	–	–	10
G3a	43,0	33,0	16,0	8,0	–	–	100
G3b	19,2	15,4	38,5	19,2	7,7	–	26
Gw4a	16,9	16,9	22,0	25,5	10,1	8,5	59
Gw4b	13,7	15,7	40,2	17,6	5,9	5,9	51
Gw4c	9,5	20,7	15,8	30,2	22,2	1,6	63
Gw4d	4,9	14,9	35,8	25,9	11,1	7,4	81
Ge4	6,7	33,3	30,0	20,0	6,7	3,3	30
Gw5a	18,5	29,6	37,1	11,1	3,7	–	27
Gw5b	5,4	27,0	40,6	21,6	5,4	–	37
Gw5c	3,8	38,5	15,4	19,2	19,2	3,8	26
Gw5d	17,7	21,0	35,5	14,5	8,1	3,2	62
Ge5a	23,5	17,7	23,5	11,8	5,9	17,7	17
Ge5b	85,7	14,3	–	–	–	–	14
Gw6a	28,6	19,0	23,8	4,8	19,0	–	21
Gw6b	23,5	41,2	–	29,4	5,9	–	17
Ge6	59,5	37,8	–	2,7	–	–	37
Gw7a	66,7	8,3	8,3	8,3	–	8,3	12
Gw7b	16,7	16,7	41,7	25,0	–	–	12
Ge7	63,6	36,4	–	–	–	–	11
V1	12,5	50,0	12,5	–	12,5	12,5	8
V2a	19,2	23,1	26,9	11,6	3,8	15,4	26
V2b	–	12,5	37,5	12,5	–	37,5	8
V3a	12,1	12,1	18,2	13,7	13,7	30,3	66
V3b	10,2	4,1	14,3	12,2	18,4	40,8	49
V4a	13,5	16,2	27,1	10,8	24,3	8,1	37
V4b	25,0	16,7	16,7	8,3	25,0	8,3	12
V4c	5,1	15,4	18,0	23,0	20,6	17,9	39
V4d	–	–	16,7	8,3	58,3	16,7	12

Typ	%					n
	(vermutl.) organisch	Muschel-grus	Keramik-grus	Gesteins-grus	nicht wahr-genommen	
G1	0,8	10,9	11,8	82,4	5,0	119
G2	–	58,4	12,5	25,0	12,5	24
G3a	1,6	46,8	34,9	1,6	24,2	190
G3b	3,1	40,6	46,9	9,4	12,5	32
Gw4a	16,9	–	57,7	1,4	26,8	71
Gw4b	8,5	–	42,4	–	50,8	59
Gw4c	12,7	–	46,9	1,3	41,8	79
Gw4d	22,0	–	50,6	–	31,9	90
Ge4	12,2	2,4	56,1	–	29,3	41
Gw5a	31,2	–	50,0	–	21,9	32
Gw5b	39,0	2,4	39,0	–	29,3	41
Gw5c	35,5	–	44,0	–	32,3	31
Gw5d	34,3	–	28,9	1,4	39,7	73
Ge5a	8,7	–	47,8	–	43,5	23
Ge5b	64,7	–	23,5	–	17,6	17
Gw6a	53,8	2,6	20,5	2,6	23,1	39
Gw6b	48,1	–	29,6	–	29,6	27
Ge6	44,2	–	16,3	–	44,2	43
Gw7a	45,0	10,0	–	–	45,0	20
Gw7b	16,7	–	4,2	–	79,2	24
Ge7	25,0	–	8,3	–	75,0	12
V1	–	–	22,9	82,9	8,6	35
V2a	14,3	26,2	40,6	11,9	14,3	42
V2b	10,0	15,0	60,0	–	25,0	20
V3a	38,5	–	37,5	1,9	25,0	104
V3b	33,3	1,2	38,3	3,7	28,4	81
V4a	49,0	3,2	23,4	–	26,6	94
V4b	52,4	2,4	14,3	–	31,0	42
V4c	49,5	9,7	22,3	–	25,2	103
V4d	43,2	5,4	8,1	–	43,2	37
K1	9,1	27,3	9,1	54,5	9,1	11
K2	7,1	28,6	28,5	14,3	28,6	14
K3a	27,0	–	54,1	1,4	20,3	74
K3b	42,5	1,1	34,4	1,1	27,6	87
K4	28,8	0,7	9,4	2,9	62,6	139

Tabelle 4 Westergo: Magerung der Keramik. Pro Gefäß(fragment) sind mehrere Magerungssorten möglich, deshalb ergibt die Addierung pro Typ eine Ergebnis > 100%.

Typ	%							n
	dunkel	grau	gr.braun	gr.gelb	ocker	orange	sonstige	
G1	31,1	8,4	42,0	9,2	9,2	–	–	119
G2	58,3	12,5	12,5	8,3	8,3	–	–	24
G3a	57,1	9,0	23,3	1,6	8,5	0,5	–	189
G3b	46,9	6,3	15,6	–	28,1	3,1	–	32
Gw4a	5,6	1,4	4,2	11,3	52,1	23,9	1,4	71
Gw4b	5,1	1,7	3,4	16,9	57,6	15,3	–	59
Gw4c	6,3	1,3	7,6	11,4	40,5	31,6	1,3	79
Gw4d	1,1	–	5,5	14,3	45,1	34,1	–	91
Ge4	2,4	–	2,4	4,9	63,4	26,8	–	41
Gw5a	–	–	3,1	18,8	59,4	18,8	–	32
Gw5b	–	–	17,1	12,2	56,1	14,6	–	41
Gw5c	–	–	3,2	3,2	67,7	25,8	–	31
Gw5d	5,5	–	12,3	9,6	52,1	20,5	–	73
Ge5a	–	–	–	17,4	60,9	21,7	–	23
Ge5b	–	5,9	–	29,4	23,5	41,2	–	17
Gw6a	*	*	*	20,5	56,4	23,1	–	39
Gw6b	*	*	*	18,5	48,1	33,3	–	27
Ge6	*	*	*	16,3	46,5	37,2	–	43
Gw7a	30,0	35,0	35,0	*	*	*	*	20
Gw7b	45,8	33,3	20,8	*	*	*	*	24
Ge7	25,0	58,3	16,7	*	*	*	*	12
V1	20,0	5,7	42,9	11,4	20,0	–	–	35
V2a	4,8	–	50,0	14,3	26,2	4,8	–	42
V2b	5,0	–	25,0	5,0	40,0	25,0	–	20
V3a	–	1,0	10,7	22,3	45,6	17,5	2,9	103
V3b	–	1,2	9,9	23,5	51,9	13,6	–	81
V4a	2,1	1,1	7,4	25,3	41,1	23,2	–	95
V4b	2,4	–	7,1	21,4	57,1	11,9	–	42
V4c	2,0	1,0	8,8	27,5	47,1	12,7	1,0	102
V4d	–	–	5,4	24,3	37,8	29,7	2,7	37
K1	27,3	–	45,5	18,2	9,1	–	–	11
K2	14,3	–	14,3	35,7	28,6	7,1	–	14
K3a	2,7	2,7	1,4	18,9	47,3	27,0	–	74
K3b	2,3	5,7	6,9	24,1	47,1	16,1	–	87
K4	43,9	11,5	28,8	4,3	7,9	2,9	0,7	139

Tabelle 5 Westergo: Überwiegende Farbe der Außenseite der Keramik. Legende: * *per definitionem* nicht möglich.

Typ	%					n
	poliert	glatt	matt	rauh	Schlick	
G1	30,8	54,7	12,0	1,7	0,9	117
G2	54,2	45,8	–	–	–	24
G3a	48,4	41,0	8,5	2,1	–	188
G3b	53,1	40,6	6,3	–	–	32
Gw4a	11,3	53,5	33,8	1,4	–	71
Gw4b	3,4	58,6	37,9	–	–	58
Gw4c	3,8	65,8	29,1	1,3	–	79
Gw4d	11,1	65,6	23,3	–	–	90
Ge4	2,5	62,5	30,0	5,0	–	40
Gw5a	–	50,0	43,8	6,3	–	32
Gw5b	–	39,0	51,2	9,8	–	41
Gw5c	3,2	54,8	41,9	–	–	31
Gw5d	4,1	47,9	42,5	5,5	–	73
Ge5a	–	39,1	60,9	–	–	23
Ge5b	–	35,3	52,9	11,8	–	17
Gw6a	2,6	15,4	59,0	23,1	–	39
Gw6b	3,6	17,9	75,0	3,6	–	28
Ge6	2,3	2,3	88,4	7,0	–	43
Gw7a	40,0	40,0	5,0	15,0	–	20
Gw7b	58,3	37,5	4,2	–	–	24
Ge7	50,0	41,7	8,3	–	–	12
V1	–	14,7	55,9	29,4	–	34
V2a	2,4	4,8	45,2	42,9	4,8	42
V2b	5,0	–	45,0	45,0	5,0	20
V3a	–	6,8	65,0	26,2	1,9	103
V3b	–	6,2	71,6	21,0	1,2	81
V4a	–	4,2	60,0	40,0	–	95
V4b	–	–	66,7	31,0	2,4	42
V4c	2,0	2,0	50,0	44,1	2,0	102
V4d	2,7	–	67,6	29,7	–	37
K1	40,0	10,0	40,0	10,0	–	10
K2	15,4	30,8	46,2	7,7	–	13
K3a	1,4	56,8	39,2	2,7	–	74
K3b	1,2	24,4	59,3	15,1	–	86
K4	70,9	23,6	3,6	1,8	–	55

Tabelle 6 Westergo: Oberflächenbehandlung der Außenseite der Keramik (Oberteil).

Typ	Anzahl					
	poliert	glatt	matt	rauh	Schlick	n
G1	5	5	2	–	6	18
G2	–	3	–	–	1	3
G3a	1	7	2	–	–	10
G3b	1	–	–	–	–	1
Gw4a	–	1	1	1	1	4
Gw4b	–	1	1	–	–	2
Gw4c	–	1	–	–	2	3
Gw4d	–	1	1	–	2	4
Ge4	–	3	2	–	1	6
Gw5a	–	–	–	–	3	3
Gw5b	–	–	1	–	–	1
Gw5c	–	–	2	–	1	3
Gw5d	–	1	3	–	–	4
Ge5a	–	3	–	2	–	5
Ge5b	–	1	1	2	–	4
Gw6a	1	–	–	2	2	5
Gw6b	–	1	4	2	–	7
Ge6	–	2	16	5	2	25
Gw7a	–	–	–	–	1	1
Gw7b	1	1	–	–	–	2
Ge7	2	3	–	–	–	5
V1	–	–	–	4	3	7
V2a	–	–	–	1	2	3
V2b	–	–	–	–	–	–
V3a	–	–	2	1	2	5
V3b	–	–	1	1	2	4
V4a	–	–	–	1	1	2
V4b	–	–	–	–	–	–
V4c	–	–	1	–	1	2
V4d	–	–	–	–	–	–
K1	–	3	1	1	–	5
K2	–	1	2	1	–	4
K3a	–	11	10	2	–	23
K3b	–	4	23	15	1	43
K4	27	51	9	–	–	87

Tabelle 7 Westergo: Oberflächenbehandlung der Außenseite der Keramik (Unterteil). Wegen der niedrigen Zahlen werden keine Prozentsätze genannt.

Typ	Anzahl									
	1	2	3	4	5	6	7	8	9	10
G1	–	–	–	20	–	–	–	1	41	–
G2	16	–	–	9	–	–	–	–	9	–
G3a	107	–	–	47	–	–	–	–	103	–
G3b	6	–	–	–	–	27	5	–	*	–
Gw4a	1	–	–	2	62	6	–	–	23	–
Gw4b	–	–	–	3	51	5	–	–	15	–
Gw4c	–	–	–	1	72	5	–	1	41	–
Gw4d	1	–	–	3	81	7	–	–	36	–
Ge4	–	–	–	–	33	7	1	–	24	–
Gw5a	–	–	–	–	–	–	–	–	9	–
Gw5b	1	–	–	–	–	–	–	–	8	–
Gw5c	–	–	–	–	–	–	–	–	14	–
Gw5d	–	–	–	–	–	–	–	–	25	–
Ge5a	–	–	–	–	–	1	–	–	9	–
Ge5b	–	–	–	–	–	–	–	–	4	–
Gw6a	–	–	–	–	1	2	–	–	–	–
Ge6	1	–	–	–	–	–	1	–	5	–
Gw7a	–	–	–	–	–	–	–	–	1	–
Gw7b	–	–	–	1	–	–	–	–	–	–
V1	1	–	–	–	–	–	–	1	1	–
V2a	–	2	1	–	–	–	–	–	25	–
V2b	–	–	–	–	–	1	–	–	6	–
V3a	–	3	3	–	–	–	–	–	22	1
V3b	–	–	–	–	3	1	–	–	15	2
V4a	–	–	–	–	–	–	–	–	4	–
V4b	1	–	–	–	–	–	–	–	–	–
V4c	–	–	–	–	–	–	–	–	–	–
V4d	–	–	–	–	–	–	–	–	–	–
K1	1	–	–	1	–	–	–	–	4	–
K2	2	1	–	–	–	–	–	–	9	–
K3a	–	–	–	5	66	3	–	–	39	–
K3b	1	–	–	–	–	–	–	–	23	–
K4	–	–	–	–	–	–	1	–	–	–

Tabelle 8 Westergo: Merkmale von Hals und Anfang Schulter. Legende: 1 Rillen unter dem Rand und auf dem Hals; 2 senkrechte Rillen; 3 senkrechte *gleren*; 4 Rillen auf der Schulter; 5 *streepband*; 6 *cannelures*; 7 Wölbung; 8 Rippe; 9 Absatz; 10 Eindrücke unten am Hals; * kein Absatz erkennbar.

Typ	Anzahl									
	1	2	3	4	5	6	7	8	9	10
G1	–	–	–	–	–	1	–	–	24	–
G2	–	–	–	–	–	–	–	–	7	–
G3a	–	2	1	–	–	–	–	–	119	–
G3b	–	–	–	–	–	–	–	–	15	–
Gw4a	–	–	–	–	–	–	–	2	1	–
Gw4b	–	–	–	–	–	–	–	1	1	–
Gw4c	–	–	–	–	–	–	1	–	–	–
Gw4d	1	–	–	–	–	–	1	–	–	–
Ge4	–	–	–	–	–	–	1	–	–	–
Gw5a	–	–	–	–	–	–	–	–	–	–
Gw5b	–	–	–	–	–	–	–	–	–	–
Gw5c	–	–	–	–	–	–	1	–	–	–
Gw5d	–	–	–	–	–	–	–	5	–	–
Ge5a	–	–	–	–	–	–	–	1	–	–
Ge5b	–	–	–	–	–	–	–	4	–	–
Gw6a	–	–	–	–	–	–	–	2	–	–
Gw6b	–	–	–	–	–	–	–	6	–	–
Ge6	–	1	–	–	–	–	1	13	–	–
Gw7a	–	–	–	–	–	–	–	–	–	–
Gw7b	–	1	–	–	–	–	–	1	–	–
Ge7	–	–	–	–	–	–	–	2	–	–
V1	–	–	2	–	–	–	–	–	–	–
V2a	1	3	2	–	–	–	–	–	–	–
V2b	–	1	1	–	–	–	–	–	–	–
V3a	–	–	2	–	3	–	2	4	–	–
V3b	–	–	–	–	–	–	–	7	1	–
V4a	–	2	1	–	–	–	–	4	–	1
V4b	–	–	–	–	–	–	–	3	–	–
V4c	–	–	–	–	–	–	–	9	–	–
V4d	–	–	–	–	–	–	–	7	–	1
K1	–	–	–	–	–	–	–	–	2	–
K2	–	–	–	–	–	–	–	–	8	–
K3a	–	–	–	–	–	–	–	3	1	–
K3b	–	–	–	–	–	–	–	7	–	–
K4	–	–	–	–	–	1	–	1	4	–

Tabelle 9 Westergo: Merkmale Schulter bis Boden. Legende: 1 einzelne Eindrücke; 2 Blöckchen oder Dreizahl; 3 waagerechte Linie; 4 einzelne Rillen; 5 senkrechte Rillen; 6 senkrechte *gleren*; 7 senkrechte »Fingerstriche«; 8 Kratzer; 9 geometrisches Muster; 10 plastisches Muster.

Typ	Anzahl													%
	Schulter-Rand					Schulter-Hals					Wand		n	
	R	S	P	U	K	R	S	P	U	K	R	K		
G1	–	–	–	–	–	2	–	–	–	6	5	2	16	13,4
G2	–	–	–	–	–	–	–	–	–	–	–	–	–	–
G3a	–	–	–	–	–	–	1	–	–	–	1	–	2	1,0
G3b	–	–	–	–	–	–	–	–	–	–	4	–	4	12,5
Gw4a	13	3	–	–	–	2	3	–	–	–	–	–	23	32,4
Gw4b	10	1	–	–	–	1	1	–	–	–	–	–	14	23,7
Gw4c	9	6	–	–	–	–	3	–	–	–	–	–	22	27,8
Gw4d	13	2	–	–	–	1	1	–	–	–	–	–	19	20,9
Ge4	2	–	–	–	–	4	16	3	–	–	–	–	29	70,7
Gw5a	9	–	–	–	–	1	1	–	–	–	–	–	11	34,4
Gw5b	6	1	–	–	–	–	–	–	–	–	–	–	7	17,1
Gw5c	4	–	–	–	–	–	1	1	–	–	–	–	7	22,6
Gw5d	1	8	2	2	–	–	1	–	–	–	–	–	14	19,2
Ge5a	*	*	*	*	–	3	14	4	1	–	*	*	23	100,0
Ge5b	3	10	1	–	–	*	*	*	*	*	*	*	17	100,0
Gw6a	–	2	–	6	–	–	–	–	–	–	–	–	8	20,5
Gw6b	2	–	1	5	–	–	–	–	–	–	–	–	11	39,3
Ge6	–	11	2	20	–	–	2	–	–	–	–	–	37	86,0
Gw7a	–	–	–	2	–	–	–	–	1	–	–	–	3	15,0
Gw7b	–	–	–	2	–	–	–	–	–	–	–	–	2	8,3
Ge7	–	1	–	4	–	–	–	–	1	–	–	–	9	75,0
V1	–	–	–	–	–	–	–	–	–	–	–	–	–	–
V2a	–	–	–	–	–	–	–	–	–	–	–	–	–	–
V2b	–	–	–	–	–	–	–	–	–	–	–	–	–	–
V3a	–	1	1	–	–	–	–	–	–	–	–	–	3	2,9
V3b	3	–	–	–	–	–	–	–	–	–	–	–	3	3,7
V4a	–	–	–	1	–	–	–	–	–	–	–	–	2	2,1
V4b	–	–	–	–	–	–	–	–	–	–	–	–	–	–
V4c	–	–	–	–	–	–	–	–	–	–	–	–	1	1,0
V4d	–	–	–	–	–	–	–	–	–	–	–	–	–	–
K1	3	–	–	–	–	–	–	–	–	1	–	–	7	63,6
K2	2	1	–	–	–	–	–	–	–	–	–	–	3	21,4
K3a	33	9	–	–	–	–	3	–	–	–	–	–	49	66,2
K3b	31	10	4	1	1	4	3	–	–	–	–	–	58	66,6
K4	–	–	–	–	–	–	–	–	–	–	–	–	–	–

Tabelle 10 Westergo: Stelle und Form der Henkel. Legende: R rund; S stumpfwinklig; P spitz; U ausgezogen; K Knopf oder Schnuröse; n Gesamtzahl der Henkel (einschließlich Fragmenten mit ungenügender Information); % Verhältnis der Gefäße mit Henkel(n)/Gesamtzahl der Gefäße des Types; * *per definitionem* Henkel am Hals (Ge5a) oder am Rand (Ge5b), für Ge5 insgesamt gilt: 41 von 50 Stück sind mit Henkeln ausgestattet, d.h. 82%.

Typ	Anzahl					% Henkel
	Eindruck	Rille/ Furche	*streepband*	sonst.	n	
G1	6	–	–	–	6	37,5
G2	–	–	–	–	–	–
G3a	1	–	–	–	1	50,0
G3b	–	–	–	–	–	–
Gw4a	10	7	7	–	13	56,5
Gw4b	4	6	6	–	10	71,4
Gw4c	5	2	5	–	7	31,8
Gw4d	8	3	4	–	10	52,6
Ge4	12	2	9	1	17	58,6
Gw5a	4	2	–	–	4	36,4
Gw5b	3	2	–	–	4	57,1
Gw5c	–	–	–	–	–	–
Gw5d	3	2	–	–	3	21,4
Ge5a	5	1	–	–	5	21,7
Ge5b	2	–	–	–	2	11,8
Gw6a	–	–	–	–	–	–
Gw6b	–	–	–	–	–	–
Ge6	–	–	–	–	–	–
Ge7	–	–	–	–	–	–
V1	–	–	–	–	–	–
V2a	–	–	–	–	–	–
V2b	–	–	–	–	–	–
V3a	–	–	–	–	–	–
V3b	–	–	–	1	1	33,3
V4a	–	–	–	–	–	–
V4b	–	–	–	–	–	–
V4c	–	–	–	–	–	–
V4d	–	–	–	–	–	–
K1	–	–	–	–	–	–
K2	–	–	–	–	–	–
K3a	8	5	3	–	11	22,4
K3b	1	–	–	1	2	3,5
K4	–	–	–	–	–	–

Tabelle 11 Westergo: Verzierung der Henkel.

Typ	%				n
	Ruß	Ansatz	Flecken	total	
G1	6,7	10,8	0,8	15,8	19
G2	–	4,0	–	4,0	1
G3a	3,1	12,0	0,5	14,1	27
G3b	9,4	15,6	–	18,8	6
Gw4a	32,4	14,1	1,4	45,1	32
Gw4b	28,8	13,6	8,5	47,5	28
Gw4c	21,5	7,6	1,3	29,1	23
Gw4d	28,6	11,0	6,6	44,0	40
Ge4	9,8	7,3	–	17,1	7
Gw5a	28,1	6,3	–	34,3	11
Gw5b	46,3	17,1	2,4	58,5	24
Gw5c	32,3	25,8	–	48,4	15
Gw5d	27,4	23,3	2,7	47,9	35
Ge5a	21,7	8,6	–	26,1	6
Ge5b	11,8	11,8	5,9	23,5	4
Gw6a	20,5	12,8	–	30,8	12
Gw6b	21,4	25,0	7,1	42,9	12
Gw7a	5,0	5,0	–	10,0	2
Gw7b	–	4,2	–	4,2	1
Ge7	–	–	–	–	–
V1	8,6	14,3	5,7	25,7	9
V2a	16,7	23,8	2,4	35,7	15
V2b	20,0	10,0	–	30,0	6
V3a	21,2	15,4	–	34,6	36
V3b	19,8	6,2	–	22,2	18
V4a	11,6	8,4	2,1	21,1	20
V4b	11,9	9,5	–	19,0	8
V4c	21,4	12,6	1,9	29,1	30
V4d	8,1	10,8	5,4	18,9	7
K1	–	9,1	–	9,1	1
K2	21,4	7,1	–	28,6	4
K3a	39,2	13,5	–	48,6	36
K3b	28,7	14,9	–	36,8	32
K4	0,7	3,6	–	3,6	5

Tabelle 12 Westergo: Gebrauchsspuren. Pro Gefäß(fragment) sind mehrere Spuren möglich, bei Kochresten zusätzlich Ruß (und Flecken).

Tabelle 13 Westergo: Numerierung und Lokalisierung der Fundstellen. Es gibt eine große Verschiedenheit an Inventarnummern. Auch gibt es Fundkomplexe, bei denen die Inventarnummern völlig fehlen. Deshalb sind alle Fundstellen fortlaufend, und zwar von Nord nach Süd, numeriert (siehe Abb. 63). Bei Wurten ist die Inventarnummer von Boeles zwischen Klammern angegeben.

Nr.	Name	Status	Koordinaten
1	Ried	Wurt (71a)	168.60 581.90
2	zwischen Ried und Boer	Wurt	167.85 581.45
3	Peins: Slappeterpsterweg	Wurt	169.28 580.27
4	Dongjum: Roedersmaterp	Wurt (67)	165.50 580.20
5	Peins: nordöstlich	Wurt	169.00 580.16
6	Peins: Bloembergen Santée	Wurt (71)	168.80 580.10
7	Dongjum: südlich	Wurt	165.35 579.65
8	Peins: westlich	Wurt	168.42 579.60
9	Schalsum	Wurt	167.64 579.25
10	Herbaijum: nördlich	überschwemmt	162.95 578.95
11	Herbaijum: nördlich	überschwemmt	163.10 578.95
12	Wijnaldum: östlich	Wurt	160.55 578.90
13	Schalsum: südöstlich	Wurt	168.26 578.84
14	Peins: südlich	–	168.80 578.79
15	Schalsum: südöstlich	überschwemmt?	167.90 578.74
16	Schalsum: südlich	überschwemmt?	167.74 578.72
17	Franeker: westlich	Wurt	165.55 578.55
18	Franeker: bei War	Wurt	163.90 578.40
19	Franeker: rondweg	Wurt	164.58 578.30
20	Franeker: rondweg	überschwemmt?	164.40 578.25
21	Zweins: bei Kingma State	Wurt (72a)	169.30 578.10
22	Franeker: rondweg	überschwemmt?	164.42 577.99
23	Zweins: bei Kingmatille	Wurt (72)	169.00 577.80
24	Franeker: De Doelen	Wurt	165.50 577.74
25	Franeker: Friedhof	Wurt	164.88 577.65
26	Franeker: Groot Lankum	Wurt (132)	163.50 577.60
27	Herbaijum: westlich	Wurt	161.52 577.52
28	Franeker: Klein oder Nieuw Lankum	Wurt (122)	163.90 577.50
29	Kiestrazijl	Wurt (74)	162.70 577.10
30	Welsrijp: Tjeppenbuorren	Wurt	169.19 576.93
31	Welsrijp: Tjeppenbuorren	Wurt	168.97 576.50
32	Miedum	Wurt (73e)	165.90 576.20
33	Lutjelollum	Wurt	166.88 576.20
34	Lutjelollum: südlich	Wurt	166.90 576.08
35	Lutjelollum: südwestlich	überschwemmt?	166.64 575.74
36	Westerhitzum	Wurt	163.10 575.64
37	Achlum: Sopsum	Wurt (74h)	162.20 575.60
38	Tzum: Zathe Truurd	Wurt	167.12 575.59
39	Hitzum: westlich	Wurt	163.35 575.55
40	Hitzum	Wurt (68)	163.80 575.50
41	Hitzum: Doijum	Wurt (68b)	164.72 575.44
42	Tzum: Holprijp	Wurt (180)	165.30 575.35
43	Welsrijp: Westerend	Wurt	169.38 575.31
44	Achlum: Yslumburen	Wurt (74i)	160.40 575.30
45	Tzum: Holprijp (Klaverbloem)	Wurt (157)	165.70 575.23
46	Tzum: Holprijp (De Kroon)	Wurt (210)	165.85 575.15
47	Tzum: Herum	Wurt	166.24 574.88
48	Achlum: Offingahuis	Wurt (74e)	161.80 574.80
49	Achlum: Terp (Gouden Kroon)	Wurt (186)	161.45 574.77
50	Spannum: nordwestlich	–	168.80 574.40
51	Achlum: Klaverblom	Wurt (149)	163.40 574.20

Nr.	Name	Status	Koordinaten
52	Tzum: Vlaren cq. Sitlum	Wurt (73)	164.80 574.00
53	Achlum: Goede Verwachting	Wurt (175)	163.70 573.88
54	Achlum: Groot Deersum	Wurt (74a)	162.90 573.80
55	Spannum: Basculeterp	Wurt (209)	169.40 573.80
56	Achlum: Ludumerterp	Wurt (74c)	160.30 573.70
57	Tzum: Barrum (De Parel)	Wurt (188)	166.70 573.70
58	Achlum	Wurt (74b)	161.40 573.50
59	Tzum: Groot Tjallum	Wurt (73b)	168.38 573.25
60	Tzum: Botertobbe	Wurt (137)	168.80 573.20
61	Tzum: Fatum	Wurt (73d)	167.50 573.10
62	Spannum: Heechhiem	Wurt (73c)	168.78 573.00
63	Spannum	Wurt (65)	169.60 573.00
64	Arum: Monnikenweg	überschwemmt	160.45 572.88
65	Achlum: bei Boltaterp	Wurt	162.36 572.80
66	Groot Tolsum	Wurt (123)	165.60 572.80
67	Achlum: Boltaterp	Wurt (141)	162.10 572.60
68	Arum: Beijum	Wurt (80bb)	163.70 572.60
69	Lollum:Berghuizerweg	Wurt	165.00 572.40
70	Spannum: Felsum	Wurt (173)	169.10 572.23
71	Arum: östlich	Wurt (80cc)	162.70 572.10
72	Tritsum	Wurt	166.90 571.95
73	Lollum: nordwestlich	Wurt	163.82 571.58
74	Lollum: nördlich	Wurt (80c)	164.65 571.53
75	Arum: Baarderburen	Wurt (80d)	162.30 571.46
76	Arum: Baarderburen	Wurt (226)	161.80 571.40
77	Lollum: bei Barsum	Wurt	165.39 571.28
78	Arum: Galamaterp	Wurt	161.88 571.10
79	Lollum	Wurt (80f)	164.60 571.00
80	Kubaard: Barkwerd	Wurt (138)	168.30 571.00
81	Lollum: Hizzaarderlaan	Wurt	164.00 570.80
82	Kubaard: Groot Lopens	Wurt (143)	165.40 570.80
83	Kubaard: Jorum	Wurt	167.32 570.75
84	Arum: De Hornen	überschwemmt	161.66 570.70
85	Lollum: Hoogterp	Wurt	165.08 570.45
86	Kubaard	Wurt (64a)	167.20 570.40
87	Groot Marwird	Wurt	162.60 570.30
88	Grauwe Kat	überschwemmt?	161.52 570.17
89	Arum: Allengastate	Wurt (211)	161.90 570.10
90	Kubaard: De Grits	Wurt	167.09 569.99
91	Kubaard: südlich	Wurt	167.38 569.74
92	Arum: Monnema State	Wurt	162.08 569.63
93	Wommels: Walperd	Wurt (227)	168.60 569.60
94	Wommels: Britsaard	Wurt (219)	169.30 569.50
95	Klein Gietens	Wurt	167.00 569.40
96	Arum: Oosterburen	Wurt	162.93 569.10
97	Wommels	Wurt (64)	168.50 569.00
98	Littenserburen	Wurt (136)	166.80 568.80
99	Witmarsum: Bongaterp	Wurt (128)	161.20 568.70
100	zwischen Wommels und Oosterend	–	169.67 568.60
101	Wommels: Stapert	Wurt	168.30 568.60
102	Westerlittens	Wurt	166.86 568.58
103	Witmarsum: Vibo I	überschwemmt?	161.90 568.42
104	Witmarsum	Wurt (81)	160.40 568.40
105	bei Sinnemastate	Wurt	163.08 568.06
106	Hemert	Wurt	164.08 568.05
107	Pankoeken	Wurt	162.55 568.00
108	Wommels: Geins	Wurt	168.67 567.95
109	Feins	Wurt	167.38 567.50
110	Wommels: südlich	Wurt	168.30 567.40
111	Wommels: Sudhoek	Wurt	168.35 567.22
112	Schettens: Bittens	Wurt	161.50 566.90
113	Schettens: nordöstlich	Wurt (83a)	162.25 566.85
114	Schettens: Vibo II	überschwemmt?	162.40 566.80
115	Groot Tellens	Wurt	168.20 566.78
116	bei Schettens	überschwemmt?	162.71 566.42
117	Hichtum: Sieswerd	Wurt (82b)	163.70 566.40
118	Schettens	Wurt	161.50 566.30
119	Hichtum	Wurt (82a)	164.40 565.90
120	Hichtum: östlich	Wurt (182)	164.80 565.90
121	Schettens: Sotterum	Wurt	161.50 565.50
122	Hartwerd: Oldeclooster	Wurt (82)	168.10 565.30
123	Hichtum: Halfweg	Wurt (82c)	164.10 565.20
124	Longerhouw	Wurt	160.98 564.68
125	Hartwerd	Wurt	167.00 564.60
126	Bolsward: Keppens	Wurt	163.10 564.46
127	Bolsward: St.Maarten	Wurt	164.50 564.20
128	Hartwerd: Sions	Wurt (135)	166.00 563.90
129	Bolsward: beim Bahnhof	Wurt (162)	164.70 563.80
130	Tzum: op de Vlaren	Wurt (112)	unbekannt
131	Achlum: südlich	Wurt (74g)	unbekannt
132	Franeker: Botniastins	–	unbekannt
133	Franekeradeel	–	unbekannt
134	Kollektion Van der Toorn	–	unbekannt
135	bei Arum	Wurt (80b)	unbekannt

ERNST TAAYKE / Die einheimische Keramik der nördlichen Niederlande, 600 v.Chr. bis 300 n.Chr., Teil 1: Westergo (Friesland)

Fundstelle	Typ																											total
	G1	G2	G3a	G3b	Gw4a	Gw4b	Gw4c	Gw4d	Ge4	Gw5a	Gw5b	Gw5c	Gw5d	Ge5a	Ge5b	Gw6a	Gw6b	Ge6	Gw7a	Gw7b	Ge7	V1	V2a	V2b	V3a	V3b	V4a	V4b	V4c	V4d	K1	K2	K3a	K3b	K4	Schale	Kleinstker.	Sonderf.	Deckel	Sieb	Rassel	Löffel	dickw.	Rest	
1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	1
2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1
3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	1
4	–	–	–	–	–	–	–	–	–	–	–	–	7	–	–	–	–	–	–	–	–	–	–	–	–	–	3	3	4	–	–	–	–	–	–	–	–	1	–	–	–	–	–	5	23
5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	⋆
6	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2	–	–	6	1	–	–	–	–	–	–	9
7	–	–	–	–	–	–	–	1	1	4	4	1	8	–	3	4	3	2	–	–	–	–	–	–	–	1	6	2	8	4	–	–	–	–	3	1	–	1	–	–	–	–	–	16	73
8	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	2
9	–	–	–	–	–	2	1	2	3	–	5	1	5	1	–	6	1	1	–	–	–	–	–	–	1	2	2	–	4	–	–	–	–	–	2	–	–	–	–	–	–	–	3	5	47
10	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1
11	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	4	2	–	3	1	–	–	–	–	–	–	1	2	7	3	–	–	–	–	7	1	–	–	–	–	–	–	–	32	63
12	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	⋆	⋆	–	⋆	–	⋆	–	–	–	–	–	–	–	⋆	⋆	–	–	–	–	⋆	–	–	–	–	–	–	–	–	–	⋆
13	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	⋆
14	–	–	–	–	–	–	–	–	–	–	1	1	–	–	1	1	–	–	–	–	–	–	–	–	–	–	–	–	3	–	–	–	–	1	2	–	–	–	–	–	–	–	–	11	21
15	–	–	–	–	1	3	7	18	2	1	9	3	15	1	1	–	–	2	–	–	–	–	–	–	4	4	4	2	1	–	–	–	–	1	4	–	–	–	–	–	–	–	–	31	114
16	–	–	–	–	2	1	1	5	–	2	1	–	12	1	–	–	–	–	–	–	–	–	–	–	–	2	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	10	39
17	–	–	–	–	2	–	–	1	–	2	–	1	3	2	1	1	1	–	–	–	–	–	–	–	2	1	8	9	5	–	–	–	1	1	4	–	–	–	–	–	–	–	–	31	76
18	–	–	–	–	–	–	–	–	–	1	–	–	1	–	1	3	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2	2	–	–	–	–	–	–	–	15	26
19	–	–	–	–	–	–	–	–	–	7	8	10	15	–	–	6	5	2	1	–	–	–	–	–	–	1	10	8	13	–	–	–	–	–	1	1	–	–	–	–	–	–	–	16	104
20	–	–	–	–	–	–	–	–	–	3	2	2	2	–	–	2	1	–	–	–	–	–	–	–	–	–	3	1	3	–	–	–	–	–	1	–	–	–	–	–	–	–	–	7	27
21	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	1
22	–	–	–	–	1	–	–	–	–	–	–	1	–	–	–	–	–	1	–	–	–	–	–	–	–	–	1	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	4	9
23	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2	2
24	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	1
25	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	⋆
26	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	2	2	–	–	–	–	–	–	5
27	–	–	–	–	–	–	–	–	–	–	–	–	1	–	1	1	1	–	–	–	–	–	–	–	–	–	–	–	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2	8
28	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2	–	–	1	–	–	–	–	–	3	6
29	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	3	3	–	–	–	–	–	–	7
30	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	⋆
31	–	–	–	–	5	5	10	26	6	6	36	8	65	2	3	30	3	4	–	1	–	–	–	1	11	11	10	8	41	1	–	–	1	2	10	1	–	–	2	2	–	–	6	77	394
32	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	3	–	–	–	–	–	–	3
33	–	–	–	–	4	2	3	5	7	–	2	4	10	–	–	3	1	1	–	1	–	–	–	–	2	3	2	1	9	–	–	–	–	1	1	–	–	1	–	–	–	–	–	21	84
34	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	1
35	–	–	–	–	1	1	1	1	–	3	2	–	4	–	–	–	1	1	–	–	–	–	–	–	–	2	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	12	30
36	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	1	–	–	–	–	–	2	4
37	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2	–	–	–	–	–	1	3
38	–	–	–	–	–	–	–	–	–	⋆	2	1	1	–	–	–	–	⋆	–	–	–	–	–	–	–	–	⋆	–	–	–	–	–	–	–	⋆	–	–	–	–	–	–	–	–	12	17
39	–	–	–	–	1	1	5	5	1	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	1	3	1	–	–	–	–	3	3	–	–	–	1	–	–	–	–	–	34	60
40	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	1	1	–	–	2	–	–	–	–	–	–	–	5
41	–	–	–	1	4	6	8	15	12	11	18	8	14	6	1	9	7	3	–	–	–	–	3	3	4	5	12	7	36	4	–	–	2	3	8	2	3	–	–	–	–	–	1	45	261

Tabelle 14 Westergo: Fundzahlen pro Typ und Fundstelle. Legende: * Zahl der Funde unbekannt.

ERNST TAAYKE / Die einheimische Keramik der nördlichen Niederlande, 600 v.Chr. bis 300 n.Chr., Teil 1: Westergo (Friesland)

Fundstelle	Typ																																								total
	G1	G2	G3a	G3b	Gw4a	Gw4b	Gw4c	Gw4d	Ge4	Gw5a	Gw5b	Gw5c	Gw5d	Ge5a	Ge5b	Gw6a	Gw6b	Ge6	Gw7a	Gw7b	Ge7	V1	V2a	V2b	V3a	V3b	V4a	V4b	V4c	V4d	K1	K2	K3a	K3b	K4	Schale	Kleinstker.	Sonderf.	Deckel	Sieb	Rassel	Löffel	dickw.	Rest	
42	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2	4	30	18	21	2	10	1	–	–	–	1	–	4	–	–	–	–	–	–	–	10	103
43	–	–	–	–	1	–	6	2	–	1	2	1	3	1	1	2	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	3	1	–	–	–	1	–	–	–	–	–	11	37
44	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	5	–	–	–	–	–	–	–	7
45	–	1	4	–	6	6	1	5	3	2	1	1	2	–	1	–	1	1	1	–	–	–	1	10	5	4	3	7	–	–	–	1	2	2	1	3	1	1	1	–	–	–	44	122
46	–	–	–	–	1	–	1	2	1	–	–	1	–	1	–	–	1	–	–	–	–	–	1	–	–	1	1	–	–	–	–	1	–	2	–	–	–	–	–	–	–	–	–	8	22
47	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	⋆
48	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	3	–	–	–	–	–	2	5
49	–	–	5	1	–	–	–	–	1	–	–	–	–	–	1	–	1	3	–	–	1	–	⋆	⋆	1	–	1	–	1	–	–	–	1	–	–	–	2	1	–	1	–	–	–	7	28
50	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	3	3
51	–	–	22	2	–	1	–	–	–	–	–	–	1	–	–	–	–	2	–	–	–	–	2	–	3	–	–	–	–	1	1	1	–	2	–	–	–	–	–	–	–	45	83
52	–	–	⋆	⋆	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	⋆	⋆	–	–	1	1	1	–	–	–	–	–	–	1	–	–	–	1	1	–	3	10
53	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	1	–	–	–	–	–	–	–	–	6	9
54	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	1	–	–	–	–	–	1	3
55	–	–	–	–	1	–	1	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	2	–	–	–	–	2	8
56	–	–	54	4	5	4	5	6	3	6	2	5	7	3	1	2	1	3	3	1	1	1	–	–	2	1	3	2	1	–	–	3	4	3	20	–	11	2	–	–	–	1	–	383	553
57	–	–	3	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	1	–	1	1	1	–	–	3	1	2	–	9	–	–	–	–	–	–	11	35
58	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	1	–	–	–	1	–	–	2	–	–	–	–	–	–	1	7
59	–	–	1	–	1	3	4	8	2	1	4	–	3	5	–	–	–	–	–	–	–	–	2	–	2	–	2	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	10	49
60	–	–	4	1	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	1	–	–	–	–	–	–	–	–	5	13
61	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	3
62	–	–	4	2	5	1	6	4	–	1	4	–	4	2	–	–	–	–	–	–	–	–	4	–	1	–	–	–	–	–	1	–	–	–	–	–	–	1	–	–	–	–	–	21	61
63	–	–	–	–	–	–	–	1	–	–	–	–	4	–	1	–	–	1	–	–	1	–	–	–	–	1	–	–	–	–	–	–	1	1	–	–	1	1	–	1	–	–	2	16
64	–	–	2	–	–	7	8	28	–	1	5	1	19	–	–	–	1	2	–	–	–	–	1	–	5	6	1	–	1	–	–	–	–	3	–	1	–	1	–	–	–	–	31	124
65	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	⋆
66	–	10	88	10	20	31	31	27	4	–	–	–	2	1	1	2	–	1	1	1	–	–	3	1	13	9	18	9	8	2	1	2	18	7	12	1	10	6	–	1	2	2	–	690	1044
67	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	1	–	–	3	–	–	–	–	–	–	2	9
68	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	1	–	–	–	–	–	–	2
69	–	–	–	–	–	–	2	1	–	–	–	–	1	–	1	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	5	11
70	–	–	2	–	–	–	–	4	2	–	1	1	2	–	–	8	–	2	11	2	–	–	–	–	–	1	5	4	11	–	–	–	–	4	–	–	5	–	1	–	–	–	21	87
71	–	–	–	–	–	–	–	–	–	1	–	–	–	–	1	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	2	–	–	–	–	–	–	–	5
72	⋆	⋆	⋆	⋆	⋆	⋆	⋆	⋆	⋆	⋆	⋆	⋆	⋆	⋆	⋆	⋆	⋆	⋆	⋆	⋆	⋆	⋆	⋆	⋆	⋆	⋆	⋆	⋆	⋆	⋆	⋆	⋆	⋆	⋆	⋆	⋆	⋆	⋆	⋆	⋆	–	⋆	⋆
73	–	–	2	–	2	1	2	1	–	–	2	3	1	–	–	–	1	–	–	–	–	–	–	1	1	1	2	–	5	–	–	–	1	–	1	1	–	–	–	–	–	–	–	14	42
74	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	1
75	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	3	1	1	–	1	–	–	7
76	1	–	7	1	4	1	1	3	2	2	1	1	6	2	1	1	–	–	–	–	3	–	–	1	3	1	–	–	2	–	–	–	1	18	–	1	–	–	–	–	–	–	29	93
77	–	–	–	–	2	–	1	3	–	1	2	1	4	–	–	1	–	–	–	–	–	–	2	–	2	–	2	–	1	–	–	–	–	1	–	–	–	–	–	–	–	–	5	28
78	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	⋆
79	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2	1	–	–	–	–	–	–	–	–	–	–	–	–	–	2	1	–	–	3	1	–	–	–	1	–	1	12
80	6	–	27	6	7	10	9	30	8	3	14	4	9	9	–	3	–	3	4	6	6	2	4	4	9	5	3	5	7	4	–	–	–	2	16	2	1	3	–	1	–	2	3	111	348
81	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	1	2
82	–	–	4	1	3	2	2	2	–	1	6	1	10	2	2	1	3	1	2	10	3	–	2	–	3	–	11	4	10	7	1	1	4	1	38	1	1	2	–	–	2	–	–	65	209

Tabelle 14 (Fortsetzung)

ERNST TAAYKE / Die einheimische Keramik der nördlichen Niederlande, 600 v.Chr. bis 300 n.Chr., Teil 1: Westergo (Friesland)

Fundstelle	Typ																																									total
	G1	G2	G3a	G3b	Gw4a	Gw4b	Gw4c	Gw4d	Ge4	Gw5a	Gw5b	Gw5c	Gw5d	Ge5a	Ge5b	Gw6a	Gw6b	Ge6	Gw7a	Gw7b	Ge7	V1	V2a	V2b	V3a	V3b	V4a	V4b	V4c	V4d	K1	K2	K3a	K3b	K4	Schale	Kleinstker.	Sonderf.	Deckel	Sieb	Rassel	Löffel	dickw.		
83	–	–	1	–	–	–	–	3	–	–	1	–	2	–	–	–	1	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	4	14
84	–	–	–	–	–	–	4	–	–	1	–	1	–	–	–	1	–	–	–	–	–	–	–	–	–	4	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	11	22
85	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	11	11
86	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	2	–	–	–	–	–	–	–	–	1	6	–	3	–	1	–	–	3	17
87	*	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	*
88	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	*
89	1	–	3	–	–	–	–	–	1	1	1	–	1	–	–	–	–	–	–	–	–	–	–	–	–	1	1	–	1	–	–	–	3	2	–	–	–	–	–	–	–	–	15	31
90	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2
91	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	1
92	–	–	–	–	–	1	1	1	1	–	–	1	1	1	–	–	–	–	–	–	–	–	–	–	1	–	1	–	1	–	–	–	1	–	–	–	–	1	–	–	–	–	7	19
93	7	1	1	–	–	1	–	–	1	–	–	–	1	1	–	–	–	4	–	–	–	3	1	–	–	–	1	1	1	–	–	–	4	3	1	–	–	–	–	–	–	–	20	52
94	–	–	–	–	2	–	–	–	1	1	–	–	–	–	–	–	–	1	–	–	–	–	2	–	–	1	–	1	1	–	–	1	–	1	1	–	1	–	3	–	–	–	1	8	26
95	2	2	6	–	7	10	24	24	5	15	21	10	24	5	1	4	1	2	–	–	–	1	–	–	10	13	4	5	6	–	–	–	3	–	9	2	–	–	10	–	–	–	2	53	282
96	–	–	–	–	–	–	–	–	2	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	1	5
97	10	–	16	3	1	6	3	10	2	14	21	16	37	3	2	35	1	7	4	2	1	6	6	3	18	6	19	12	28	3	–	2	2	3	11	1	2	1	–	–	–	–	2	138	457
98	–	–	1	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	3
99	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	1
100	–	–	2	–	–	–	–	–	–	1	1	–	1	–	–	1	–	–	–	–	–	–	–	1	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	7	15
101	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	1
102	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1
103	–	–	–	–	2	–	2	1	1	–	5	2	2	–	–	–	–	–	–	–	–	–	–	–	1	1	–	–	1	–	–	–	1	1	–	–	–	–	1	–	–	–	–	15	36
104	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	1	–	–	4	–	–	–	–	–	–	6
105	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	*
106	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	*
107	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	*
108	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	1	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	4	7
109	10	–	–	1	2	–	4	2	1	2	1	1	3	1	–	2	1	–	–	–	–	2	2	2	2	1	–	–	3	–	1	–	1	–	2	2	–	–	–	–	–	–	–	12	61
110	–	–	–	–	1	2	–	4	–	1	2	1	1	–	–	–	–	–	–	–	–	–	–	–	1	1	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	2	17
111	–	–	–	–	–	1	1	1	1	–	1	–	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	11	19
112	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	1	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	5	9
113	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	1	–	1	–	–	–	–	–	–	–	–	–	–	–	–	1	–	1	1	–	–	–	–	–	–	3	9
114	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	1	1	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	6
115	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	3
116	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	*
117	–	–	–	–	1	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	2	5	–	–	–	1	–	–	1	–	–	2	14
118	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	2	3
119	94	10	67	13	25	11	17	36	12	12	13	9	9	6	3	15	13	18	19	9	2	28	16	6	28	13	23	25	54	22	3	4	10	16	24	6	2	19	3	–	–	1	–	253	968
120	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	1	–	–	–	1	–	–	–	–	–	2	8
121	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	7	8
122	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	3	–	1	–	–	–	–	–	–	–	–	2	8
123	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1

Tabelle 14 (Fortsetzung)

Tabelle 14 (Fortsetzung)

Fundstelle	Typ																							total
	G1	G2	G3a	G3b	Gw4a	Gw4b	Gw4c	Gw4d	Ge4	Gw5a	Gw5b	Gw5c	Gw5d	Ge5a	Ge5b	Gw6a	Gw6b	Ge6	Gw7a	Gw7b	Ge7	V1		
124	–	–	–	–	1	–	1	1	1	–	3	1	3	–	–	–	–	–	–	–	–	–		
125	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1		
126	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–		
127	–	1	6	–	2	–	3	–	2	–	1	–	1	–	–	1	–	–	–	2	–	2		
128	1	–	6	1	–	–	1	1	–	–	–	–	–	–	1	–	–	–	–	–	–	–		
129	–	–	4	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–		
130	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–		
131	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–		
132	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–		
133	–	–	–	–	–	–	–	1	–	–	1	–	1	–	–	–	–	–	–	–	–	–		
134	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–		
135	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–		
Total	136	25	342	48	124	123	178	293	92	109	208	104	331	58	30	155	57	76	51	37	18	46		

Typ																							total
V2a	V2b	V3a	V3b	V4a	V4b	V4c	V4d	K1	K2	K3a	K3b	K4	Schale	Kleinstker.	Sonderf.	Deckel	Sieb	Rassel	Löffel	dickw.	Rest	
–	–	1	4	–	–	–	–	–	–	2	1	–	–	–	–	–	–	–	–	–	6	25
–	–	–	–	–	–	–	–	–	–	–	–	–	1	2	1	1	–	–	–	–	7	13
–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1
2	2	–	3	1	–	–	–	–	–	3	2	–	–	–	–	–	–	–	–	–	23	57
–	–	–	–	–	–	–	–	1	1	–	4	–	–	–	–	–	–	–	–	–	32	49
–	–	–	–	–	–	–	–	–	–	1	2	–	–	1	–	–	–	–	–	–	5	13
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2	–	–	–	–	–	–	3
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1
–	–	–	1	1	–	–	–	–	–	1	1	–	–	–	–	–	–	–	–	–	4	11
–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	1	–	–	–	–	–	–	2
–	–	–	–	–	–	–	–	–	–	–	–	–	–	3	–	–	–	–	–	–	–	3
57	31	175	140	194	122	307	52	9	19	84	97	219	39	111	60	29	8	8	9	19	2623	7052

GEOLOGIE (Torfdatierungen Blätter 10 und 11)

Nr.	Jahre BP	Ort	Tiefe (-NAP)	Quelle	Bemerkungen
GrN-818	3720±80	Sneek I	2,15–2,30	Cnossen 1971, 59	–
GrN-1939	3460±70	Sneek I	0,75–0,76	unpubliziert	Oberseite; *tpq* D 0
GrN-1844	4285±70	Sneek II	2,90–3,00	Cnossen 1971, 59	*Unio klei*
GrN-1979	2380±70	Schraard I	1,12–1,13	Cnossen 1971, 61	Oberseite; *tpq* D Ib
GrN-1981	3280±70	Schraard II	1,51–1,52	Cnossen 1971, 61	Unterseite; *taq oude blauwe klei*
GrN-4318	1920±75	Warga I	0,95–0,98	Ter Wee 1976, 82–4, fig. 44	Unterseite; *taq* D Ib
GrN-4319	2330±75	Warga II	1,20–1,25	Ter Wee 1976, 82, fig. 44	Oberseite; *tpq* D Ib
GrN-4320	3980±90	Warga III	2,25–2,30	Ter Wee 1976, 72, fig. 44	Unterseite; *taq* C IV
GrN-4321	4700±100	Warga IV	3,27–3,32	Ter Wee 1976, 72, fig. 44	Oberseite; *tpq* C IV
GrN-4322	1725±105	Kubaard I	1,16–1,20	Ter Wee 1976, 76, fig. 43	dünne Schicht in Rinne
GrN-4323	3830±105	Kubaard IIa	3,25–3,30	Ter Wee 1976, 76, fig. 43	Oberseite; *tpq* D 0
GrN-6531	2520±70	Greonterp I	1,73–1,76	unpubliziert?	Unterseite; *taq* D 0
GrN-1167	2440±65	Rauwerd II	–	Cnossen 1971, 61	Oberseite; *tpq* D Ib
GrN-2065	2800±50	Rauwerd I	–	unpubliziert?	–
GrN-4009	3000±80	Wijtgaard I	2,12–2,20	unpubliziert?	Unterseite; *taq* D 0
GrN-4050	3580±110	Wijtgaard II	2,81–2,88	unpubliziert?	Oberseite; *tpq* D 0
GrN-4051	5060±180	Wijtgaard III	3,44–3,51	unpubliziert?	Unterseite; *taq* C II
GrN-4010	6040±120	Wijtgaard IV	4,01–4,10	unpubliziert?	Oberseite; *tpq* marin Sediment
GrN-5210	2405±50	Makkum I	1,54–1,59	unpubliziert?	Unterseite
GrN-5211	3835±55	Makkum II	2,40–2,45?	unpubliziert?	Unterseite; *taq* C IV ??
GrN-5212	3910±40	Makkum III	2,07–2,12?	unpubliziert?	Oberseite; *tpq* D 0 ??
GrN-6193	2590±55	Makkum IV	1,58–1,63	Ter Wee 1976, 82, fig. 41	Unterseite; *taq* D 0
GrN-6195	3620±55	Makkum VI	2,16–2,21	Ter Wee 1976, 77, fig. 41	Unterseite; *taq* C IV
GrN-6194	3710±55	Makkum V	1,99–2,02	Ter Wee 1976, 77, fig. 41	Oberseite; *tpq* D 0
GrN-6138	4385±130	Makkum VII	3,08–3,13	Ter Wee 1976, 72, fig. 41	Oberseite; *tpq* C IVb

ARCHÄOLOGIE

Nr.	Jahre BP	Ort	Probenmaterial	Quelle	Bemerkungen
Deutschland					
Hv-2048	2115±75	Hatzum-Boomborg	Holz	Löbert 1982, 96	Siedlungshorizont 1A
Hv-2052	2125±45	Hatzum-Boomborg	?	Löbert 1982, 96	Siedlungshorizont 1B
Hv-2055	2270±80	Hatzum-Boomborg	?	Löbert 1982, 96	Siedlungshorizont 2
GrN-4668	2340±30	Hatzum-Boomborg	Holz	Löbert 1982, 96	Siedlungshorizont 2
Hv-2049	2380±45	Hatzum-Boomborg	?	Löbert 1982, 96	Siedlungshorizont 4
Hv-2054	2420±80	Hatzum-Boomborg	?	Löbert 1982, 96	Siedlungshorizont 3
GrN-4669	2445±35	Hatzum-Boomborg	Holz	Löbert 1982, 96	Siedlungshorizont 1A
GrN-4344	2460±50	Hatzum-Boomborg	Holz	Löbert 1982, 96	Siedlungshorizont 2
Hv-2053	2490±65	Hatzum-Boomborg	?	Löbert 1982, 96	Siedlungshorizont 2
GrN-129	2335±70	Jemgum I	Holz	Lanting & Mook 1977, 157	Pfosten Haus I
GrN-17408	2310±40	Jemgum I	Holz	unpubliziert	ident. Probe (neue Vorbehandlung)

Tabelle 15 Liste der ^{14}C-Daten.

ARCHÄOLOGIE (Fortsetzung)

Nr.	Jahre BP	Ort	Probenmaterial	Quelle	Bemerkungen
GrN-7910	1945±25	Jemgum I	Mist	Lanting & Mook 1977, 180	Graben
Hv-1388	2590±60	Einbeck	Holzkohle	Lanting & Mook 1977, 134	Kalenderberg, Harpstedt
Groningen					
GrN-7500	2175±35	Middelstum 543	Holzkohle	Lanting & Mook 1977, 154	RW III–*streepband*
GrN-7909	2205±50	Middelstum 538/539	Holzkohle	Lanting & Mook 1977, 154	Übergang RW III–*streepband*
GrN-7501	2205±35	Middelstum 550	Holzkohle	Lanting & Mook 1977, 154	Übergang RW III–*streepband*
GrN-6933	2360±35	Middelstum 179	Holz	Lanting & Mook 1977, 153	Übergang Periode 2
GrN-6932	2400±35	Middelstum 24	verk. Getreide	Lanting & Mook 1977, 153	Periode 2
GrN-6854	2415±35	Middelstum 341	Holz	Lanting & Mook 1977, 153	Periode I
GrN-6898	2420±35	Middelstum 490	verk. Getreide	Lanting & Mook 1977, 153	Periode 2
GrN-6855	2480±35	Middelstum 467	Holz	Lanting & Mook 1977, 153	Periode I
GrN-6902	2495±35	Middelstum 445	Holz	Lanting & Mook 1977, 153	Periode I
GrN-7903	2510±35	Middelstum 349	Holz	Lanting & Mook 1977, 153	Periode I
GrN-7902	2555±35	Middelstum 246	Holz	Lanting & Mook 1977, 153	Periode I
GrN-4368	2300±65	Ezinge	Holz	Lanting & Mook 1977, 157	Pfosten Haus Phase 1c
GrN-5592	2125±35	PaddepoelIII 332	Holz	Van Es 1968, 222	Erstes Haus Periode II
Friesland					
GrN-15833	1990±20	Sneek 1988 3A	Holz	unpubliziert	Brunnen, mit *streepband*
GrN-15834	2130±30	Sneek 1988 3B	Knochen	unpubliziert	Brunnen, mit *streepband*
GrN-1673	2060±65	Felsum	Holz	Lanting & Mook 1977, 174–5	Brunnen oder Grube
westliche Niederlande					
GrN-11489	2180±35	Spanjaardsberg IV	Knochen	Van Heeringen 1988, Tab.1	Periode 2
GrN-11487	2190±30	Spanjaardsberg II	Knochen	Van Heeringen 1988, Tab.1	Periode 2
GrN-11486	2275±30	Spanjaardsberg I	Knochen	Van Heeringen 1988, Tab.1	Periode I
GrN-11488	2315±30	Spanjaardsberg III	Knochen	Van Heeringen 1988, Tab.1	Periode I
GrN-11491	2180±40	Velsen Spuikanaal I	Knochen	Van Heeringen 1989	RW III
GrN-5505	2210±70	Velsen VIII	Holz	Lanting & Mook 1977, 154	RW III
GrN-11493	2240±40	Velsen Hoogovens Put 82 I	Knochen	Van Heeringen 1989	RW II und RW III
GrN-11283	2280±35	Velsen Hoogovens Put 82 II	Holzkohle	Van Heeringen 1989	RW II und RW III
GrN-11494	2265±35	Velsen Hoogovens Put 86 I	Knochen	Van Heeringen 1989	RW II und RW III
GrN-6408	2200±50	Baambrugge	Holz	Lanting & Mook 1977, 154	RW III
GrN-8685	2125±25	Assendelft 32	Holz	Stolp 1983, 100	Wellenrand, *streepband*
GrN-8336	2110±25	Assendelft 32	Holz	Stolp 1983, 100	Wellenrand, *streepband*
GrN-12757	1910±20	Alkmaar Tiefgarage 't Hooge Huys I	Holzkohle	unpubliziert	Grube
GrN-12756	2040±30	Alkmaar Koorstraat I	Holz	unpubliziert	Brunnen

Tabelle 15 (Fortsetzung)

ARCHÄOLOGIE (Forsetzung)

Nr.	Jahre BP	Ort	Probenmaterial	Quelle	Bemerkungen
Drenthe					
GrN-6410	2440±50	De Weper	Holzkohle	Lanting & Mook 1977, 151	Brunnen, mit RW I und Harpstedt
GrN-10969	2250±60	Eursinge 9	Holzkohle	unpubliziert	RW I, RW II und Harpstedt
GrN-10968	2350±70	Eursinge 2	Holzkohle	unpubliziert	RW I und Harpstedt
GrN-2392	2360±55	Gees	verk. Getreide	Lanting & Mook 1977, 152	RW I, RW II und Harpstedt
GrN-1553	2460±45	Gees	verk. Getreide	Lanting & Mook 1977, 152	ident. Probe (bessere Vorbehandlung)
GrN-6867	2510±50	Ruinen 186	Holzkohle	Lanting & Mook 1977, 152	Quadratgraben mit RW I Töpfchen
GrN-6397	2390±35	Wapse 152	Holzkohle	Lanting & Mook 1977, 134	Harpstedt-Urne
GrN-6868	2580±40	Wapse 70	Holzkohle	Lanting & Mook 1977, 134	Harpstedt-Urne
Niederlande (sonstige)					
GrN-6407	2300±90	Ermelo 1	Holz	Lanting & Mook 1977, 154	RW III
GrN-7446	2410±60	Losser-Oelemars	Holzkohle	Lanting & Mook 1977, 135	Harpstedt-Urne
GrN-1531	2515±50	Eersel tum. 101	Holzkohle	Lanting & Mook 1977, 140	Harpstedt-Urne
GrN-7420	2675±55	Swalmen	Holzkohle	Lanting & Mook 1977, 140	Harpstedt-Urne

Tabelle 15 (Fortsetzung)

TORBJÖRN E. TÖRNQVIST[1]

Fluvial Activity, Human Activity and Vegetation (2300–600 yr BP) near a Residual Channel in the Tielerwaard (Central Netherlands)

Keywords: palynology, palaeoecology, geomorphology, archaeology, Late Holocene, Iron Age, Roman Period, Middle Ages, the Netherlands, fluvial area, Tielerwaard.

ABSTRACT

A palynological investigation of three cores was undertaken to reconstruct vegetation succession in and around a residual channel in relation to fluctuations in fluvial activity and human interference in the landscape. Pollen assemblages are interpreted as much as possible in terms of syntaxonomic units, and it is demonstrated that marked changes in the local vegetation succession are compatible with data on the geomorphological development. A break in the hydrosere in the residual channel is synchronous with the development of a new river branch in the area of study. This phase of fluvial activity gives rise to erosion of part of the residual channel fill and a renewed, temporary development of aquatic communities.

Very little has been published on archaeological finds from the eastern Tielerwaard. In spite of this a strong human impact, through agricultural activities, on the area surrounding the residual channel can be inferred from the regional pollen assemblages. This situation already existed in the Middle Iron Age, when the pollen record begins. The centuries following the Roman Era saw a decline in human pressure on the region. It appears that the duration of this period was significantly shorter in the fluvial area than in the cover sand area south of the Meuse, and that an increase in population had already taken place in the Early Middle Ages. A further increase in human activity, resulting in complete deforestation, started during the Late Middle Ages.

INTRODUCTION

The fluvial area of the rivers Rhine and Meuse in the central Netherlands is characterized by the presence of a complex pattern of stream ridges and flood basins. Residual channels representing the final stage of former river channels are also common features. Residual channels develop due to rapid changes in the course of river channels, either following avulsion or through neck- or chute cut-offs.[2] Residual channels resulting from avulsion are particularly common in the central Netherlands. Residual channels are successively filled with bed load material (sand and gravel), suspension material (clay and silt) and in numerous cases, organic material.[3]

Residual channel fills have proved to be important for various kinds of palaeoenvironmental analysis. Dating these sediments yields a minimum age for the accompanying stream ridge, thereby providing an important clue for palaeogeographic reconstruction.[4] Furthermore, residual channel fills are extremely suitable for the study of the vegetational history of stream ridges[5], including the effect of pre- and protohistoric settlement.

This investigation aims at a better understanding of

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2 Allen 1965, 118–20.

3 See, e.g., Reineck & Singh 1980, 292–4.

4 In the Netherlands this was first suggested by Verbraeck (1970, 61 and 83) and practiced successfully with the aid of radiocarbon dating especially by Berendsen (1982).

5 cf. De Jong 1970–71; Teunissen 1986.

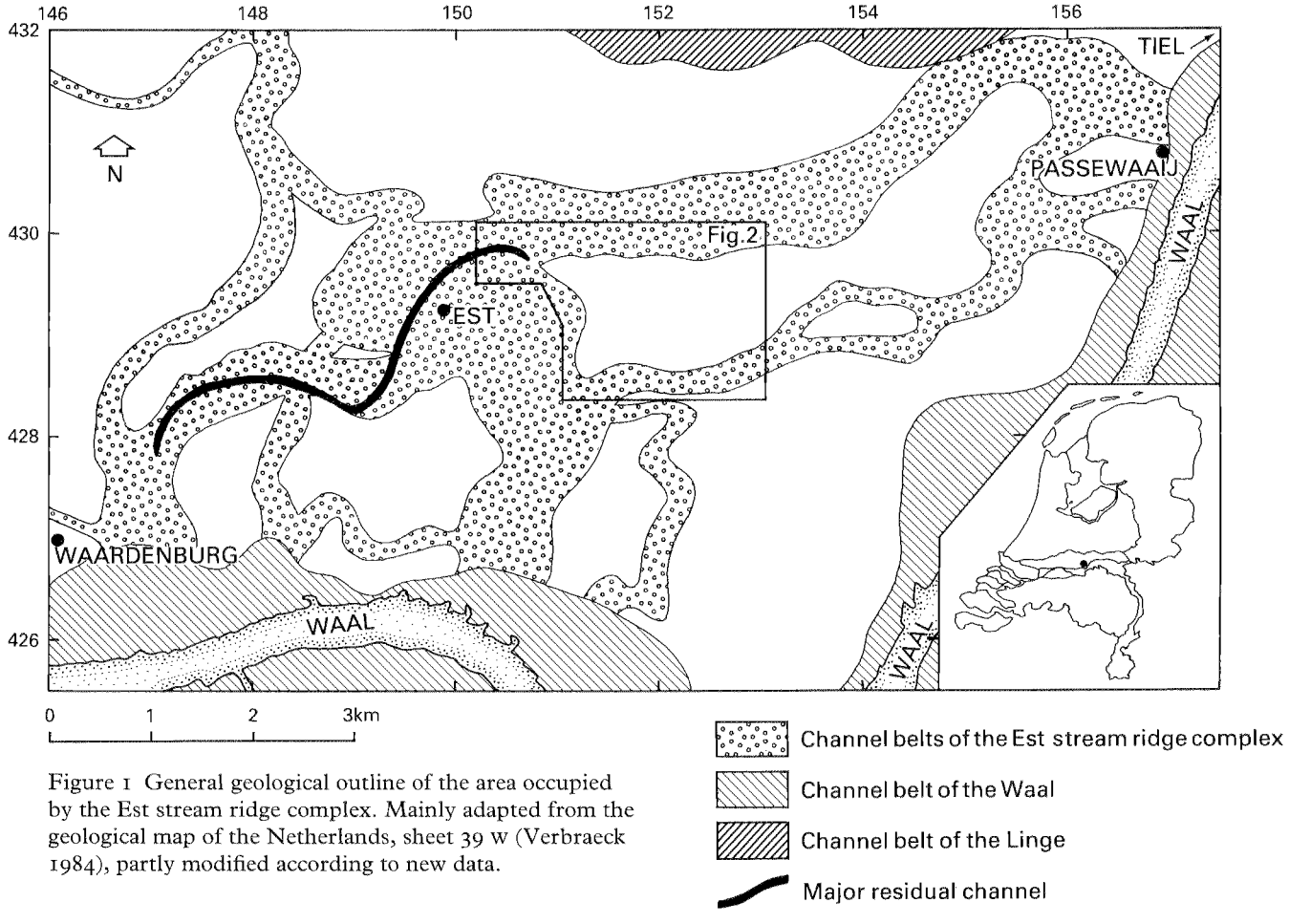


Figure 1 General geological outline of the area occupied by the Est stream ridge complex. Mainly adapted from the geological map of the Netherlands, sheet 39 W (Verbraeck 1984), partly modified according to new data.

palaeoecological changes during the period of infilling of residual channels, especially in relation to fluvial processes and human activity. The research area is located in a region with a complicated pattern of stream ridges near Est in the eastern part of the Tielerwaard (see fig. 1). This area was selected for palynological investigation and radiocarbon dating because knowledge of the age of these stream ridges, as well as their occupation history, is poor. According to Verbraeck[6] the major part of the Est stream ridge complex was formed between 5500 and 2000 yr BP. In spite of the presumably young age of the most recent stream ridges, no archaeological finds have been published from this area.

MATERIALS AND METHODS

Field methods

Fieldwork included a geomorphological survey, based on terrain observations and numerous borings. The coring equipment consisted of an 'Edelman' corer and a gouge for clayey and organic sediments. In a few cases the 'Van der Staay' suction corer[7] was used in coarse-grained deposits below the groundwater table. In the field, every 10 cm was described with special attention to the following aspects: texture and organic matter content,[8] lime content, colour and plant remains.

In the key area (fig. 3) the altitude of the terrain was levelled adhering to the Dutch Ordnance Datum. In all

6 Verbraeck 1984, 228.

7 Van de Meene *et al.* 1979.

8 Following the classification of the Netherlands Soil Survey Institute (De Bakker & Schelling 1966).

other cases levels were derived from the elevation map of the Netherlands. Finally, appropriate locations were selected for sampling. Radiocarbon samples were taken with a Dachnowski corer (diameter 50 mm), whereas pollen cores were collected with the use of a gouge (diameter 60 mm), immediately adjacent to the radiocarbon samples.

Laboratory methods

Pollen subsamples were collected from the cores volumetrically. The addition of *Lycopodium clavatum* tablets[9] provided the possibility of calculating pollen concentrations. The chemical preparation of the subsamples included treatment with 10% KOH, sieving over a 250 μm screen and subsequent treatment with sodium pyrophosphate, 38–40% HF and 10% H_2O_2 (10 minutes at 60–70 °C) prior to acetolysis. Pollen types were identified with the aid of the pollen key in Moore & Webb.[10] The Northwest European Pollen Flora was used when identification to a lower taxonomic level was desired.[11] All pollen types with the affix 'type' can be attributed to more than one taxon. The composition of these pollen types is given in table 1. Radiocarbon dating was carried out at the Centre for Isotope Research (University of Groningen) under supervision of Prof. dr. W.G. Mook (table 2).

Alisma type: *Alisma, Baldellia, Luronium*

Buglossoides arvensis type: *Buglossoides arvensis, Lithodora diffusa*

Dryopteris type: *Dryopteris, Cystopteris, Thelypteris*

Galium type: *Galium, Asperula, Rubia, Sherardia*

Genista/Ulex type: *Genista, Ulex, Cytisus, Sarothamnus*

Lamium/Rhinantus/Stachys type: *Lamium, Rhinantus, Stachys, Ajuga, Bartsia, Euphrasia, Galeobdolon, Galeopsis, Scutelaria, Veronica*

Lotus type: *Lotus, Ornithopus, Tetragonolobus*

Mentha type: *Mentha, Lycopus, Origanum, Salvia, Thymus*

Polygonum aviculare type: *Polygonum aviculare, P. arenastrum, P. boreale, P. maritimum, P. oxyspermum, P. patulum, P. rurivagum*

Polygonum persicaria type: *Polygonum persicaria, P. foliosum, P. hydropiper, P. lapathifolium, P. minus, P. mite*

Prunella type: *Prunella, Glechoma, Nepeta*

Typha latifolia type: *Typha latifolia, T. minima, T. shuttleworthii*

Valeriana officinalis type: *Valeriana officinalis, V. pyrenaica, V. repens, V. sativa, V. tuberosa*

Table 1 Plant taxonomic composition of pollen types with the affix 'type'.

sample name	GrN-no.	age (^{14}C yr BP)	(x/y-)coordinates and elevation of core location above Dutch Ordnance Datum (m)	depth below surface (cm)	material
Est I	12464	1860±60	150.413/429.842/+2.65	266–270*	strongly humic clay
Est II	12465	2190±60	150.416/429.817/+2.80	125–130*	strongly clayey *Phragmites* peat
Est III	12466	2310±60	150.531/429.814/+2.70	182–188*	strongly humic clay
Steendert I	12467	1890±60	152.230/428.940/+3.2	205–210	strongly humic clay

Table 2 List of radiocarbon ages.

* Note that the depth of the radiocarbon samples in the pollen diagrams (figs. 4, 6 and 7) has been slightly corrected. This is due to the fact that these samples were taken from separate cores, immediately adjacent to the pollen cores. Note further that the thickness of these samples as indicated by Janssen & Törnqvist (1991, fig. 3) is erroneous.

9 Stockmarr 1971.
10 Moore & Webb 1978.
11 Punt 1976; Clarke 1980; Clarke & Jones 1980; Punt 1984; Van Leeuwen *et al.* 1988. Also the work of Van Geel (1978) was used.

GEOMORPHOLOGY AND SEDIMENTS

Terminology and classification

The lithostratigraphic subdivision of the sediments in the area of study (figs. 2 and 3) essentially follows Berendsen.[12] The Betuwe Formation comprises all siliciclastic fluvial deposits including reworked peat. Autochthonous peat belongs to the Broek Formation. The Betuwe Formation is subdivided into a number of lithogenetic units,[13] namely:

1 stream belt deposits, including:
a channel deposits (sand or gravel);
b residual channel deposits (heavy, light or sandy (usually humic) clay);
c levee deposits (light or sandy clay);
2 crevasse-splay deposits (light or sandy clay or sand);
3 flood basin deposits (heavy (sometimes humic) clay);
4 dike breach deposits (heterogeneous sandy clay).

The residual channel deposits are of special interest in this study. They comprise according to Berendsen[14] all sediments (except peat) that have been deposited in the channel after it has been abandoned.

Detailed study of residual channel fills in several parts of the fluvial area made a new definition of the term residual channel deposits desirable. Residual channel deposits comprise siliciclastic deposits, usually calcareous, sometimes humic, heavy, light or sandy clay which are formed when there is still (suspended) sediment transport in a longitudinal direction through the residual channel. In many cases these sediments grade vertically into non-calcareous, heavy clay (flood basin deposits) which have subsequently been deposited as a sheet both in the residual channel and its surroundings. As well as these sediments, peat or gyttja, belonging to the Broek Formation, may contribute significantly to residual channel fills. It should be stressed that the widely used term 'channel-fill deposits'[15] has a different meaning, since it also contains part of the channel sand, which usually forms the primary fill of abandoned river channels and which can hardly be distinguished from the channel deposits.

Mapping

The Est stream ridge complex emerges from the Waal stream ridge southwest of Tiel and is again crossed by the Waal near Waardenburg (fig. 1). Various stream ridges in the Bommelerwaard, south of the Waal, must be regarded as continuations of the Est stream ridge complex.

Several residual channels occur in the area covered by the geological-geomorphological map (fig. 2). The most striking one, which can be traced for a distance of many kilometres has been studied in detail. In the key area the width of the residual channel is *c.* 80 m, whereas the surface level is 60–80 cm below the natural levees. In the upstream direction to the east, both the width and the meander wave length of the residual channel decrease markedly. This rapid change in morphology is also indicated on the soil map, sheet 39 W.[16] Also, the dimensions of the accompanying stream ridge change considerably in this direction. The width of the channel belt decreases to *c.* 50 m. Point bars are very narrow and sometimes almost lacking. The channel deposits of this stream ridge are rather thin (< 3 m). Apparently this channel stretch did not incise itself into the Pleistocene subsoil, in contrast to most other channels of the Est stream ridge complex. The top of the Pleistocene sand is found at a depth of 6–7 m below the surface in this area.[17]

Cross-sections

The cross-sections (fig. 3) show the rather complex nature of the residual channel fill. The underlying channel deposits consist of calcareous, gravelly, very coarse sands in the southern part of the cross-sections, whereas the sand is considerably finer in the northern part. The basal residual channel fill is characterized by calcareous, very dark coloured, humic (in the lowermost parts gyttja-like) light or heavy clay. Several beds of strongly clayey *Phragmites* peat are intercalated in these sediments. The peat in many cases is calcareous, and sometimes even slightly sandy. Vertically the residual channel deposits gradually merge into sterile heavy clay, rich in lime partly resulting from the presence of abundant shell remains. The uppermost sediments consist of non-calcareous heavy clay (flood basin deposits).

12 Berendsen 1982; 1984; 1985.
13 Berendsen 1982, 91; see also Törnqvist 1987.
14 Berendsen 1982, 101–2.
15 Reineck & Singh 1980, 292–4.
16 Stichting voor Bodemkartering 1973.
17 Verbraeck 1984.

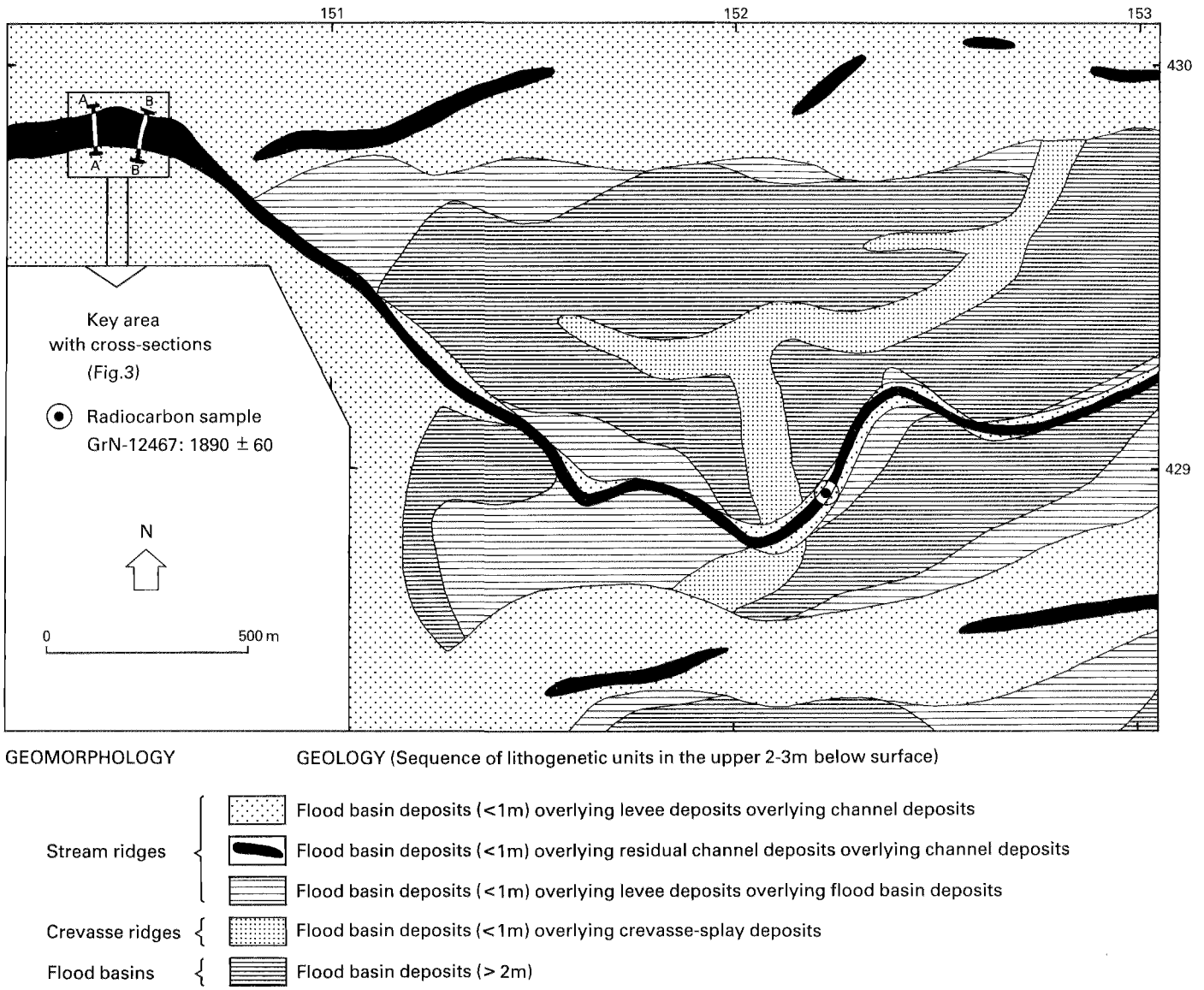


Figure 2 Geological-geomorphological map of the study area. Legend following Berendsen *et al.* 1986.

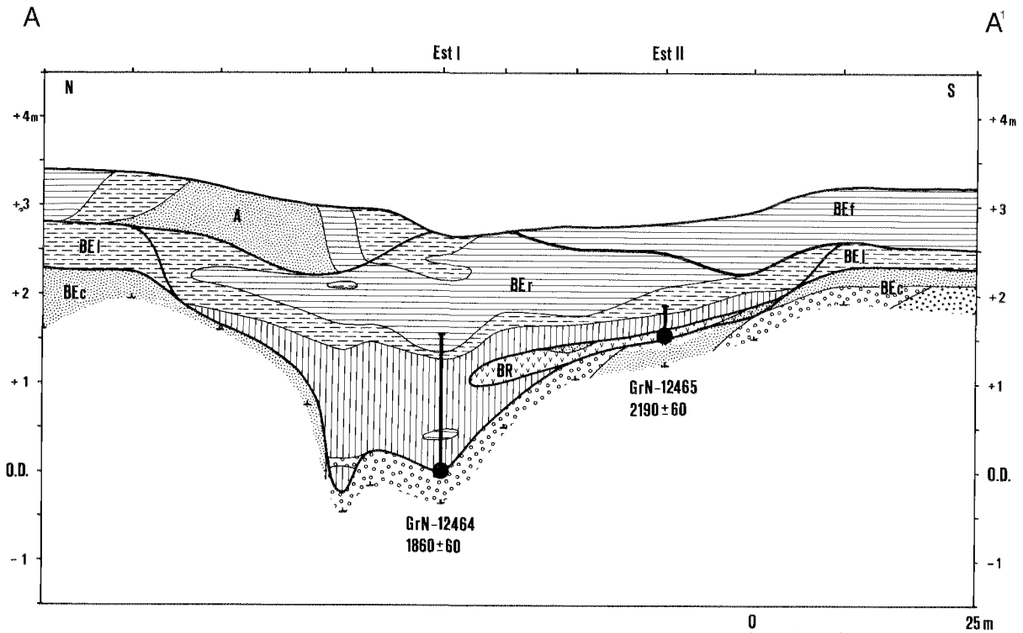
DATING AND PALAEOGEOGRAPHY

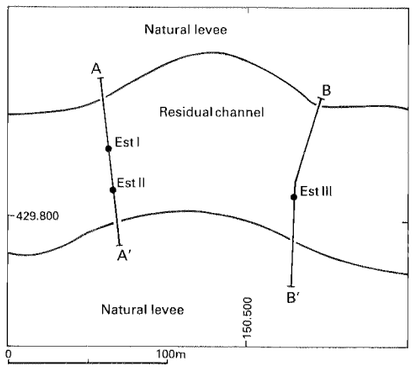
Palyno-stratigraphy

Earlier research[18] has already demonstrated that sediments in the fluvial area are likely to contain fluvially transported pollen. The interpretation of pollen diagrams can be especially hampered when strongly differing sediment types alternate (e.g., pure clay and pure peat).[19] In the study area, however, major disturbances due to this effect are not expected. Pollen of *Abies* and *Picea*, nearly all river-borne, has low and rather con-

18 Florschütz & Jonker 1939.

19 This has been shown convincingly by Van der Woude (1983, 20–3), who concluded that especially *Fagus, Abies, Picea, Pinus, Tilia* and to a lesser extent *Quercus* pollen may be sensitive to river transport.





LITHOLOGY

- Clayey peat
- Humic clay
- Sandy peat
- Heavy clay
- Light clay
- Sandy clay
- Fine sand
- Coarse sand
- Gravelly sand

LITHOSTRATIGRAPHY

Betuwe Formation

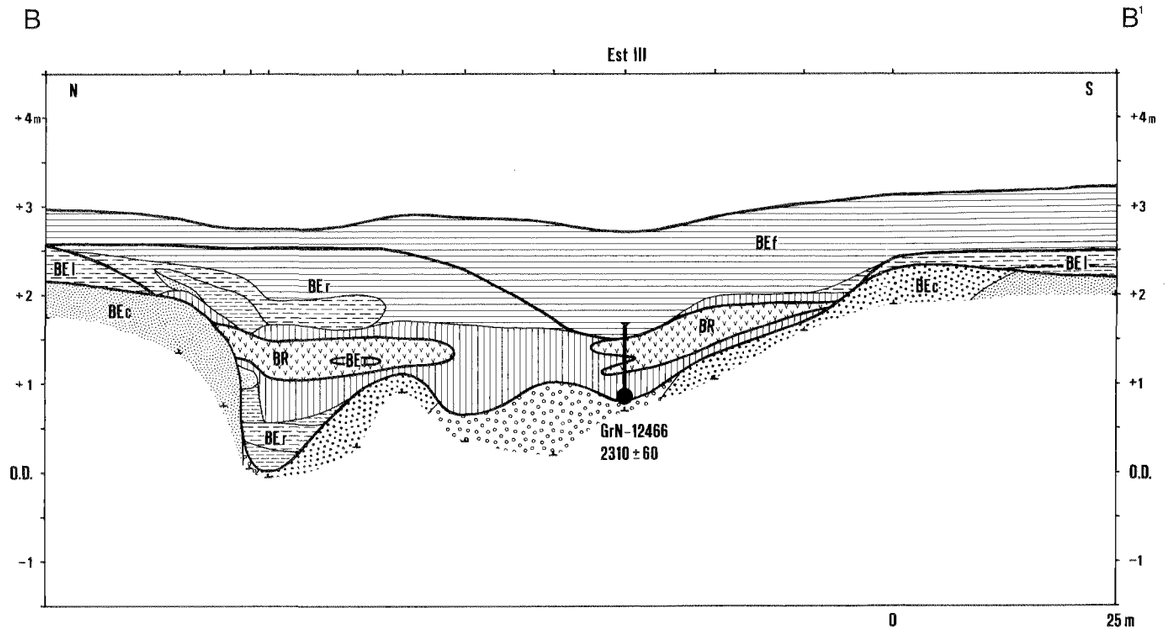
- BEc Channel deposits
- BEr Residual channel deposits
- BEl Levee deposits
- BEf Flood basin deposits

BR Broek Formation

A Strongly disturbed topsoil

- End of boring
- Pollen section
- Radiocarbon sample

Figure 3 Key area with detailed cross-sections across the major residual channel of the Est stream ridge complex. (See also the opposite page.)



stant values (see fig. 4). Furthermore, there are no very large differences in lithology within or between the cores, since all sediments have a high clay content.

The zonation of the pollen diagrams was meant to serve two goals. Firstly, the zones should form the basis for a reconstruction of regional vegetation changes. Secondly, synchronous zones were desired in order to establish a chronology, not only enabling relative time-correlation of the three cores, but also providing the possibility of detecting spatial differences in the former vegetation. Synchroneity of pollen zones becomes increasingly likely when the zonation is only based upon the curves of (extra-)regional pollen types and when correlation is made over short distances.[20]

These aims imply that a clear distinction between 'upland' (in this case: the stream ridge(s) and to a lesser degree the surrounding flood basins) and 'lowland' (the residual channel) pollen types is important, resulting in a distinction between regional and local pollen, respectively.[21] All (extra-)local pollen types, mostly belonging to taxa of aquatic or marsh communities are excluded from the pollen sum. An additional advantage of this distinction is that disturbing effects due to very high percentages of (extra-)local components can be avoided.[22] *Alnus* is included in the pollen sum because of its similar trend in the three diagrams and its moderate percentages (never exceeding 45%, see fig. 4), in spite of the fact that *Alnus* might be considered as a constituent of the marginal vegetation bordering the residual channel. The opposite holds true for *Salix*; both the curves and the percentages point to an (extra-) local origin of *Salix* pollen (fig. 6).[23] Therefore *Salix* is excluded from the pollen sum.

Since regional vegetation changes are in this case strongly related to human activity, the pollen zones are essentially based upon the AP/NAP ratio and the connected curves of the synanthropic pollen types. One could therefore speak of an 'anthropo-stratigraphy'.[24]

20 Janssen 1981, 169; see also Janssen & Törnqvist 1991.
21 Janssen 1966; 1973.
22 cf. Janssen 1959.
23 cf. Kalis 1984, 294–5.
24 Janssen 1980.

The zones can be regarded as regional zones[25] with the prefix 'EST'.
A percentage diagram including the regional pollen types is given in fig. 4. In order to facilitate direct comparison, the arrangement of regional pollen types is similar in the three diagrams. The distinction of pollen groups will be elucidated later.
Zone EST-A is characterized by relatively high NAP values and a strong representation of synanthropic pollen types. In zone EST-B a marked increase in the AP/NAP ratio can be observed, whereas in zone EST-C comparable pollen assemblages to those of zone EST-A are present. Zone EST-D is characterized by a second increase of NAP and synanthropic pollen types.
The complete set of pollen zones is only present in diagram Est I, although zone EST-A is represented only by the lowermost assemblage. Synchroneity of the pollen-assemblage zones is confirmed by the similar trend of a number of curves.[26] The substantial presence of zone EST-A in diagrams Est II and Est III suggests that the basal residual channel fill in these cores is older than in core Est I.

Radiocarbon dating
The presence of humic or peaty sediments directly overlying channel deposits offered many opportunities for radiocarbon dating of the residual channel fill. In connection with the pollen sections, three radiocarbon ages were obtained in the key area (fig. 3 and table 2). In view of the organic matter content of these samples the results, obtained from the humin fraction, can be considered reliable.[27] The lowermost sample (Est I), located in the northern part of the residual channel revealed a significantly younger age (GrN-12464: 1860±60 yr BP) than samples Est II and Est III (GrN-12465: 2190±60 and GrN-12466: 2310±60 yr BP) from the southern part of the cross-sections. All radiocarbon ages are in agreement with the relative ages derived from the pollen zones.
An age of 1890±60 yr BP (GrN-12467) was obtained from the basal part of the residual channel fill directly overlying sandy channel deposits in the eastern part of the residual channel (for location see fig. 2).

Palaeogeographic evolution
The dating results can be explained satisfactorily by assuming an infilling process of the residual channel in two stages. The basal part of the sediments in the southern part of the residual channel fill was formed during phase 1. A subsequent reactivation of the channel caused erosion in the northern part, followed by a new infilling (phase 2) after the discharge had decreased again. In fig. 5 a cross-section indicating isochrons in the residual channel fill is given, clearly demonstrating the fluvial incision in the northern part of the residual channel. The incision can hardly be deduced from the lithostratigraphy of the residual channel fill; only the sharp transition at the pollen-zone boundary EST-A/B in core Est III may be related to this event. Reactivation of a residual channel has also been observed by De Jong[28]; in that case as many as three infilling phases could be distinguished.
In the previous chapter the distinct change in morphology of the residual channel in the area east of the key area was already pointed out. The radiocarbon age obtained here corresponds neatly to the basal age of infilling phase 2 in the residual channel in the key area. It is likely that the northern branch of the Est stream ridge complex, following the route Passewaaij-Est-Waardenburg (see fig. 1) was active during the period before *c.* 2300 yr BP. Avulsion caused the formation of a wide residual channel around this time. It is tentatively proposed that this avulsion caused the begin of development of the Linge stream ridge (fig. 1). Around or shortly after the beginning of the Christian Era, a renewed, but much smaller activity in the Est stream ridge complex caused erosion of the residual channel fill in the key area and in the area downstream of it. The narrow channel belt in the upstream area was formed during this period. The upstream continuation of the residual channel in the large northern branch has only been observed in a few scattered boreholes. Probably the residual channel silted up rapidly in this area, due to its proximal position.
The infilling with calcareous residual channel deposits and later with flood basin deposits continued for a long period. According to the palynological data (see below)

25 An amalgamation of site pollen-assemblage zones (Janssen & Törnqvist 1991).
26 e.g. *Alnus*, *Quercus*, *Daucus*, *Fraxinus* and *Rumex* cf. *R. crispus*; see also Janssen & Törnqvist 1991.
27 cf. Roeleveld & Steenbeek 1990.
28 De Jong 1970–1.

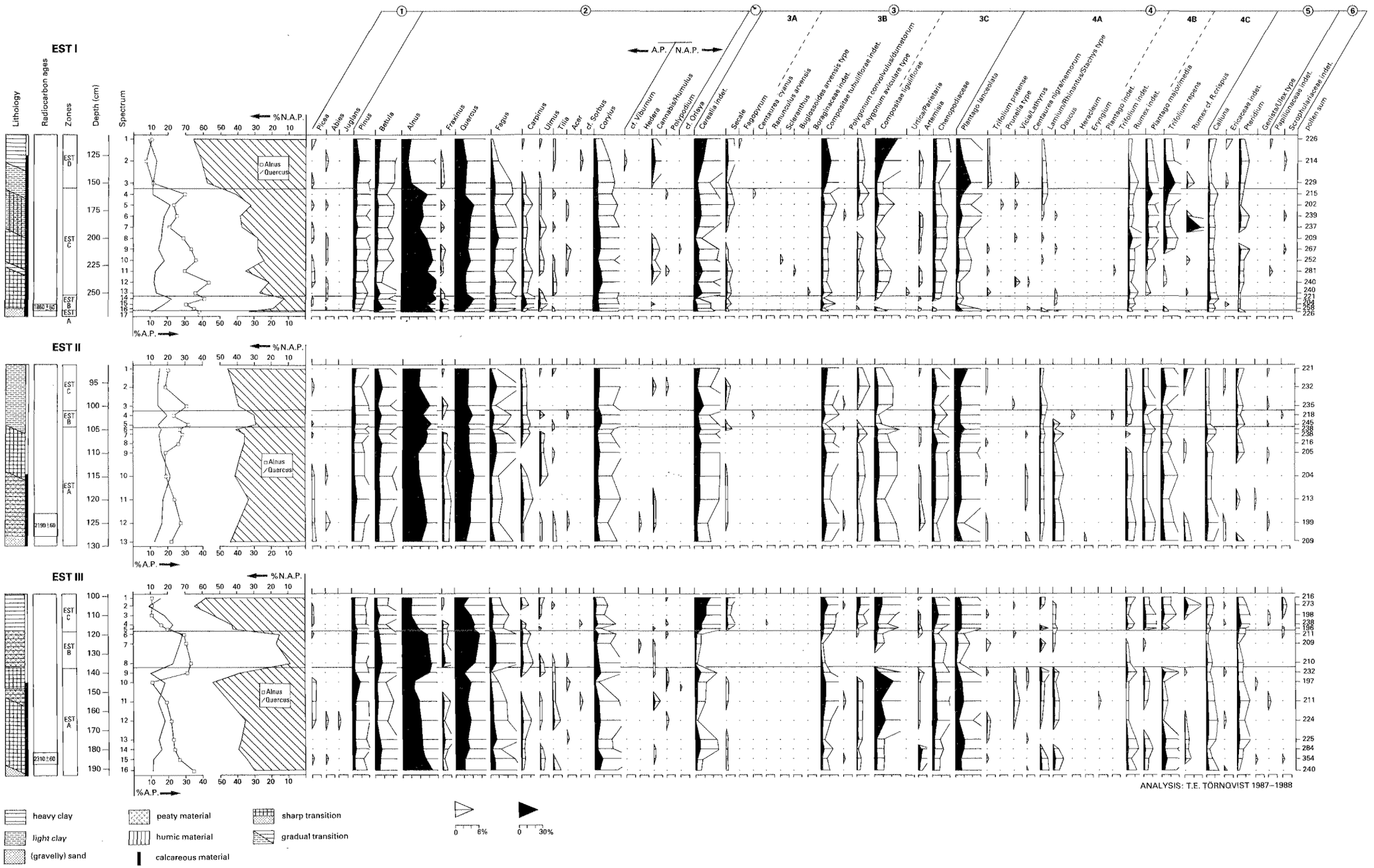


Figure 4 Pollen percentage diagrams Est I, Est II and Est III (regional pollen types).

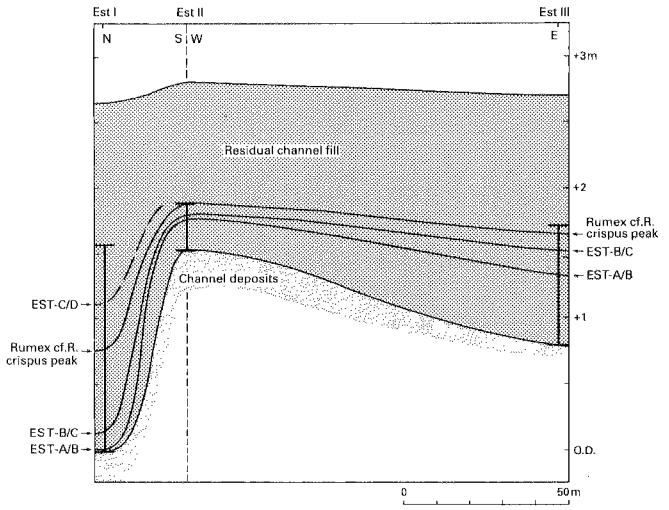


Figure 5 Isochrons in the residual channel fill in the key area.

the upper sediments in core Est I may have been formed during the Late Middle Ages, indicating rapid sedimentation in the residual channel even after the embankment of the rivers. This is in agreement with a radiocarbon age of 460±90 yr BP from a residual channel near Driel in the Overbetuwe, derived from a depth of 75–77 cm.[29]

PALAEOECOLOGICAL DEVELOPMENT OF THE RESIDUAL CHANNEL

The local pollen percentage diagrams (fig. 6) consist of a stratigraphical arrangement of local pollen types. The resulting pollen groups are not in all cases ecologically homogeneous, indicating that the pollen assemblages are only partly autochthonous. However, a general hydrosere can be deduced from the stratigraphic arrangement.[30] The term hydrosere is used here in a broad sense, including both the slow vegetational succession resulting from autogenic infilling processes as well as changes governed by external factors.

Results and interpretation

In general, two major vegetation units can be inferred from the local pollen assemblages: aquatic communities (*Potametea*) and marsh communities (*Phragmitetea*).

In the lower parts of zone EST-A in the diagrams Est II and Est III, pollen of aquatic plants (especially *Nymphoides, Myriophyllum verticillatum, Potamogeton, Nuphar* and Ranunculaceae indet.) is important. Pollen of *Nymphoides* is almost exclusively present in the lower part of zone EST-A. *Nymphoides peltata* is characteristic for the association of the *Polygoneto-Nymphoidetum*,[31] a community occurring on mineral soils in eutrophic, alkaline, gently flowing water with a depth of 5–300 cm. Probably this community was present in the residual channel during its early stage, when there was still an open connection with the upstream rivers. High values of Ranunculaceae pollen might be a result of the presence of a *Ranunculaceae circinati*. This community can be found in comparable environments as the *Nymphoidetum peltatae*, although in shallower water.[32] Apart from these communities, some other syntaxa belonging to the *Potametea*, namely the *Potameto-Nupharetum* and perhaps also the *Potametum lucentis* may have occurred in the residual channel.

In the upper part of zone EST-A of diagram Est III, pollen of *Stratiotes* is abundant, possibly resulting from the presence of a *Hydrocharito-Stratiotetum*. This community is characteristic for sheltered habitats in shallow, stagnant water.[33] *Stratiotes aloides* grows very fast which can give rise to a rapid accumulation of organic deposits.[34] This may help to explain the extremely low pollen concentrations in this part of core Est III (see fig. 7).

In the diagrams Est II and Est III, many pollen types of taxa that belong to the *Phragmitetea* dominate strongly in the upper part of zone EST-A, indicating that a dense marsh vegetation developed at these spots. Numerous pollen types can (at least partly) be related to this type of vegetation (e.g., Gramineae indet., Cyperaceae, *Sparganium, Typha latifolia* type, *T. angustifolia*,

29 Teunissen 1986.
30 The vegetational development will be discussed following the nomenclature of Westhoff & Den Held (1969).
31 The *Polygonetum-Nymphoidetum* discussed by Van Donselaar (1961) is synonymous to the *Nymphoidetum peltatae* (Westhoff & Den Held 1969).
32 Van Donselaar 1961, 22.
33 Van Donselaar 1961, 20.
34 Westhoff *et al.* 1971, 60.

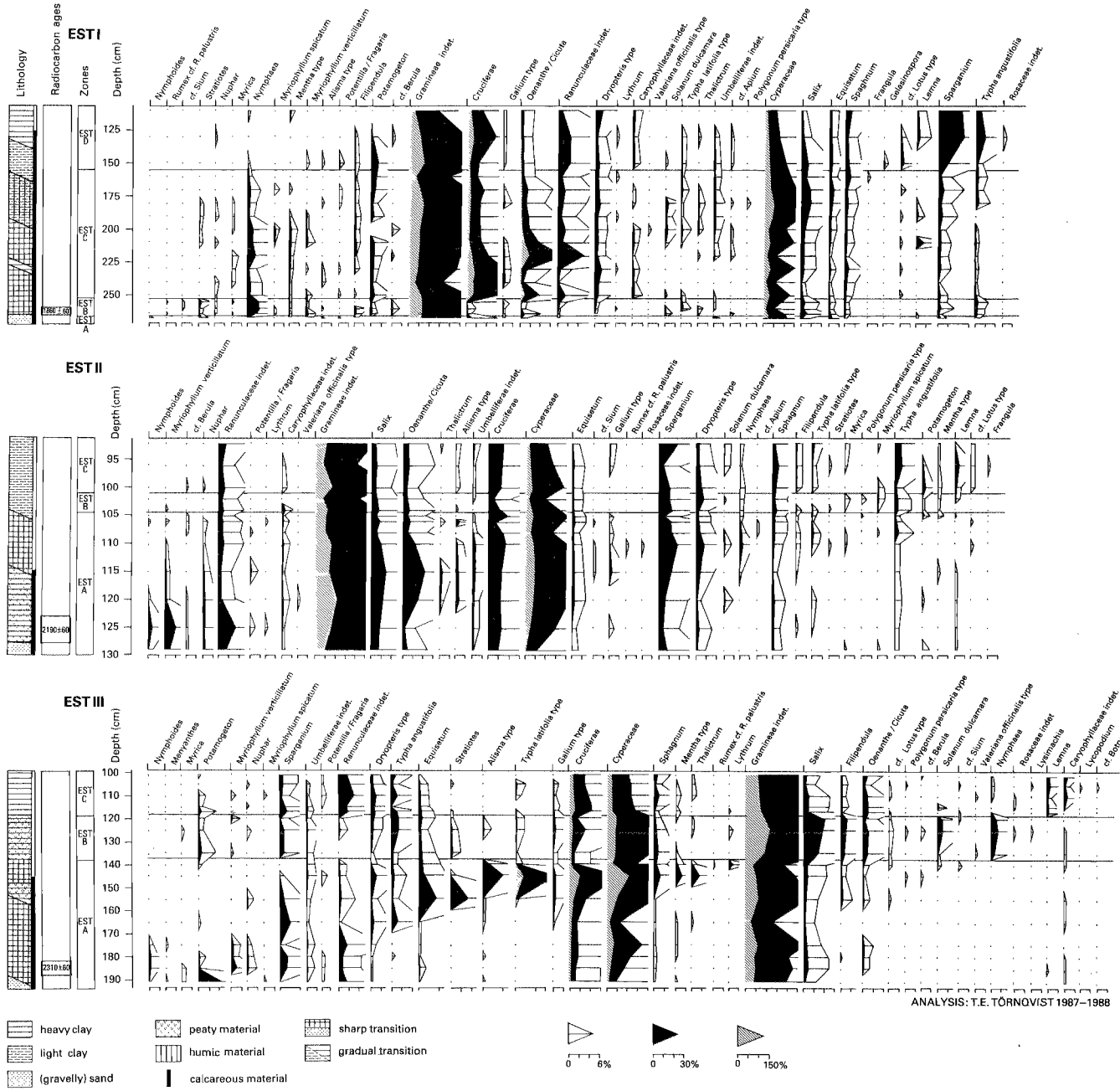


Figure 6 Pollen percentage diagrams Est I, Est II and Est III (local pollen types).

Equisetum, *Alisma* type, Cruciferae, *Galium* type, *Dryopteris* type, *Lemna*, *Mentha* type, cf. *Sium*, *Solanum dulcamara* and *Oenanthe/Cicuta*). In the upper spectra of zone EST-A and in zone EST-B the values of the aquatic plants increase again in the diagrams Est III and to a lesser extent Est II (notably *Potamogeton*, *Myriophyllum verticillatum*, *M. spicatum*, *Nuphar*, *Nymphaea* and *Stratiotes*). This indicates a break in the hydrosere, leading to replacement of *Phragmitetea* by aquatic communities. This transition corresponds closely to the beginning of infilling phase 2 of the residual channel. Obviously the temporary reactivation of the channel is responsible for this phenomenon.

The most conspicuous presence of *Potametea* during infilling phase 2 can of course be inferred from diagram Est I, from this moment on representing the deepest part of the residual channel (see fig. 5). Probably the aquatic communities were mainly represented by a *Potameto-Nupharetum*, with perhaps a *Potametum lucentis* in the deepest parts of the residual channel. A remarkable difference with the pollen assemblages from the beginning of infilling phase 1 are the high values of *Nymphaea* in combination with the absence of *Nymphoides*, pointing to more stable conditions.[35] In the marginal parts of the residual channel (cores Est II and Est III) the *Phragmitetea* dominate already shortly after the start of infilling phase 2, whereas in the central part the pollen types belonging to the *Potametea* are almost absent only in zone EST-D.

Some local pollen types can be related to communities directly bordering the residual channel. At the margins of the residual channel a willow shrub (*Salicion albae*) was present. This type of vegetation is especially characteristic for habitats with variable water levels, like river banks.[36] High values of *Salix* pollen can be observed in many sections from residual channels.[37] The herb layer of the *Salicion albae* is comparable to the *Valeriano-Filipenduletum*.[38] In the diagrams from Est the curves of *Salix*, *Filipendula*, *Lythrum* and the *Valeriana officinalis* type generally show similar trends. Possibly a *Valeriano-Filipenduletum* developed at places where the willow vegetation was relatively open.[39]

REGIONAL VEGETATION DEVELOPMENT

The regional pollen types originate from taxa belonging to a diversity of plant communities. A strict stratigraphic arrangement of regional pollen types will therefore result in ecologically heterogeneous groups.[40] In order to facilitate the interpretation of regional vegetation development a classification of pollen types into ecological-physiognomic groups was made. Six physiognomic units were subdivided as far as possible into syntaxonomic units (table 3).[41]

Development of the anthropogenic vegetation

The vegetational development of this area during the Late Holocene is strongly related to human activities. In fact, the zones can be interpreted more or less directly in terms of cultural phases and periods of recovery of the forest.

The pollen types belonging to group 5 (especially *Calluna* and *Pteridium*; table 3) are clearly present throughout the diagrams (fig. 4). On ecological grounds it is considered most likely that this is a reflection of heath communities outside the fluvial area. In diagrams from the cover sand area south of the Meuse this group is already reaching high values from *c.* 3000 yr BP onwards.[42]

In zone EST-A a substantial anthropogenic influence is already evident. The AP/NAP-ratio suggests that a considerable part of the stream ridge was more or less cultivated and consisted of fields, pastures as well as ruderal and trampled plant communities. Calibrated radiocarbon ages[43] of 460–320 cal BC (Est III) and 345–190 cal BC (Est II) indicate that the base of zone EST-A represents the latest part of the Middle Iron Age. The regu-

35 cf. Van der Voo & Westhoff 1961, 202 and 224–6.
36 Kop 1961, 93–4.
37 e.g., the diagrams from Baal and Ressen (Teunissen 1986) and Zijderveld (De Jong 1970–71).
38 Kop 1961, 97.
39 cf. Kop 1961, 97.
40 Janssen 1972, 416.
41 Also here the nomenclature of Westhoff & Den Held (1969) was followed, resulting in a classification that strongly resembles that of Janssen (1972) and Smit & Janssen (1983).
42 Janssen 1972; Smit & Janssen 1983.
43 Radiocarbon ages were calibrated with the aid of the programme of Van der Plicht & Mook (1989) using a 100 year moving average smoothed version of the Stuiver & Pearson (1986) calibration curve. Hans van der Plicht kindly put a new version of his calibration programme at my disposal.

Ecological-physiognomic group 1: 'long distance' group
Pollen types: *Picea*, *Abies*, *Juglans*, cf. *Orlaya*
Remarks: Taxa not belonging to the present native flora, and probably mainly present as a result of fluvial transport. Consequently this group is ecologically indeterminate. Cf. *Orlaya* could also belong to group 3B.

Ecological-physiognomic group 2: forest communities
Pollen types: *Pinus*, *Betula*, *Alnus*, *Fraxinus*, *Quercus*, *Fagus*, *Carpinus*, *Ulmus*, *Tilia*, *Acer*, cf. *Sorbus*, *Corylus*, cf. *Viburnum*, *Hedera*, *Cannabis/Humulus*, *Polypodium*
Remarks: Trees, shrubs and herbs, predominantly belonging to forest vegetation types. *Cannabis/Humulus* could also belong to group 3A (cf. Janssen 1972, 419).

Ecological-physiognomic group 3: fields/ruderal communities

Subgroup 3A: Cultivated taxa
Pollen types: Cerealia indet., *Secale*, *Fagopyrum*

Subgroup 3B: *Secalietea*
Pollen types: *Centaurea cyanus*, *Ranunculus arvensis*, *Scleranthus*, *Buglossoides arvensis* type, Boraginaceae indet., Compositae tubuliflorae indet., *Polygonum convolvulus/dumetorum*, *Polygonum aviculare* type
Remarks: Weed communities of fields. Compositae tubuliflorae indet. were included in this group because they mainly consist of the *Anthemis* type (*Anthemis*, *Achillea*, *Chrysanthemum*, *Matricaria*, *Tanacetum*; Janssen 1972, 418). The *Polygonum aviculare* type could also belong to group 4C (cf. Janssen 1972, 418).

Subgroup 3C: *Chenopodietea/Artemisietea vulgaris*
Pollen types: Compositae liguliflorae, *Urtica/Parietaria*, *Artemisia*, Chenopodiaceae
Remarks: Ruderal communities.

Ecological-physiognomic group 4: pastures/communities subjected to trampling

Subgroup 4A: *Molinio-Arrhenateretea*
Pollen types: *Plantago lanceolata*, *Trifolium pratense*, *Prunella* type, *Vicia/Lathyrus*, *Centaurea nigra/nemorum*, *Lamium/Rhinantus/Stachys* type, *Daucus*, *Heracleum*, *Eryngium*
Remarks: Damp, relatively nutrient-rich pastures and 'Hochstauden' communities.

Subgroup 4B: *Molinio-Arrhenateretea/Plantaginetalia majoris*
Pollen types: *Plantago* indet., *Trifolium* indet., *Rumex* indet.
Remarks: Transitional between group 4A and 4C.

Subgroup 4C: *Plantaginetalia majoris*
Pollen types: *Plantago major/media*, *Trifolium repens*, *Rumex* cf. *R. crispus*
Remarks: Communities of disturbed environments.

Ecological-physiognomic group 5: heath communities (*Calluno-Genistion pilosae*)
Pollen types: *Calluna*, Ericaceae indet., *Pteridium*, *Genista/Ulex* type
Remarks: Degradation types of forests on nutrient-poor and acid soils, conditioned by burning, grazing etc.

Ecological-physiognomic group 6: ecologically indeterminate group
Pollen types: Papilionaceae indet., Scrophulariaceae indet.
Remarks: Remaining taxa which cannot be classified.

Table 3 Composition and characterization of pollen groups.

lar presence of *Secale* pollen from the base of zone EST-A onwards is in accordance with earlier observations[44] and supports the idea that small-scale cultivation of rye started in the Netherlands before the Roman Period. The transition EST-A/B was radiocarbon dated in core Est 1, and corresponds to a sideral age range of 75–215 cal AD. In zone EST-B the area occupied by open vegetation types decreases in favour of forest. Archaeological, historical and toponymic research has shown that the occupation of the fluvial area decreased dramatically during the second half of the 3rd century AD.[45] This was primarily due to the recurrent invasions of Germanic tribes (the Franks) south of the Rhine and the subsequent abandonment of the 'limes' by the Romans.[46] It can therefore be concluded that the upper part of zone EST-A represents the culmination of the Roman Era. The diagrams from Est give no indication of a gradual expansion of the forest starting in the Late Iron Age. This was observed by Willems[47] in the eastern part of the fluvial area and explained by assuming a partial shift from cattle raising to arable farming. A decline in grazing activity in the flood basins would lead to a recovery

44 Van Zeist 1976; Van Geel 1978, 15; Middeldorp 1986, 17.
45 Modderman 1955; Willems 1984; Henderikx 1986.
46 Willems 1984, 271–3; Henderikx 1986, 478.
47 Willems 1984, Fig. 137.

of the (*Alnus/Fraxinus*-)forests in these areas.[48] Indeed the *Alnus* values do show a marked increase in the upper part of zone EST-A, but it is questionable whether the flood basins already played such an important role for agricultural purposes during this period. In the next paragraph it will be shown that this phenomenon can also be explained in a different way.

A rapid, although later more gradual increase of agricultural activities, characterizes zone EST-C. According to Modderman,[49] no important increase in the population size occurred before the Carolingian period. Willems[50] envisages the start of a new cycle of development at the end of the 6th century AD. Henderikx,[51] however, states that the level of habitation may already have been increasing by around AD 500. Although the transition EST-B/C has not been radiocarbon dated, the diagrams support the hypothesis that the 'cultural minimum' did not last longer than a few centuries, if it is accepted that the accumulation rate has not varied too much. This cultural minimum can also be recognized in a diagram from Ressen,[52] where there are also indications that this phase was relatively short. In the diagrams 'Ospelse Peel' and 'De Moerkuilen'[53] the onset of this phase closely corresponds to the radiocarbon age from Est (70–160 cal AD and 230–355 cal AD, respectively). The subsequent increase of the NAP, however, occurs much later (740–845 cal AD and later than 1030–1150 cal AD, respectively). Obviously it lasted considerably longer in the cover sand area south of the Meuse until human pressure on the landscape reached the same level as during the Roman Era.

The boundary EST-C/D is characterized by a further expansion of the cultivated area. The decrease of *Alnus* values may indicate that deforestation was more or less completed and that from now on the flood basins began to be reclaimed. In this area, this took place in the 11th century AD.[54] The 11th century also marks the beginning of the cope-reclamations, i.e. the reclamation of the low-lying peat areas in the west-central Netherlands.

The impact of Man on the vegetation can also be deduced from a few curves in the local percentage diagrams. Pollen of Cruciferae shows a strong positive correlation with the cultural phases,[55] indicating that a major part of the Cruciferae pollen is produced by weeds. In the diagrams Est I and Est III a strong decrease of *Salix* pollen at the transition EST-B/C may very well be a result from cutting of the *Salix* shrub.

From an archaeological point of view, the Est stream ridge complex has always been a 'blank area'. This has been explained by the excess of living space elsewhere in the region, as well as the relatively isolated situation of these stream ridges.[56] From palynological evidence however, it seems clear that the area was cultivated intensively at least since the Middle Iron Age. Attributing the lack of archaeological finds to a 'Forschungslücke'[57] seems therefore more appropriate. In fact the Tielerwaard, unlike many other parts of the fluvial area, was never subjected to a systematic archaeological survey within the framework of soil mapping activities by the Netherlands Soil Survey Institute. Recent surveys have however shown that numerous archaeological sites are present in this area. Dwelling places from the Iron Age and the Roman Period have been identified immediately south of the key area.[58]

Development of the forest vegetation

Despite the fact that residual channel fills are excellent locations for reconstructing the natural forest vegetation on stream ridges[59] the possibilities in the area of study are rather problematic. The strong impact of Man not only reduced the area occupied by forest, but possibly also changed its composition, due to selective felling of trees. Nevertheless, an attempt is made to get a general idea of forest composition, using data discussed by Kalis[60] on the relation between present-day vegetation and pollen percentages in surface samples (although these apply more directly for mountainous areas) and autecological criteria. It is tentatively proposed that *Quercus, Fagus, Corylus, Acer, Sorbus* and *Ulmus* (in this order) were constituents of the stream ridge forest. *Carpinus* and *Tilia* could also have been

48 Willems 1984, 266.
49 Modderman 1955.
50 Willems 1984, 281.
51 Henderikx 1986, 501.
52 Teunissen 1986.
53 Janssen & Ten Hove 1971 and Janssen 1972, respectively.
54 Van Tent 1984, 261.
55 cf. Teunissen 1986, 17.
56 Verbraeck 1984, 228.
57 Van Tent 1984, 261.
58 Erik Verhelst, personal communication.
59 Törnqvist 1989.
60 Kalis 1984.

part of it, although the relatively low percentages may also indicate an extra-regional origin. According to Van der Woude[61] *Quercus*, *Corylus*, *Ulmus* and *Fraxinus* were part of the forests on stream ridges in the perimarine area. For a more upstream part of the fluvial area the same genera, as well as *Tilia* and *Betula* have been mentioned.[62]

Alnus was mainly present in the flood basins. The values of *Alnus* are probably strongly related to the hydrological conditions in the flood basins. During infilling phase 1 of the residual channel fluvial activity in the surrounding area was low, leading to lowering water levels in the flood basins and consequently decreasing *Alnus* pollen percentages. The development of the small stream ridge in the upper part of zone EST-A gave rise to paludification of the flood basins, reflected by the expansion of *Alnus* populations, again followed by a gradual retreat. *Fraxinus* trees probably grew in the transitional zones between stream ridges and flood basins. *Betula* trees could be a constituent of the wetland forests in the flood basins, but the low percentages here also point to a primary source outside the fluvial area.

Differences between the three diagrams

Although the equal trends in the three diagrams enable a synchronous zonation and a general interpretation of regional vegetational changes, there are also conspicuous differences, mainly concerning the pollen percentages. These differences can be explained by statistical variation, spatial differences in the upland vegetation and differences in pollen deposition, due to the 'Tauber'-effect. The latter factor needs further explanation. Pollen deposition in a basin surrounded by closed deciduous forest consists of a trunk-space component, a canopy component and a rainout component,[63] more or less comparable to extra-local, regional and extra-regional pollen deposition respectively.[64] Tauber[65] showed that the canopy component will dominate in the central part of the basin, whereas along the margins the trunk-space component is especially important.

The indistinct nature of pollen zones (especially zone EST-B) in diagram Est II can be explained by a relatively low canopy component and a high trunk-space component. The high values of pollen types belonging to

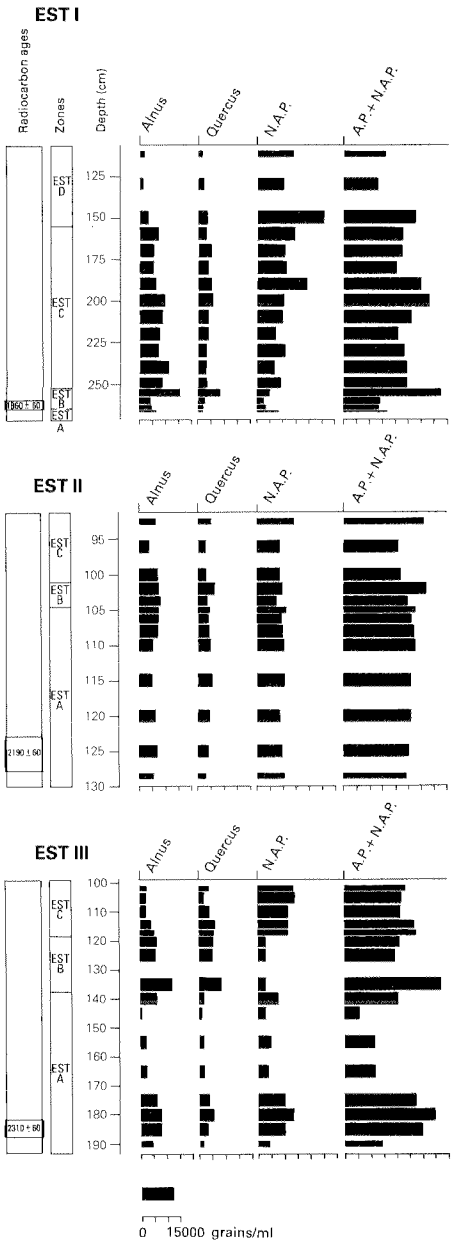


Figure 7 Pollen concentration diagrams Est I, Est II and Est III (selected pollen types).

61 Van der Woude 1983, 79, 85, 90–1 and 95.
62 Hofstede *et al.* 1989.
63 Tauber 1965.
64 Janssen 1966; 1973.
65 Tauber 1967, 134.

group 4 indicate that pastures and communities subjected to trampling were situated close to this coring spot also during this period. The strong fluctuations in the AP/NAP-ratio of diagram Est III suggest important changes in vegetation around this coring spot. Zone EST-A shows a dominance of ruderal communities, whereas during the time represented by zone EST-B cultural vegetation was probably completely absent here. In zone EST-C a marked expansion of mainly pollen types belonging to group 3A indicate that this part of the stream ridge was covered to a large degree by agricultural fields.

Pollen concentration diagrams

The pollen concentration diagrams (fig. 7), containing histograms of *Alnus*, *Quercus* and total NAP, show that major changes in the percentage diagrams are real phenomena and are not affected by disturbing 'percentage effects'.

The pollen concentrations of total AP + NAP not only reflect differences in sediment-accumulation rate but are also related to differences in pollen influx, resulting from large-scale vegetational changes. These are recorded by decreasing pollen concentrations in zone EST-A of diagram Est III and zone EST-D of diagram Est I. A higher sedimentation rate of the basal residual channel deposits is shown by the relatively low pollen concentrations in diagrams Est I and Est III.

The sediment-accumulation rate must have been much larger in core Est I than in both other cores, assuming that no major sedimentary hiatuses are present in cores Est II and Est III. However, this is not expressed at all in the pollen concentrations. In zone EST-B and the lower part of zone EST-C (below the *Rumex* cf. *R. crispus* peak) average pollen concentrations amount to 24 500 (Est I), 26 000 (Est II) and 25 000 (Est III) grains per ml. Pollen influx must have been considerably lower in cores Est II and Est III than in core Est I. This can be explained by the low amount of pollen belonging to the canopy component at these sites. One would expect, however, that the influx from the trunk space would compensate for this deficiency. Perhaps a considerable part of the trunk-space component was efficiently filtered by *Salix* shrub,[66] at that time directly bordering the residual channel.

66 cf. Tauber 1965, 38–9.

CONCLUDING REMARKS

This study demonstrates that temporal and spatial vegetational changes in the area of study are mainly determined by fluctuations in human and fluvial activity. Human activity affects a wider area (mainly the stream ridges) and is reflected by synchronous pollen trends in all pollen diagrams, based on regional pollen types. Fluvial activity is mainly reflected in the residual channel from which the pollen sections derive. Hence fluvial processes, which essentially give rise to fluctuations of flow velocity, erosion and sedimentation are especially recorded by fluctuations in the local pollen types. In this way it is demonstrated that palynology can be of value in the reconstruction of the palaeogeomorphological development.

Furthermore, this investigation shows that human activity has been intensive in this part of the fluvial area (at least since the Middle Iron Age) despite the fact that only a few archaeological finds from this region have been reported. Although the 'Dark Ages' at the end of the Roman Period are clearly represented in the pollen diagrams, it is argued that the duration of this period in the fluvial area may have been relatively short, at least shorter than in the cover sand area in the southern Netherlands.

Comparison of several closely spaced pollen sections from one basin has proven to be extremely fruitful. Firstly, this approach enabled the establishment of a sound relative chronology for the study area, which was especially useful for reconstructing the sedimentary history of the residual channel fill. Furthermore it opened up the possibility to detect spatial vegetational patterns; both on the local scale (various hydroseral plant communities in the residual channel) and on the extra-local and regional scale (the occurrence of more or less human-influenced plant communities along the margins of the residual channel as well as on the surrounding stream ridge).

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H.J.A. BERENDSEN[1]

River Courses in the Central Netherlands during the Roman Period

Keywords: ^{14}C-dating, river development, Roman Period, central Netherlands, 22 references.

Abstract During the Roman Period, probably between AD 200 and 300, a major change in the river courses in the central Netherlands occurred. At the same time peat formation started in the river channels that were abandoned. Increasing sedimentation near the new river channels and a standstill near the old channels were both part of the same process. Occupation is found only near the river channels that were abandoned by the end of the Roman Period.

The central Netherlands' river area is essentially made up of stream ridges (in Dutch, singular: *stroomrug*) and river basins, that were formed by river branches of the Rhine and the Meuse during the Holocene. The former river systems may be dated by a variety of means. A discussion of virtually all presently available methods was given by the author in his thesis.[2] To the archaeologist, methods resulting in dates that can be compared with archaeological datings are the most relevant. These methods include: pollen analysis, radiocarbon dating, dendrochronological dating, and dating on the basis of historical evidence. This paper is restricted to the evaluation of the radiocarbon dates that are now available from the river district around the Roman Period.
Although radiocarbon dating from this period is generally considered to be less accurate than the archaeological datings, the dating results are quite remarkable. They show that the classical idea, that is of the Roman Period being a period of standstill in the fluvial sedimentation (and hence a 'dry period'), may have to be reconsidered. The lithological evidence from the river district does not permit such conclusions. A more dynamic concept of fluvial activity suggests that 'wet' and 'dry' conditions occurred simultaneously, although there may also be a superimposed climatic effect.

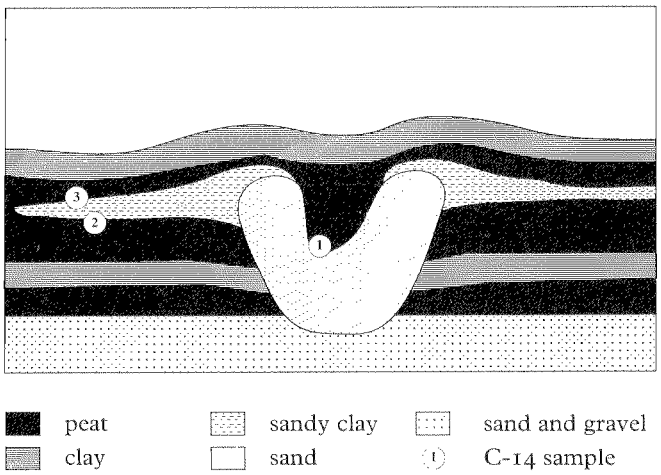

Figure 1 The principle of radiocarbon dating of former river channels (after Berendsen 1982). Legend: 1 residual channel dating; 2 flank dating of the beginning of sedimentation; 3 flank dating of the end of sedimentation.

DATING METHODS

In the central Netherlands many ^{14}C-datings have been carried out in order to determine the age of former river systems. Generally, three different kinds of datings are recognized (fig. 1):[3]

1 Dr. H.J.A. Berendsen, University of Utrecht, Dept. of Physical Geography, Heidelberglaan 2, P.O. Box 80115, 3508 TC Utrecht, The Netherlands.

2 Berendsen 1982.
3 Berendsen 1982.

1 Residual channel datings. These are datings of the base of peat in residual river channels (fig. 1: 1). Peat formation in residual channels occurs when the channel depth is less than 2 m and the main current follows a different course, so that transportation of sand in the residual channel no longer takes place. Since water is permanently present in the meandering river channels, peat formation is assumed to start immediately after the channel is abandoned by the river. Sample locations are selected where peat directly overlies river sand.
2 Flank datings for the beginning of sedimentation. The top of the peat layer, underlying the oldest fluvial sediments of the river system is dated (fig. 1: 2). Several problems may occur in selecting samples that correctly represent the event to be dated: a. it is not always easy to ascertain whether the clay layers were indeed deposited by the river system to be dated; very detailed cross sections may be necessary to reveal lateral selection of grain size in the sediments; b. there may be a time lag between peat formation and the sedimentation of clay; c. connected with the sedimentation of clay, erosion of the top of the peat layer may have occurred. Both b. and c. result in a hiatus between peat formation and sedimentation of clay. This would result in only a maximum age for the deposition of the clay being given. In order to minimize the effect, only gradual transitions of peat to clay should be selected for sampling. Also, various datings from different locations can help.
3 Flank datings for the end of sedimentation. Peat on top of fluvial basin clay is dated (fig. 1: 3). The main problem involved is, that there may be a time lag between the end of the sedimentation of clay and the beginning of peat formation. Especially near stream ridges a hiatus may occur; it has been shown that this can be of considerable duration.[4]
Datings according to these principles have been carried out by various authors.[5] Locations, sources and meaning (in terms of residual channel or flank datings) of the presently available radiocarbon dates around the Roman Period are summarized in table 1. Relevant dates have been selected from the time span 2500 to 1000 BP.

4 Van Dijk, Berendsen & Roeleveld 1991.
5 Notably by: Pons 1957; Verbraeck 1970; 1984; Berendsen 1982; 1986; Willems 1986; Teunissen 1990.
6 Berendsen 1982; later their validity was extensively discussed in Berendsen 1984.
7 Faessen 1991.
8 Berendsen 1986; Verbraeck 1984.

RESULTS

Flank datings for the beginning of sedimentation show that the following rivers came into existence during or shortly after the Roman Period (fig. 2):

1 The river Lek north of Vianen (1950±30 BP) and west of the bifurcation of the Hollandsche IJssel (2220±35 BP; fig. 2: 1). Both dates were published by the author.[6] Near Arnhem the river Rhine must have shifted to the present course around 2000 BP.[7]
2 The river Waal west of Tiel (1815±50 BP and 1795±30 BP; fig. 2: 2). The age of samples taken by Berendsen and Verbraeck,[8] although 22 km apart, is the same within one standard deviation. The reliability of the datings was discussed by Berendsen.[9]
3 The river Linge (2235±35 BP; fig. 2: 3). The dated sample was taken a few kilometres east of Leerdam by Törnqvist.[10]
4 The Hollandsche IJssel west of the city of Montfoort (1805±50 BP; fig. 2: 4).[11]
5 The (Gelderse) IJssel, north of Arnhem. The date (2000±65 BP; fig. 2: 5) published by Lanting & Mook[12] was confirmed by pollen analysis and several dates by Teunissen: 1910±60 BP, 1820±50 BP, 1720±25 BP, and 1830±110 BP.[13] After about 1500 BP sedimentation of clay further increased.
Probably, the river Meuse west of Kerkdriel also came into existence at or around the same time. However, at present no ^{14}C dates of this river branch are available yet.
No Roman artefacts have been found along these river branches. This has often been taken as proof, that these rivers were only formed after the Roman Period. However, as Louwe Kooijmans and Berendsen pointed out,[14] the natural levees near newly formed rivers are low, making them unattractive for habitation. Also, artefacts may have been eroded away, because the rivers probably increased in size gradually, as is suggested by the gradually increasing amount of clay deposited in the peat marshes.
Almost as soon as new rivers came into existence, peat

9 Berendsen 1986.
10 Törnqvist & Van Dijk in prep.
11 Berendsen 1982.
12 Lanting & Mook 1977.
13 Teunissen 1990.
14 Louwe Kooijmans 1974; Berendsen 1982.

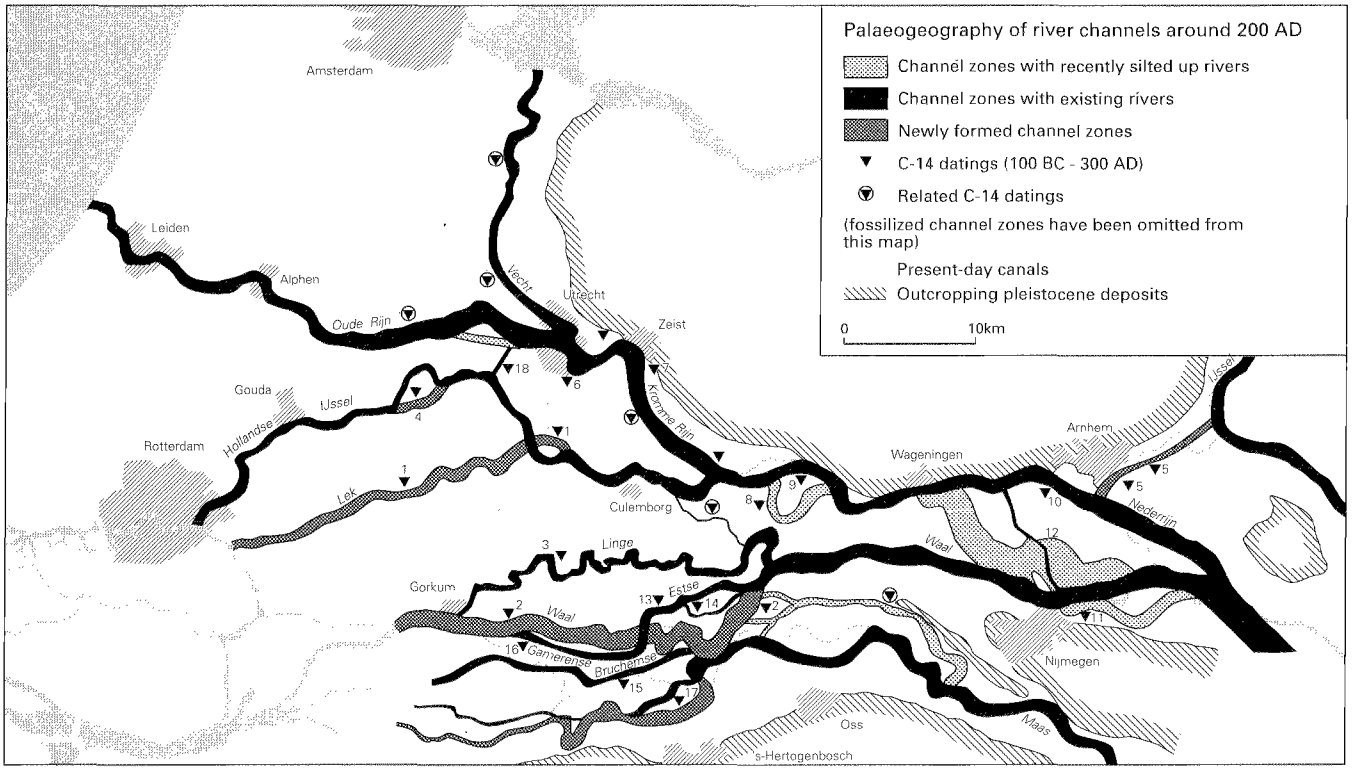

Figure 2 Rivers and inactive river channels in the central Netherlands in the Roman Period.

formation began in residual channels that had been abandoned as the main river course. Radiocarbon dates show that some meanders of the Kromme Rijn were cut off: the Oudwulverbroeker stroomrug (1915±50 BP; fig. 2: 6) and the Zeister stroomrug (1655±25 BP; fig. 2: 7).[15]
In the central river area, east of Wijk bij Duurstede, river activity in the large meander of the Ommerense stroomrug finally came to an end (2100±35 BP; fig. 2: 8).[16] Also, peat formation started in the residual channel of the nearby Liendense stroomrug (1915±55 BP; fig. 2: 9).[17] A river channel of the Neder-Rijn near Arnhem (fig. 2: 10) was dated at: 1855±50 BP.[18]

A channel of the River Waal (fig. 2: 11), that was cut off by the present river gave dates of 1800±30 BP, 2030±35 BP, and 2170±40 BP.[19] The large Ressen stream ridge complex (fig. 2: 12) has not yet been dated, but sedimentation must have ended around AD 200.[20]
Southwest of Tiel residual channel dates in the large stream ridge complex near Est showed comparable ages: Estse stroomrug 1st phase (2310±60 BP and 2190±60 BP; fig. 2: 13).[21] The smaller Estse stroomrug 2nd phase (fig. 2: 14) ended around 1860±60 BP and 1890±60 BP.[22]
Also in the Bommelerwaard, river activity in the main stream ridges came to an end: Bruchemse stroomrug (1760±45 BP; fig. 2: 15),[23] Gamerense stroomrug (around 1795±30 BP; fig. 2: 16), Velddrielse stroomrug (1760±50 BP; fig. 2: 17).[24]
Finally, a canal that was probably dug by the Romans,

15 Berendsen 1982.
16 Hofstede, Berendsen & Janssen 1989.
17 Verbraeck 1984.
18 Teunissen 1990.
19 De Jong 1983; Willems 1986.
20 Faessen 1991.
21 Törnqvist 1990.
22 Törnqvist 1990.
23 Berendsen & Cortenraad 1988.
24 Berendsen unpublished.

Age ± σ BP	GrN or UtC	coordinates (x-y/z)	depth (m–surface)	published by
Top of peat underlying fluvial clay				
LEK				
1950±30 BP	GrN-8707	136.212–446.375/0.3	2.0	Berendsen 1982
2220±35 BP	GrN-8708	122.402–439.900/-0.3	1.3	Berendsen 1982
WAAL				
1815±50 BP	GrN-6993	158.475–428.170/3.7	0.87	Verbraeck 1984
1795±30 BP	GrN-12456	132.900–425.000/1.2	1.6	Berendsen 1986
1655±50 BP	GrN-13504	132.900–425.000/1.2	1.6	Berendsen 1986 (extract date)
LINGE				
2235±35 BP	UtC-1481/82	136.565–433.200/0.6	1.07	Törnqvist & Van Dijk (in prep.)
HOLLANDSCHE IJSSEL				
1805±50 BP	GrN-7577	120.702–448.637/-0.9	1.05	Berendsen 1982
(GELDERSE) IJSSEL				
2000±65 BP	GrN-5491	200.410–443.960/?	1.08	Lanting & Mook 1977
1910±60 BP	GrN-11869	200.410–443.960/?	1.27	Teunissen 1990
1820±50 BP	GrN-11870	200.410–443.960/?	1.2	Teunissen 1990
1720±25 BP	GrN-7525	199.150–443.500/?	1.1	Teunissen 1990
1830±110 BP	GrN-11994	199.150–443.500/?	1.15	Teunissen 1990
Base of peat in residual channels				
LIENDENSE STROOMRUG				
1915±55	GrN-6992	161.075–442.925/5.1	2.0	Verbraeck 1984
NEDER-RIJN (Elden-Meinerswijk)				
1855±50	GrN-16818	188.350–442.400/?	8.92	Teunissen 1990
WAAL				
1800±30	GrN-10597	190.990–428.980/?	2.24	De Jong 1983
2030±35	GrN-10595	197.160–427.370/?	1.49	De Jong 1983
2170±40	GrN-10596	197.160–427.370/?	1.68	De Jong 1983
OUDWULVERBROEKER STROOMRUG				
1915±50 BP	GrN-7960	138.345–453.312/0.8	1.1	Berendsen 1982
ZEISTER STROOMRUG				
1655±25 BP	GrN-7968	144.845–454.028/2.4	1.5	Berendsen 1982
ESTSE STROOMRUG 1ST PHASE				
2190±60 BP	GrN-12465	150.416–429.817/2.8	1.3	Törnqvist 1990
2310±60 BP	GrN-12466	150.531–429.814/2.7	1.88	Törnqvist 1990
ESTSE STROOMRUG 2ND PHASE				
1860±60 BP	GrN-12464	150.413–429.842/2.65	2.7	Törnqvist 1990
1890±60 BP	GrN-12467	152.230–428.940/3.2	2.1	Törnqvist 1990

Table 1 Radiocarbon dates.

Age ± σ BP	GrN or UtC	coordinates (x-y/z)	depth (m–surface)	published by
OMMERENSE STROOMRUG				
2100±35 BP	GrN-12458	158.430–439.552/4.1	2.4	Hofstede *et al.* 1989
BRUCHEMSE STROOMRUG				
1760±45 BP	GrN-12463	142.600–420.275/2.0	1.62	Berendsen & Cortenraad 1988
GAMERENSE STROOMRUG				
1795±30 BP	GrN-12456	132.900–425.000/1.2	1.6	Berendsen 1986
VELDDRIELSE STROOMRUG				
1760±50 BP	UtC-1604	148.844–419.745/2.7	1.95	Berendsen unpublished
MARE				
1845±50 BP	GrN-17542	130.390–453.650/–0.7	3.5	Berendsen unpublished
66,75±0,52 %	GrN-17543	130.390–453.650/–0.7	3.5	Berendsen unpublished (shells)
after correction: approximately 1950 BP				

Table 1 (continued)

was filled up with clay: the Mare (bones: 1845±50 BP, fresh water shells: 1950±50 BP; fig. 2:18).[25] In the base of the channel fill Roman sherds were found.

All these stream ridges where peat formation in residual channels began between 2100 and 1700 BP, were densely populated until the second half of the 2nd century.[26]

The dates have been plotted in frequency histograms (fig. 3). In these histograms, each date is represented by a Gaussian distribution of equal area. The shape of the histograms was obtained by graphical superposition of the Gaussian curves. This was carried out by a computer program. The total width of each Gaussian curve is eight times the standard deviation of the ^{14}C date: a date with a large standard deviation is represented by a Gaussian distribution with a low height and thus contributes less to the histogram peaks. A date with a standard deviation of ±45 years has been chosen to represent the frequency 1 (the reference peak on the left hand side in both histograms). The ^{14}C dates were originally expressed in conventional radiocarbon years BP; then the resulting histogram was corrected for the non-linearity of the radiocarbon scale, according to the method presented by Stolk *et al.*[27]

The upper histogram is made up of twelve dates of the top of peat layers, underlying fluvial clay beds of rivers that came into existence around the Roman Period. The lower histogram is made up of fifteen dates of the beginning of peat formation in residual channels. It is striking, that the peaks in both histograms coincide exactly on the time axis, around AD 250. This suggests, that, statistically speaking, there was no time lag between the formation of new rivers and the beginning of peat formation in residual channels.

The author obtained similar results for older stream ridges, but did not connect earlier avulsions to immediate peat formation in the residual channels, i.e. he left the possibility open for a time lag.[28]

DISCUSSION OF THE RESULTS

The datings of former river courses around the Roman Period are very consistent and should be regarded as very reliable. They clearly show that important changes in the river pattern in the central Netherlands occurred around AD 250. Avulsion took place and new river courses were formed, while, simultaneously, the old channels were abandoned and peat formation began

25 Age corrected according to standard procedure; pers. comm. Dr. J. van der Plicht, Centre for Isotope Research, Groningen University, Groningen.

26 Berendsen 1982; Törnqvist 1990.

27 Stolk *et al.* 1989.

28 Berendsen 1984.

(fig. 3). No time lag between both events can be deduced from the data. Near the old channels, where people lived, a period of standstill in the sedimentation was recorded, that has been described by various authors. At many locations near the inhabited stream ridges a vegetation horizon (sometimes called a 'laquer-layer') was formed.[29] Near the newly formed river channels however, conditions became increasingly wet, sedimentation increased, and no archeological remains are found.[30]

In this model increasing sedimentation and the formation of vegetation horizons are both part of the same mechanism. The question may be raised whether the Roman Period in the river district really was a dryer or even a dry period, at the end of which sedimentation increased all over the river district at the same time, as is assumed in many papers published hitherto. Contrary to common opinion in the literature, this question cannot be answered decisively on the basis of lithological evidence from the river district. The seemingly increasing sedimentation around AD 250 has led some authors to believe, that the end of the Roman occupation in the Netherlands was somehow influenced by increasing river sedimentation or an increasing influence of the sea ('transgression'), or both. However, available lithological data may also be interpreted in such a way, as to suggest that there was no overall succession of a 'dry period' by a 'wet period'. These conditions seem to have occurred rather simultaneously, depending on the spatial distribution of land forms.

Nevertheless, pollen analyses of peat bogs in pingo-remnants indeed seems to indicate a 'dry' Roman Period, with wetter conditions prevailing between approximately AD 200 and 450.[31] Peat bogs in pingo-remnants react to increasing precipitation and therefore may be a better indicator of climate conditions than pollen diagrams from the river area.

The question that still has to be answered is why such a dramatic change in the river pattern occurred. If climate really changed around AD 200, it is likely that discharge of the rivers increased, causing the rivers to develop new courses. However, it should be stressed that a climatic change cannot be deduced from the lithological evidence in the Netherlands' river area. The course of events during the Roman Period can just as well be explained from an internal adjustment of the river system, or by the activity of man, that may have caused both increasing discharge and increasing sedimentation. In other words, it may seem likely that the major change in river channel pattern was induced by a climatic change, but it is not a necessary requirement.

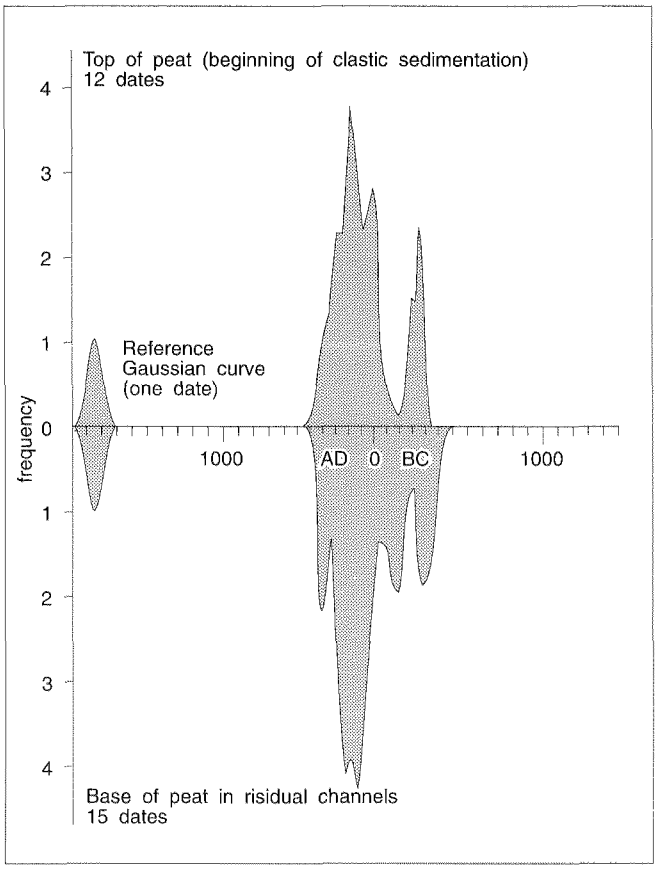

Figure 3 Frequency histogram of ^{14}C dates of the top of peat, underlying fluvial clay beds (upper histogram) and of the base of peat in residual channels (lower histogram). Dates have been selected from the time span 2500–1000 BP. The reference histogram (representing one date) is indicated on the left. The histograms are corrected for the non-linearity of the radiocarbon time scale according to Stolk *et al.* 1989.

29 Havinga & Op 't Hof 1983; Steenbeek 1990.
30 Louwe Kooijmans 1974; Berendsen 1982.
31 Bohncke 1991.

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W.J.H. VERWERS AND L.I. KOOISTRA

Native House Plans from the Roman Period in Boxtel and Oosterhout

Keywords: excavation, settlements, house plans, distribution of native house types, Roman period, Boxtel, Oosterhout, Province of Noord-Brabant, the Netherlands, 38 references.

During the second half of the 1980's, two rescue excavations were carried out at new housing developments in the Brabant communities of Boxtel and Oosterhout as a form of archaeological heritage management. The excavations brought many settlement-features to light which consisted almost exclusively of a number of house plans from the Roman period. In this article, the results of both excavations will be described separately. Special consideration will be given to the various house plans uncovered by the excavations. The dating of the buildings and the size and phasing of the respective settlements will also be discussed.
Finally, we will turn our attention to the distribution of the native house types from the Roman period. The discussion is not limited to comparable examples from Brabant; connections with bordering areas will also be taken into consideration. In addition, the significance of the Boxtel and Oosterhout house plans for the history of native house types will be examined.

1 BOXTEL

The 1985 regional archaeological survey, carried out by F. Kortlang (Eindhoven) commissioned by the Province of Noord-Brabant, brought to light several Iron Age and Roman period sherds in Munsel, to the north of Boxtel (fig. 1). This discovery led to a campaign of trial-trenches in 1985 which uncovered features consisting of postholes and pits, indicating the existence of a settlement. Thanks to the cooperation of the tenant, T.C. van de Aker (Boxtel), a part of the complex was investigated prior to the execution of a new housing development scheduled to take place in the area. The Province of Noord-Brabant offered financial support for the project. The excavation covered a total area of *c.* 1250 m^2 (fig. 2) and took place from 5–16 December 1988. Daily supervision of the excavation was in the hands of M.J.A. de Haan; overall responsibility lay with the first-named author of this article. F. van der Schoot participated in the excavation as part of his studies.
The settlement lay along the southern bank of the River Dommel and was built on late glacial coversand (fig. 3: a). The activity of the Dommel had caused the erosion of a part of the coversand before or during the Bronze Age. During a phase without erosion, a dark brown sandy layer formed on the slope of the river bank (fig. 3: b). This layer was absorbed into the plough soil on the coversand. On the top of this layer a bronze lance-head from the Middle or Late Bronze Age was found (fig. 7: 2). After this period the Dommel deposited several sand layers (fig. 3: c). Since these layers did not contain such waste products as settlement rubbish or charcoal, it can be assumed that the place remained uninhabited until the end of the Iron Age or the beginning of the Roman period. A small part of the occupation level from the Roman period remained preserved at the northern extremity of the north-south oriented vertical section (fig. 3: d). This level should have continued on the coversand, but ploughing caused it to be absorbed into the plough soil. It was, moreover, cleared away by erosion from the slope of the valley. Exactly when this erosion took place is unclear. Wherever the Roman level is still intact, it is covered by a relatively clean sediment which was also absorbed into the plough soil on the coversand. From the remaining part of this sediment in the valley a Carolingian wall sherd emerged (fig. 3: e). On the basis of these data, the erosion could have taken place after the Roman habitation (from the beginning of the 3rd century) and before the Carolingian period (the 8th or 9th century).

Figure 1a Location of the excavations: 1 Boxtel; 2 Oosterhout.

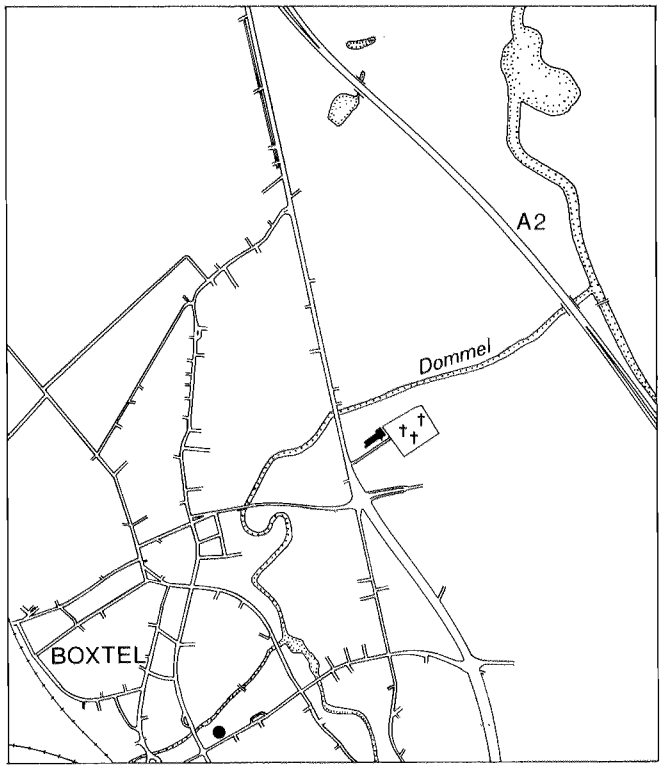


Figure 1b Boxtel: location of the excavation.

The settlement was situated on the northern side of a large area covered with a *plaggen* soil (fig. 3: f, plough soil included).

FEATURES

The features consisted almost exclusively of postholes. The circumference and depth of these features varied greatly: from postholes with a diameter and a depth of only a few centimetres to large postholes almost 1.5 m across and *c.* 1 m deep which held heavy posts. A few pits, ditches, and a natural depression were also found. The distribution of the soil marks makes clear that the Dommel formed the northern border of the settlement. The ditches in the west can also be seen as a possible border; in any case, the number of traces in that direction decreased markedly. The settlement probably continued to the south. Because the soil there was completely disturbed to a depth of 70 cm below the ground level, excavation in that direction was pointless. In the east the settlement narrowed to a strip of about seven metres wide. The presence of a ditch and a modern graveyard made it impossible to obtain more information about the eastern border. Although it cannot be ruled out that the settlement continued eastward, it seems obvious that this was hardly the case. Soil marks generally were absent in the south-eastern part of the excavation. A fence of posts can be reconstructed in the adjoining part of the excavation, so that it seems reasonable to assume the existence of a border there.

The excavation brought the plans of ten buildings to light. Seven of these had a west-east orientation (nos. 1–7; more precisely their orientation was roughly WSW-ENE); the rest stood at right angles to them (nos. 8–10; see figs. 2 and 4). For most of the buildings only the soil marks of the row of central posts have been found. For one building (no. 1), the soil marks of the wall-posts remained preserved as well. Another building exhibited an aisled construction (no. 2).

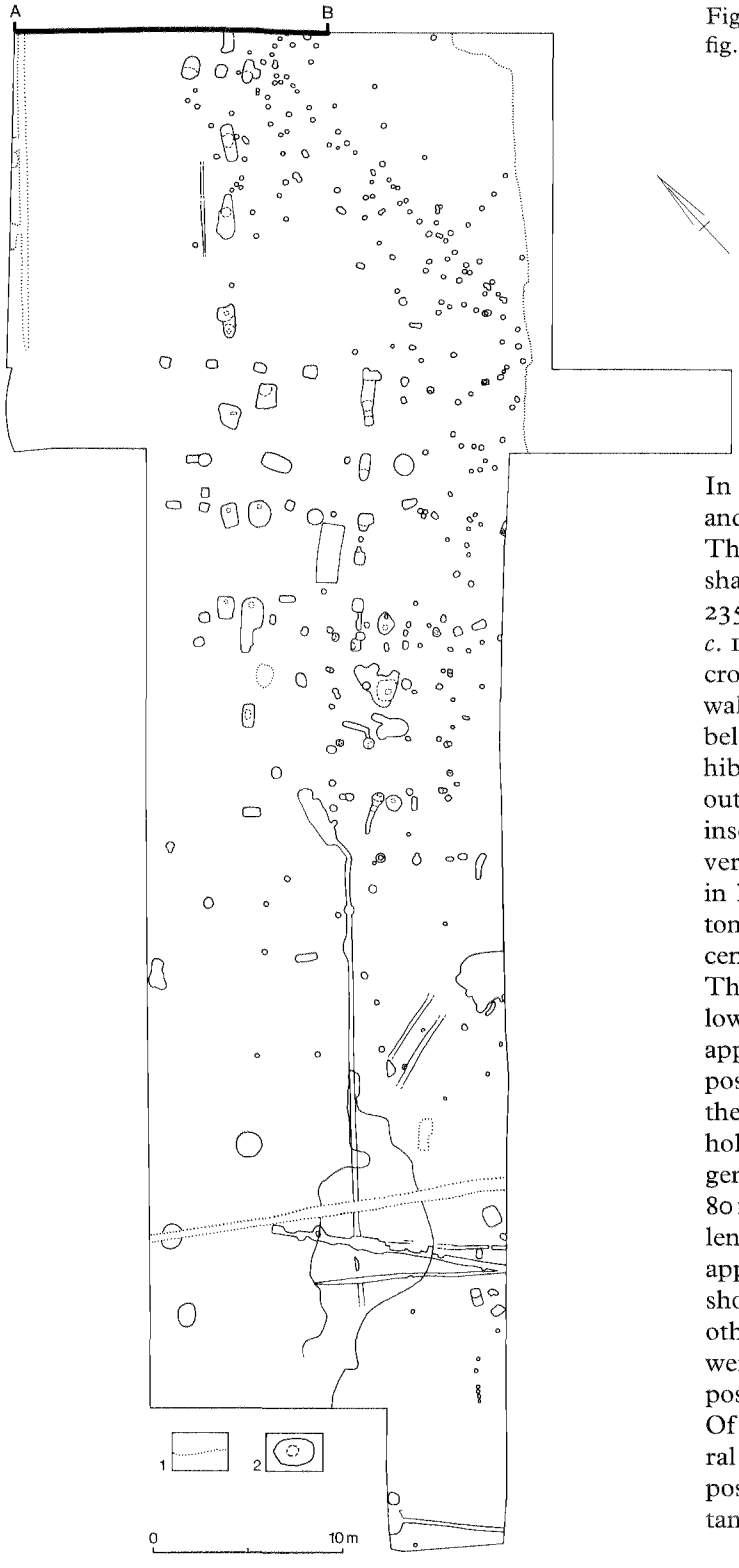


Figure 2 Boxtel: plan of the excavation. For section A–B see fig. 3. Legend: 1 recent disturbance; 2 post within posthole.

In four of the buildings with central posts (nos. 1, 5, 6, and 7) these posts had been dug deeply into the ground. The postholes were finished off in rectangular or square shapes; the measurements varied from 90×90 cm to 235×100 cm. The bottom of the postholes reached to *c.* 1 m beneath the excavation level (*c.* 6.4 m NAP). In cross-section some postholes had more or less vertical walls and flat bottoms. All postholes from house 7 belonged to this type. The postholes in house 6 exhibited the so-called holster-shape, with one side dug out diagonally to the deepest point. Here the post was inserted and set upright against the other, more or less vertical wall of the posthole. Such holes were also found in houses 1 and 5. In these houses holes with flat bottoms were also found, as well as holes with deepened central areas in which the central post was placed.

The posts of houses 2, 3, 4, 9, and 10 had much shallower holes, with a few exceptions. They reached approximately 50 cm below the excavation level. The posts in building 8 were very shallow: 10–20 cm below the excavation level. The circumference of these postholes was smaller than that of the previous group. In general, the measurements lay between 50×50 cm and 80×80 cm. A few holes were somewhat elongated; their length ran up to 1.5 m. The same variations in shape appeared as in the more deeply-dug holes: some holes showed a clear indication of the so-called holster-shape; others had broad, flat bottoms. Absent from this group were postholes with deepened centres which held the posts.

Of the buildings where only the soil marks of the central posts remain preserved (nos. 3–10), the number of posts varies from three to five. In every house, the distance between the central posts is virtually the same.

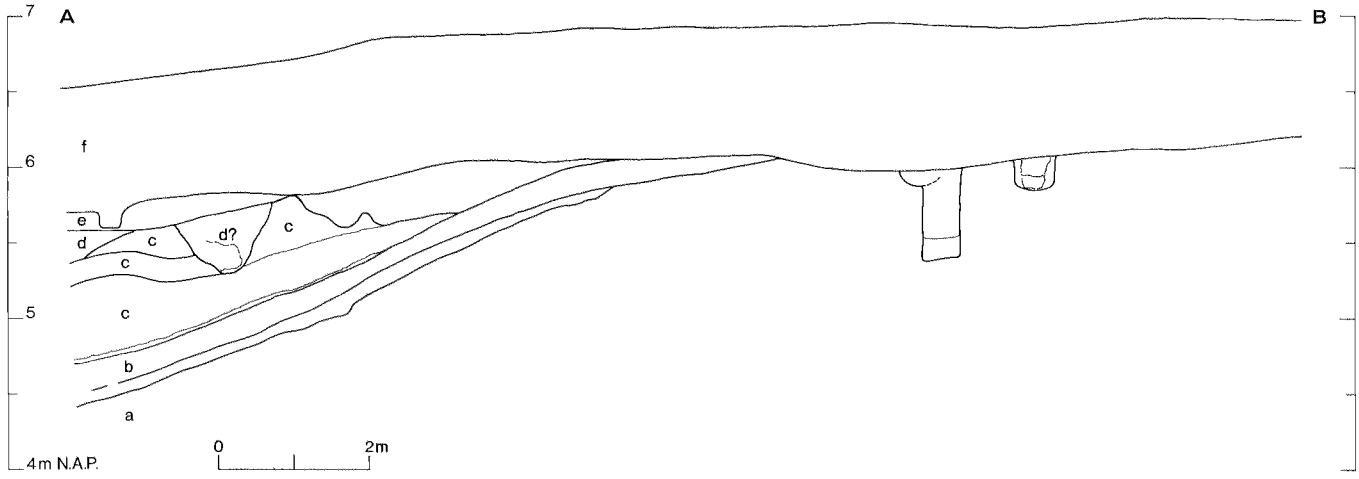


Figure 3 Boxtel: section. The location of the section is indicated in fig. 2.

The posts in building 10 stand closest together, with intervals measuring 1.5 m. In the other two north-south oriented buildings the posts are somewhat further removed from each other; the intervals are 2–2.5 m. This distance is much greater in the west-east oriented buildings; it varies here from 4.5 to 6 m. In house 1, where the soil marks of the walls are also preserved, the intervals between the central posts are unequal and measure 3.5 and 6 m.

Two of the north-south oriented buildings (nos. 10 and 8) are very short in length, measuring 3–3.5 and 4.5 m respectively. The third building situated in this direction (no. 9) measures 7.75 m, somewhat similar to most of the west-east oriented buildings (nos. 1, 2, 3, 4, and 6). These buildings are 8.5–10.3 m long. Buildings 7 and 5 are much longer, 15.5 m and 22.5 m respectively.

The following remarks should be made about buildings 3, 4, and 9. The central posts of buildings 3 and 4 lie in one line and are of almost the same depth. The shape and fill of the postholes of both buildings are also quite similar. Despite this similarity, it is presumed that these posts represent not one but two buildings. The reason for this is the space between the posts. The distance between the central posts varies from 1 m to 2.75 m, the distance between one pair is 3 m. Since this kind of irregularity is absent in other house plans, and since such a large number of central posts would form an obstacle inside a building, it is assumed that one building was rebuilt on more or less the same site. The significance of the small ditch at the eastern far end of building 4 (with the repaired post) is unclear. A posthole was dug through this ditch. This post more closely resembles the posts in building 9 in shape and depth than those in buildings 3 and 4. This fact is the basis for including the post with the construction of building 9.

Now some attention will be given to buildings 1 and 2. The house plan of building 2, which is the smaller of the two structures, stands within that of building 1. In the middle of these two configurations is a row of three postholes more than one metre deep. The distance between them amounts to 3.5 and 5.75 m. The post in the middle of the row stood in an irregularly-shaped hole. These three heavy posts served as central posts of building 1. If it is assumed that central posts stood in the short walls, then both the outermost rows of four posts belong to the same construction. These can be completed by joining together the corner posts in the lengthwise direction. The northern wall of six posts is then very clearly outlined; this is less the case in the southern wall. In the short walls, the space between the posts is almost equal. Along the western side of the building, the posts of the long walls stand face-to-face. The posts of the long walls along the eastern side show no such correlation. The building measures 9.5×6 m. The entrance may have been built in the middle of the southern long wall.

Building 2 exhibits a regular construction of four rows with four posts. The sixteen posts are of approximately the same depth. All extend deeper than the wall posts of building 1, although the differences are small. Most of

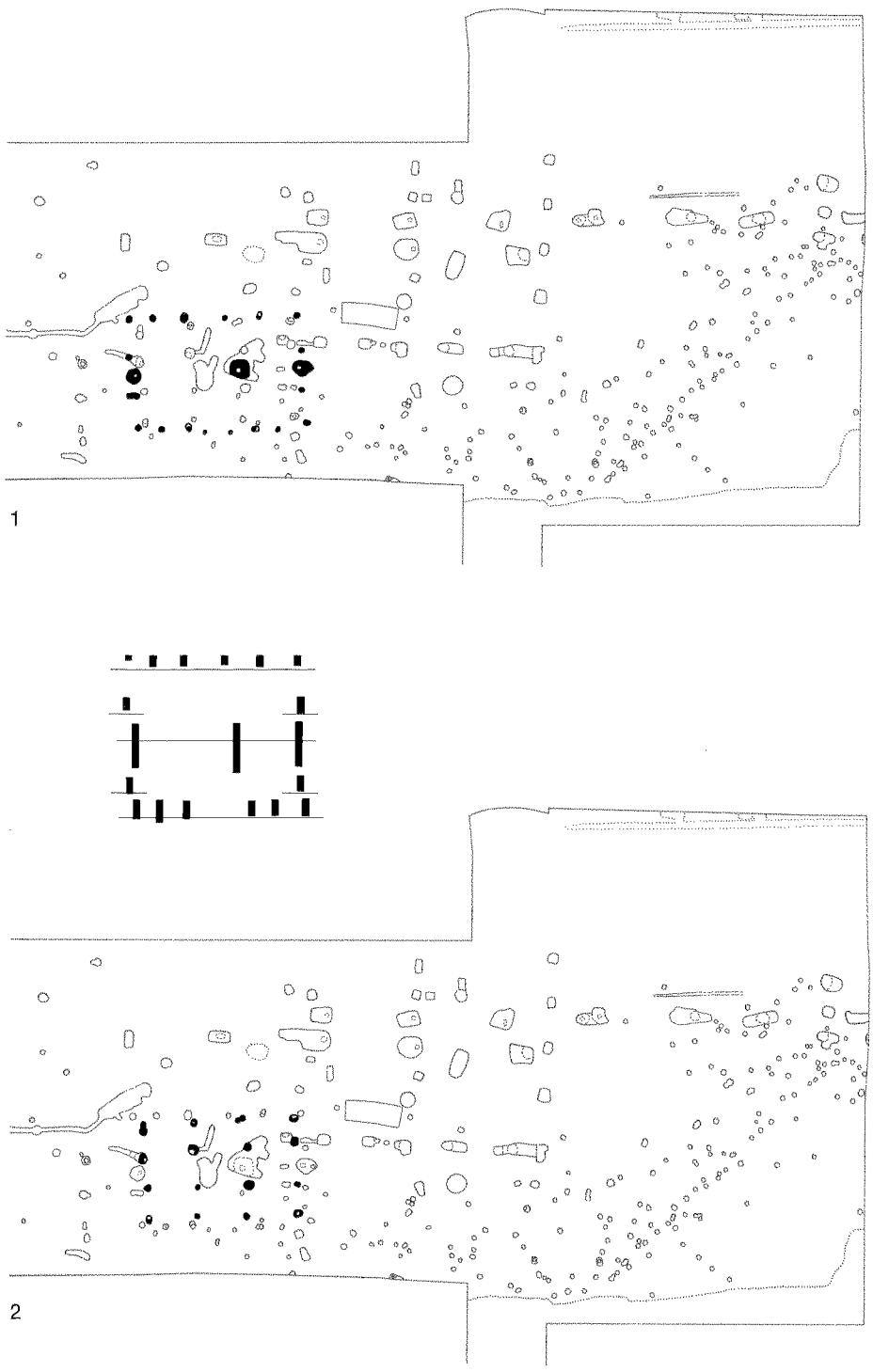


Figure 4 Boxtel: plans and section of postholes of buildings 1–10. The numbers refer to the buildings. The horizontal lines represent 6 m NAP. Scale, map 1 : 400; vertical section 1 : 160.

Figure 4 (continued)

5

6

Figure 4 (continued)

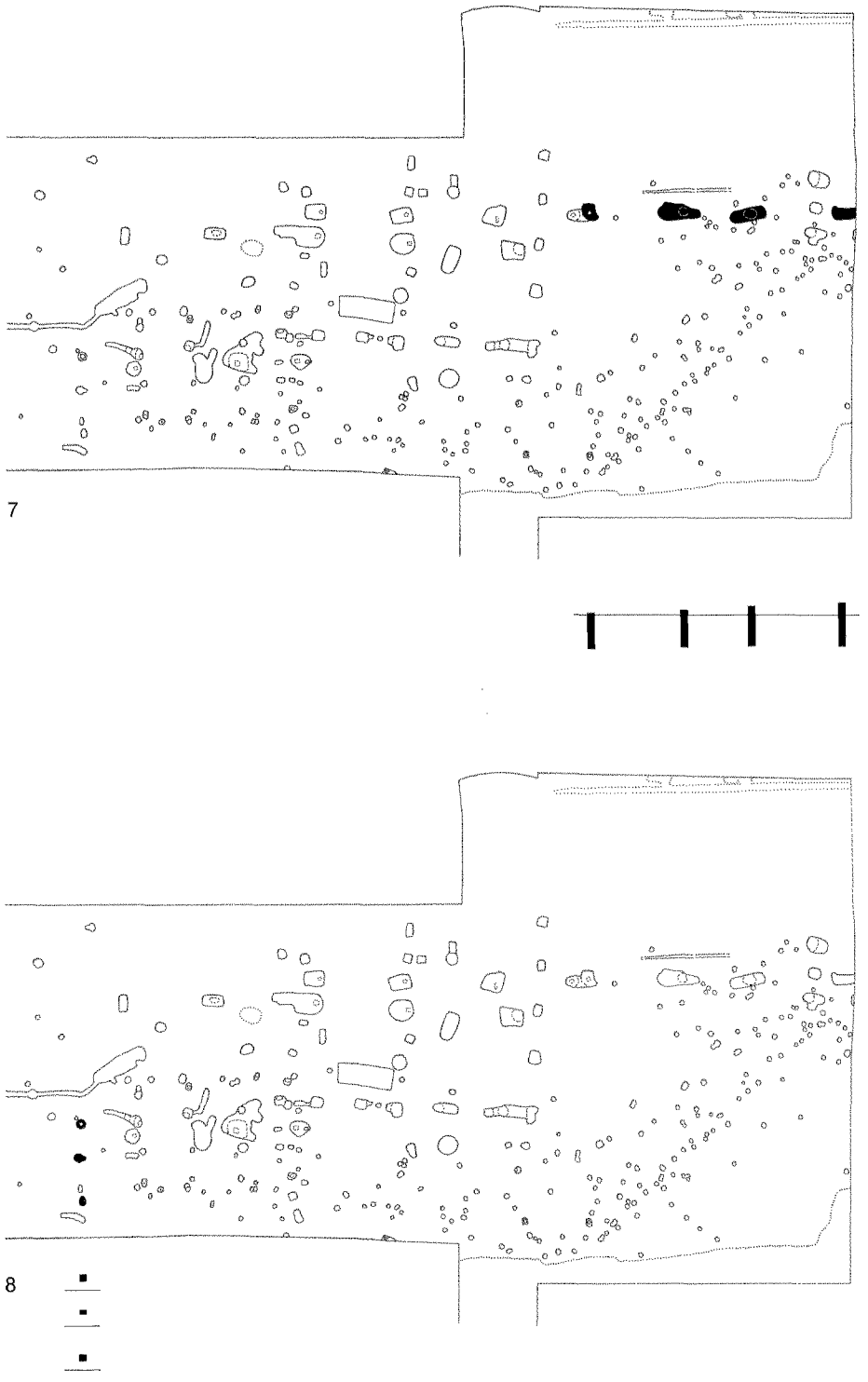


Figure 4 (continued)

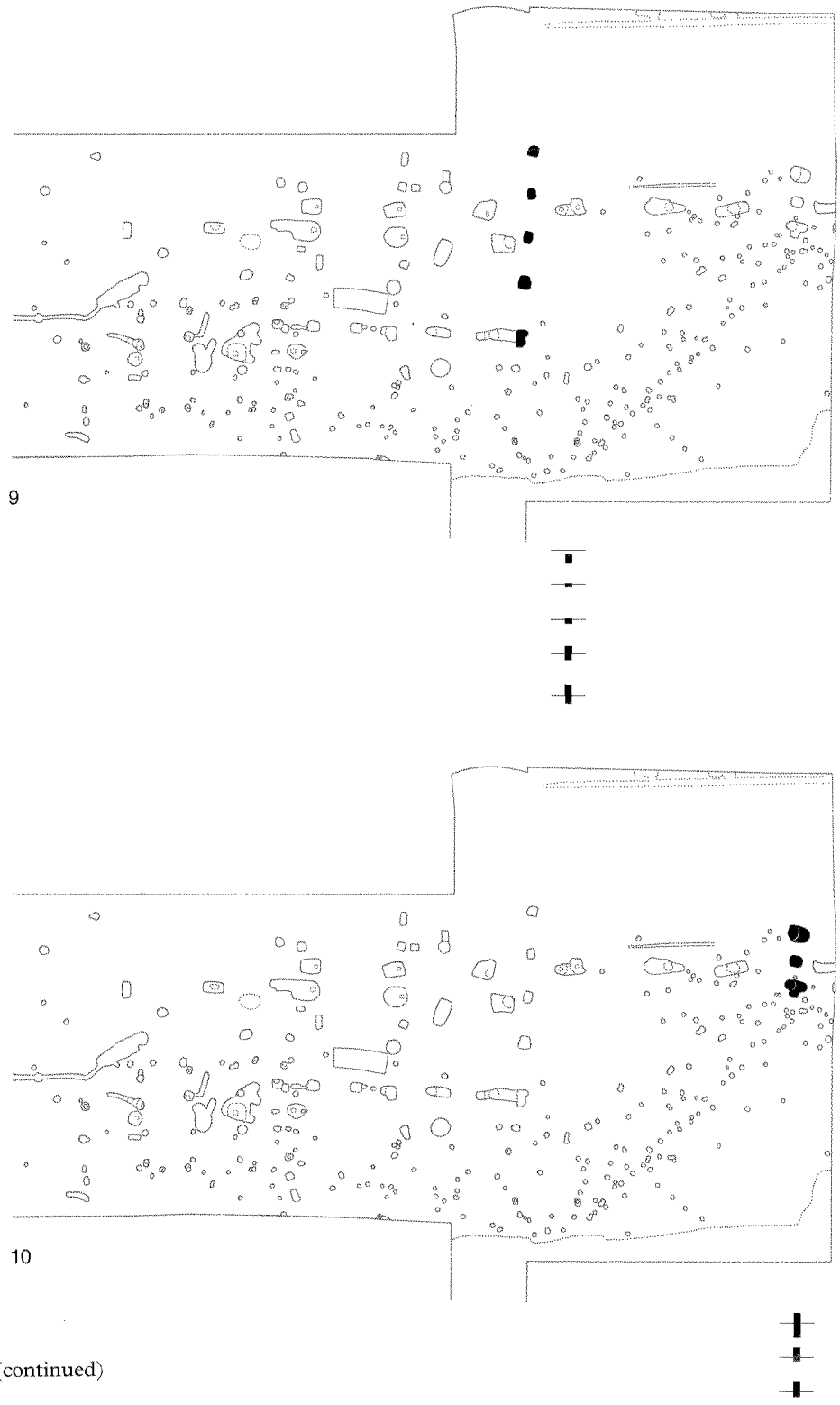


Figure 4 (continued)

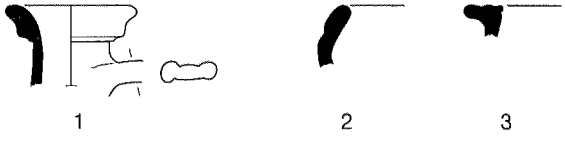


Figure 5 Boxtel: pottery from the Roman period, found in the postholes of buildings 7 (nos. 1–2) and 1 (no. 3).

Figure 6 Boxtel: stamp on base of terra sigillata plate. Scale 1:1.

building 2's posts are deeper than 5.95 m NAP; those of building 1 reach to 6.02 m NAP. There is little difference in circumference between the posts of the two buildings apart from the three central posts of building 1. The dimensions of building 2 are 8.5×5.5 m. The nave is somewhat broader than either aisle. One of the arcade-posts of building 2 is dug into the fill of one of the central postholes of building 1, thus proving that building 2 is of later construction than building 1.

It is unlikely that both configurations belong to one construction because the house plans do not completely coincide: they lie somewhat askew in relation to each other. The distance between the long northern walls of buildings 1 and 2 is shorter on the eastern than on the western side. With the southern long walls the opposite is the case. Moreover, there seems to be no clear connection between the wall-posts of buildings 1 and 2. In terms of construction, there is also no reason to use the heavy central posts and both pairs of arcade-posts in one building. A final reason to doubt one single construction, though not of overriding importance, is the already-mentioned fact that one of the arcade-posts from building 2 has been dug into the fill of a posthole of building 1.

The many postholes in the south-eastern part of the excavated area ran no deeper than 40 cm beneath the excavation level. Apart from a few granaries, there were no recognizable structures. It is not impossible that a number of posts formed a partition, possibly a property divider. In general, the direction of the granaries and fences, if any, deviates from that of the houses. The ditches in the west terminate in a natural depression which was filled in with loamy sand containing many fragments of Roman roof tiles.

FINDS

Most of the finds consisted of pottery sherds. These sherds fall into two groups: hand-formed and wheel-thrown pottery.

According to the identification made by P.W. van den Broeke (IPL), almost all the sherds in the first group are native material from the Roman period. Because of the scant number of rims and the absence of characteristic wall- and base-sherds, little is known about the forms of the native pottery from the Roman period. Also, the few rim fragments found provide little information about the circumference. An exceptional group is the so-called thin and thick red pottery, which is well represented.[1] According to Van den Broeke, this native pottery was probably imported. It is unclear for what purpose it was used.

Belonging to the earliest Roman pottery are sherds of terra sigillata bowls type Drag. 29, girth-beakers in terra rubra, other beakers, plates and bowls in terra nigra, and cork-urns. It is not possible, on the basis of the finds, to date the beginning of the import of this pottery more precisely than the middle of the 1st century.

The end of the habitation is indicated more by the absence of characteristic forms than by the finds themselves. Characteristic types for the 3rd century, which are well-known from Niederbieber, are poorly represented or completely absent from the Boxtel finds. These types of pottery would include terra sigillata plates Drag. 32, plates of coarse ware (Oelmann 1914, type 113), and pots with lid-grooves (Oelmann 1914, type 89). Insofar as decorated terra sigillata bowls of the type

1 Van der Sanden & Van den Broeke 1987, 117–8.

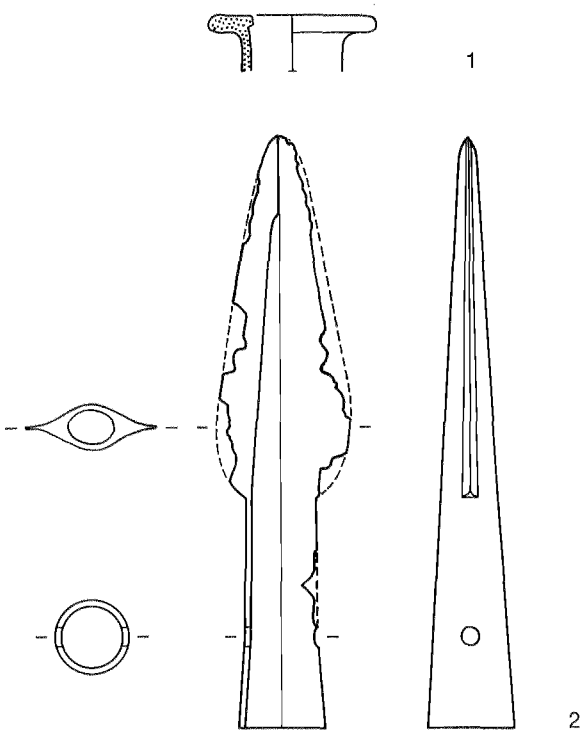


Figure 7 Boxtel: 1 rim of Roman glass bottle; 2 Bronze lance-head. Scale 1:2.

Drag. 37 are present, their dating points to the 2nd century.
Notable is the relatively large number of terra nigra-like bowls from the type Stuart 1962, 210. It is assumed that this type was in use from the Flavian period until after the third quarter of the 2nd century. Just as well represented were the so-called Arentsburg bowls, which are characteristic of the 2nd century but could possibly be found in the 3rd as well. The base of a plate type Drag. 18 from South Gaulish terra sigillata was provided with a stamp (fig. 6): ALBANVS (retrograde).[2] The potter Albanus began his work in La Graufesenque under Nero. Around the year 80 his activities came to an end.

2 M. Polak (Nijmegen) kindly identified the stamp as Hawkes & Hull 1947, pl. 42: 46 and Stuart 1976, 19, fig. 6: 31. The sherd was found in a pit to the south of buildings 1 and 2.

house	numbers		percentages	
	native	Roman	native	Roman
1	8	10	44	56
2	–	2	–	100
3	5	3	62	38
4	3	1	75	25
5	13	4	76	24
6	7	4	64	66
7	–	2	–	100
9	5	9	38	62

TABLE 1 Boxtel: number and percentages of pottery sherds from houses 1–7 and 9. The fragments of native so-called thin and thick red pottery are not included.

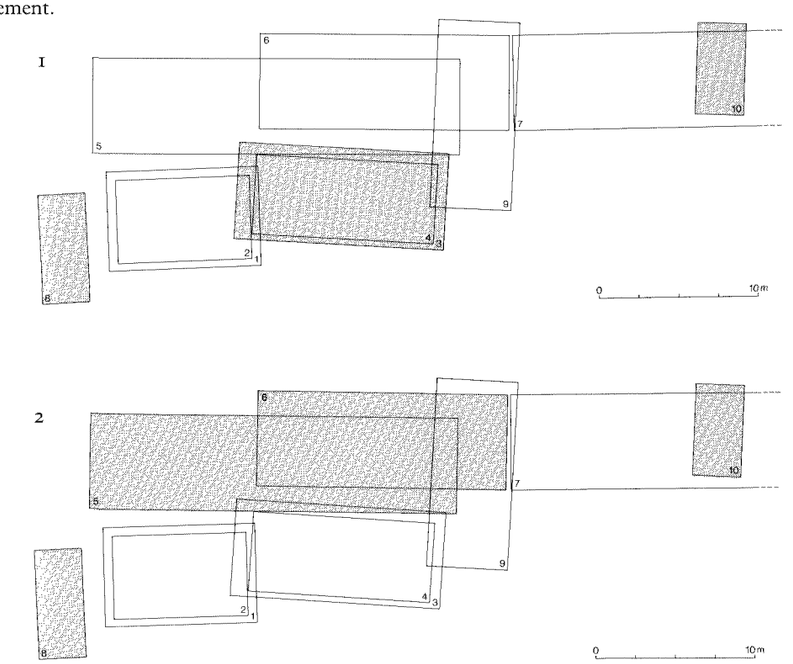
The rim of a smooth flagon (Brunsting 1937, type 6) can be dated to the end of the 2nd and the beginning of the 3rd century. Among the finds 'from the first centuries of our era' belongs the rim of a green bottle in figure 7 (Isings 1957, type 50b/51).
On the basis of the dating of the Roman pottery, it is known that the settlement was in use from the beginning of the Roman period to probably *c.* AD 200 or shortly thereafter.

PHASING

The ten buildings were used during these two centuries (fig. 8). In the attempt to classify the various components of the settlement chronologically (assuming that the settlement has been almost completely excavated), two factors play a role. First is the distance between the buildings. House plans which lie a short distance from each other must represent consecutively-built structures, not structures which were in use at the same time. A second factor forms the relationship between the native and the wheel-thrown pottery. To the extent that the amount of native material decreased in the course of the 1st and 2nd centuries in favour of wheel-thrown pottery, a more recent date is likely.[3] Table 1

3 Van der Sanden & Van den Broeke 1987, 96.

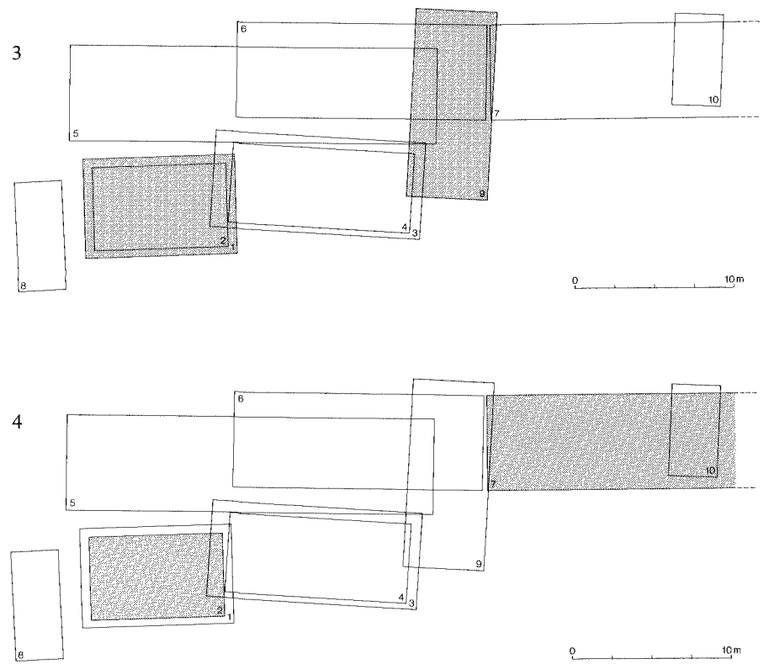
Figure 8 Boxtel: phasing of the settlement.
(See also opposite page.)



gives an overview of the numbers and percentages of sherds which were found in postholes of the buildings. The holes from buildings 8 and 10 produced no sherds. The postholes of building 7 produced Roman import pottery only, amongst which were a fragment of a smooth flagon (fig. 5: 1, Brunsting 1937, type 5a) and a terra nigra-like cooking pot with a turned-in rim (fig. 5: 2, Brunsting 1937, type 16). These sherds, together with the absence of native pottery, point to a relatively late date, possibly the middle of the 2nd century.
The postholes from buildings 3–5 produced a relatively large amount of native pottery. This could indicate early dating in the Roman period, an impression which is strengthened by two fragments of cork-urns from postholes in buildings 3 and 5. Given the location, and assuming a width of *c.* 5–6 m, it is almost impossible that buildings 3 and 4 were in use at the same time as buildings 5 and 6. There is no evidence upon which to base a chronological difference between the two pairs. Or it may be that building 6 has a somewhat lower percentage of native pottery than the other buildings. That would mean that buildings 3 and 4 are older than nos. 5 and 6 (fig. 8: 1 and 2). The impression that the larger buildings are generally of more recent construction than the smaller ones could hardly be confirmed by this observation.[4] It is possible that the outbuildings 8 and 10 were in use during the same period as buildings 3–6. The period of use for buildings 3–6, phases 1–4, covers at least 100 years if it is assumed that a building was in use for at least twenty-five years.
Although not impossible, it is unlikely that buildings 1 and 2 were built at the same time as building 6 in view of the short distance between them. Building 1 is older than 2, as was explained above. The postholes of building 1 have produced about as much native pottery from the Roman period as Roman import pottery (one terra

4 Slofstra & Bazelmans 1985, 24.

W.J.H. VERWERS AND L.I. KOOISTRA / Native House Plans from the Roman Period in Boxtel and Oosterhout



nigra-like rim sherd, fig. 5: 3, Stuart 1962, type 210), a situation which differs in buildings 3–6. This gives the impression that building 1 is younger than nos. 3–6. It is striking that in the postholes of building 2, more native pottery from the Roman period was found than in the holes of building 1. That would indicate an earlier date for building 2, but this is not possible because of the posthole of building 2 that is dug into the fill of the posthole of building 1. Theoretically, postholes can contain refuse from an earlier habitation phase, which suggests a greater age for the building. For example, sherds may have been deposited into postholes during building construction or when the wood rotted after the period of use was over. Such occurrences can also account for the higher percentage of native sherds in the postholes of building 2. However, if the native import pottery were left out of the picture, then it can be said that building 2 has yielded exclusively Roman import pottery. Another possibility is that at Boxtel, in comparison with the settlement at Oss-Ussen, for example, Romanization began later and native pottery was longer in use as a result.[5] A relatively late date for building 2, comparable to that of building 7, is then plausible. Such a date is even more likely if we consider the function of buildings 1 and 2. The position of the posts indicates that building 1 served as a dwelling, possibly in relation with building 9. Building 1's period of use occurred after that of buildings 3–6 and formed a fifth phase (fig. 8: 3).
From its house plan it can be inferred that building 2 functioned not as a dwelling but as a barn. The excavation at Oss-Ussen produced a comparable plan.[6] The position of the buildings leads one to suspect that barn 2 was used in relation to building 7 (fig. 8: 4). Thus it

5 Van der Sanden & Van den Broeke 1987, 96.

6 Van der Sanden & Van den Broeke 1987, 84, fig. 2.

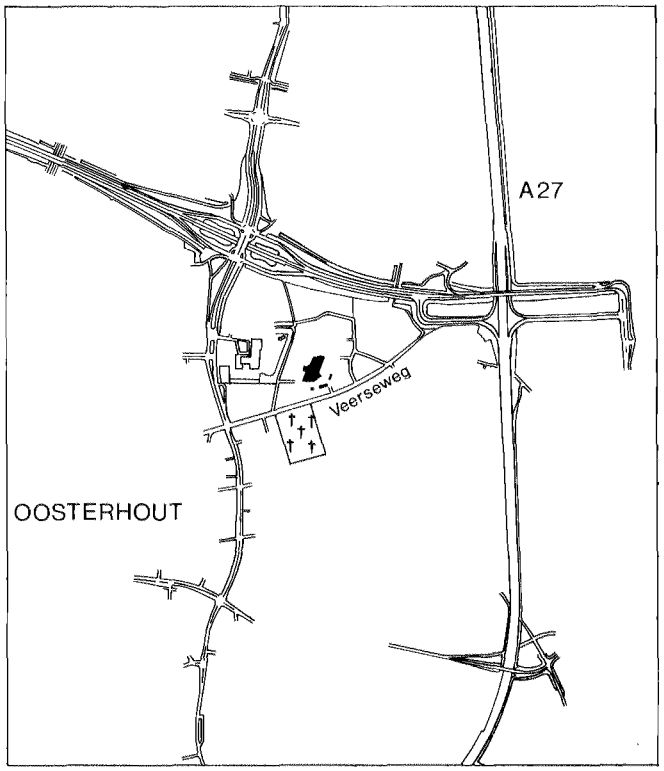


Figure 9a Oosterhout: location of the excavation.

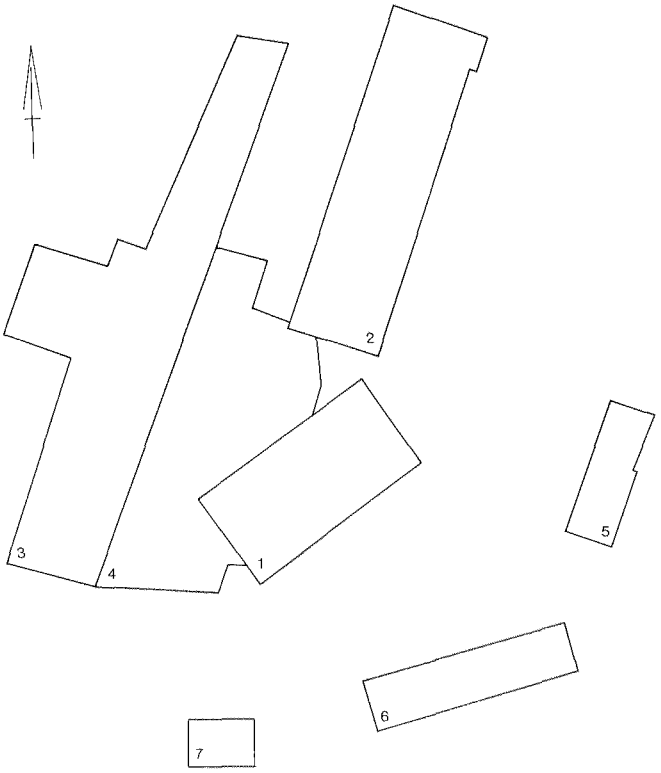


Figure 9b Oosterhout: trenches. Scale *c.* 1 : 1000.

is assumed that dwelling and barn formed a farm unit. Both buildings were constructed during a relatively late period: the sixth and last phase of the settlement.
In reconstructing the buildings it is assumed that they were provided with saddle roofs, although the presence of a hipped roof is not to be ruled out (see p. 279). It is not known from what sort of material the roofs were made.
Although the finds cannot be very precisely dated, it appears on the basis of the data that the total habitation period was at least 150 years. More likely is a duration of approximately 200 years. Since there are no indications of discontinuity in the settlement, each phase lasted at least twenty-five, but more probably at least thirty years. That means that at Boxtel at the beginning of the 2nd century the percentage of native pottery constituted more than half the total pottery complex.

2 OOSTERHOUT (figs. 1a, 9a–b, 10: see supplementary map in back envelope)

In September 1984, during the excavation of sewer trenches and in several existing road-construction trenches which were part of the Molenbuurt development scheme on the north side of Oosterhout, M. Bahiaoui of Oosterhout found sherds and soil marks dating from the Iron Age and the Roman period (fig. 10). After consultation with the provincial archaeologist, and with the cooperation of amateur archaeologists from Oosterhout and Breda, a trial-trench of *c.* 7×7 m was dug on the southern side of the area on uncultivated land upon which nothing would be built before March 1985. The trench revealed shallow ditch structures and a row of posts, the last of which possibly indicated the presence of a house wall. About forty rims of Roman import pottery were collected, especially from the lowest part of the plough soil. This led to the decision to expand the trial-trench, which was done by machine at the end of

November and beginning of December 1984 (trench 1, fig. 9b). The goal of this work was to uncover completely the presumed house plan. After the trench was successfully expanded to *c.* 31×16 m, and after it became clear that this part of the Molenbuurt scheme would not be realized before the middle of 1985, it was decided to continue with the rescue excavation. The second campaign took place from the end of February to mid-April 1985.

More or less in the extension of trench 1, but more in the direction NNE-SSW and parallel to a construction road, trench 2 was dug (*c.* 51×14 m). Trench 3 was dug at a distance of 15 m from and parallel to trench 2. The SW part had a width of 14 m over a length of 52 m. When the traces of a WNW-ESE-oriented house plan came to light, the excavation trench was expanded (15×11 m) in order to expose the complete house plan. On the basis of data from trench 2, the north-eastern extremity of trench 3 was dug with a narrower width (7.5 m) over a length of 36 m. Finally, the area between trench 1 and the south-western half of trench 3 were investigated (trench 4, length 54 m, maximum width 22.5 m).

The excavated area was enclosed on three sides by construction roads. It was impossible to extend the excavation to the west because of the presence of recently-constructed roads and ditches. In order to verify whether the settlement stretched farther southward and eastward, three trial-trenches were dug to the south and east of the construction roads (respectively 10×7.5, 31.5×7.5, and 20.5×7.5 m; fig. 9b, trial-trenches 5–7). The excavation could not be expanded to the north because of the progressing housing construction.

A large number of collaborators offered their assistance to both campaigns of the rescue excavation, both from the ROB[7] and from the circle of amateur archaeologists.[8] In this connection Mohammed Bahiaoui in particular, who selflessly worked with us for many days, must be mentioned. Further, much-appreciated use was made of the services offered by the Surveying and Fire Departments of the Municipality of Oosterhout in connection with the tower wagon which was put at our disposal.

The settlement lay on a spur of the coversands area at a distance of approximately 500 m from the Maas valley.

FEATURES

Three native house plans from the Roman period of varying orientations are among the most striking features. These are described below.

House 1

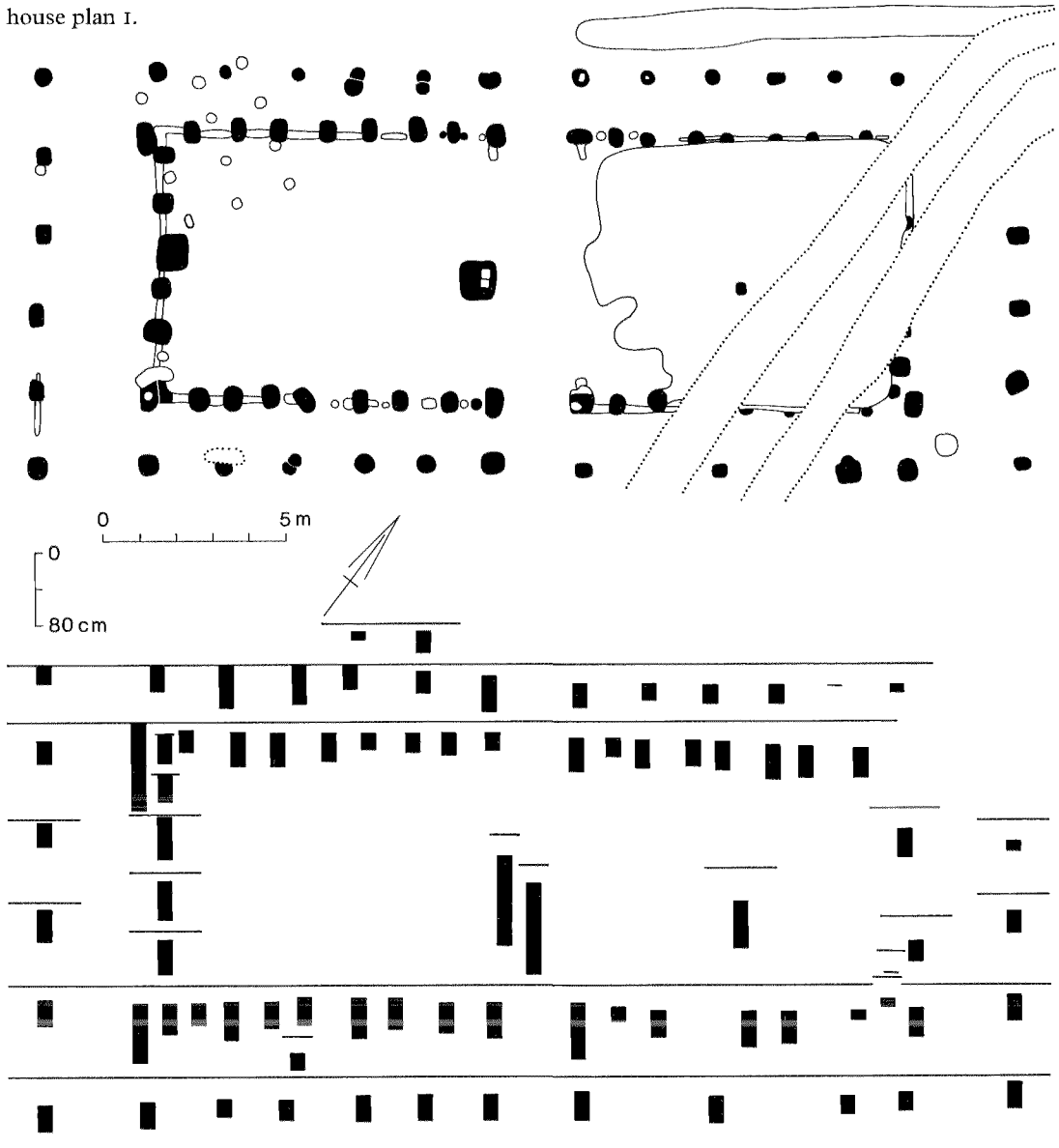
The northern part of house 1 (fig. 11) had been disturbed by two recent, parallel trenches holding water- and sewer-pipes. Nevertheless, it was possible to reconstruct the complete house plan. The house was 27.5 m long and 11.3 m wide with a SW-NE orientation. For the sake of simplicity, in the following description 'west' and 'east' are used instead of SW and NE. Two entrances standing opposite each other in the long walls and with a probable passageway of *c.* 1.8 m divide the house in two equal units. In fact, what is being described is a building with a row of central posts having a width of 7.3–7.5 m, surrounded by a row of outer posts. Of the central posts, the lower ends of three remained preserved. The fourth, in the short eastern wall, was destroyed by the digging of one of the recent trenches. In the large posthole of its counterpart in the short western wall a post with a diameter of 25 cm stood along the western side. Of the two central, deeply-dug posts in the middle, the western one, which was aligned with the entrance, had been repaired.

The sandy fill of the outer postholes varied from grey to dark brown. It was often flecked and was found to contain charcoal. The outer posts stood 1.6 m outside the long walls, while the distance to the short walls amounted to 3.3 m. The space between the outer posts varied from 1.7–2 m. In the long as well as in the short sides, the outer posts stood in pairs opposite each other. That was also the case with the wall-posts, in which the fill was comparable to that of the outer posts. The distance between the wall-posts varied from 0.9 to 1.4 m. Between the wall-posts in the *western* part of the house remnants of the wall-ditch were recovered. In general, the colour of the fill was lighter than that of the posts, but the difference between both sorts of soil marks was not always clear. In each corner of the short western wall stood a heavy post, in both cases the repair of an older post. The position of these older posts could not be determined. They could have stood vertically as well as diagonally. Of the more recent post in the south-

7 P.C. van Beest, A. Buisman, W.J. Ebens, R.E. Lutter, H. ter Schegget, and J. Smulders.

8 M. Ackermans, J. Hendriks, K. Kops, L. Moelands, F. van Nuenen, J. Oomen, and J.H. Verhagen.

Figure 11 Oosterhout: house plan 1.



western corner it was clearly discernible that the upper side, parallel with the short wall, was slanted inward. An identical observation in the north-western corner was not possible because of recent digging activities.

In the *eastern* part of the house only the trace of one corner post was preserved. Nothing is known of its exact position. Parts of the wall-ditch were also found here between the wall-posts, which were more discernible here than in the western part. A number of postholes were half-visible on the excavation level. Along the southern side of the house they appeared to have been cut through by the wall-ditch. In the opposite wall the ditch is cut through by the postholes. In both cases, the wall-ditch was not visible in the vertical sections of the postholes. What was clear was that on the inner side of the wall-posts a large pit had been dug which cut into the fill

of the postholes. The large pit thus had been dug after the house was built. Apart from that, the central post was only visible below the fill of the pit. In the centre, the pit (9×7 m) was 32 cm deep, measured from the excavation level. The excavation level in this centre was dug too deeply. Based on the data from the vertical sections, at least 10 cm can be added to the recorded depth of 32 cm. In order to determine the absolute depth of the pit, the thickness of the arable would have to be included. In total, therefore, the pit should have been at least 60 cm deep. The pit extended out to the walls with the exception of the south-western part, where it gradually became shallower. Along the edges of the pit, especially the northern part, bands of charcoal were clearly visible. The pitch-black fill of the pit consisted of sandy humic material with a great deal of charcoal. The analysis of the charcoal is described on page 271 ff. The fill also produced a large number of finds.

In contrast to the western part of the house, there appeared to exist in the eastern half a specific connection between the wall- and outer posts. The first, second, fourth, and sixth pair of outer posts starting from the entrance or the corner (it makes no difference) correspond with pairs of wall-posts, but the third and fifth pair of outer posts are situated precisely in between a pair of wall-posts. In figure 11, which illustrates the depth of the posts, the uppermost line indicates a level of 3.1 m NAP. The upper side of the underlying block marks the height of the level on which the post was examined during the excavation. It is clear that the excavation level runs down in a south-eastern direction. The height of the block shows the absolute depth of the posthole. The central posts and the two corner posts of the western short wall are strikingly deep. Otherwise, there exists almost no difference between the depth of the wall- and outer posts. In general, the wall-posts are but a few centimetres deeper than the outer posts. This difference increases somewhat in the eastern half of the house. In the walls next to the entrance stand a few heavy posts, the depth of which reaches to 2.3 m NAP.

House II

This house with a row of central posts (fig. 12), roughly west-east oriented, was 16.7 m long and 7.2 m wide. It consisted of two parts, divided by two opposing entrances in the middle of the house.

In each of the long walls of the *western* part of the house stood three wall-posts at intervals of 2.5 m. The postholes have a depth of less than 20 cm. The absence of posts in the short wall of that part of the house is notable. In the strip where an entrance is presumed to have been (4.2 m wide), stood the only heavy central post of the house. Possibly there were two posts on either side of this central post in the long wall, by which the width of the entrance was reduced to 2.4 m. If this supposition is correct, then the entrance lay more or less in the middle of the house. Moreover, this house plan would then display a strong similarity to that of house I.

The *eastern* part of the house, which is 7.5 m long, appears irregular in its construction. The eastern short wall consists of a number of wall-posts standing at varying intervals. There was no heavy central post in the middle. Remnants of a foundation trench with posts in it formed the southernmost of the two long walls.

It was difficult to distinguish between the foundation trench and the wall-posts because of the depth. Generally, the post marks did appear somewhat darker in colour than the foundation trench, but even in this respect the differences were slight. There were possibly four posts in that wall at varying intervals from 2 to 3 m. An obvious corner post is absent (because of the absence of a counterpart, the post in the elongated pit is not considered a corner post). In the opposite wall, traces of only three wall-posts have been found, two of which are relatively deep. Based on the supposition that this house was soundly constructed, a connection between both long walls can be assumed. That probably means that some posts, in spite of accurate investigation, were not recognized because of their shallow depth. It is unclear whether both posts in the north-eastern corner of the long wall belonged to the construction at the same time or whether one replaced the other in repair operations.

Within the eastern part of the house lay a large pit (6×7 m), whose construction, form, and fill are completely comparable to that of house I. One difference is the position of the pit within the posts. The pit in house I joined with the walls; in house II this is the case in two of the three walls. Between the pit and the southern wall is a clear amount of open space. The greatest depth of the pit amounted to 34 cm below the excavation level (= 3.35 m NAP). The central post reached to 2.34 m NAP and was not the deepest. The deepest posts were found in the northern wall of the eastern part of the house (base of these posts at respectively 1.98 and 2.14 m NAP). In the short wall of this part stood a deep post as well. The rest of the posts in that wall had been dug less deeply, as was the case in the western part of the house.

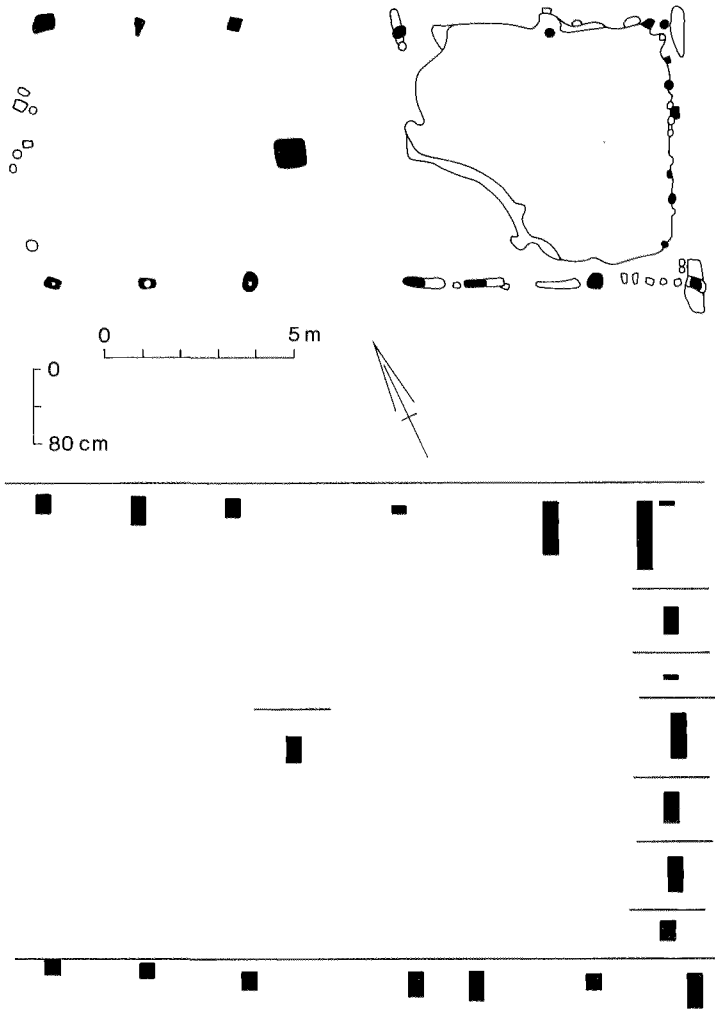


Figure 12 Oosterhout: house plan II.

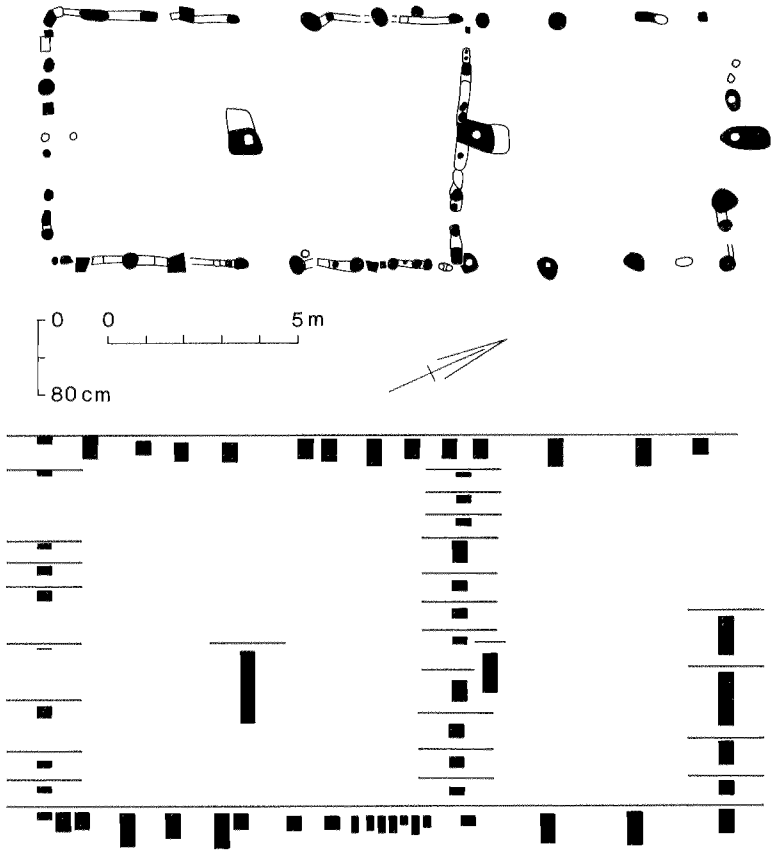
House III

This house with a row of central posts with a SSW-NNE orientation (fig. 13) was 18.1 m long and 6.5 m wide. It was probably constructed in two phases: first a southern (11 m long) and then a northern part (7.1 m long).

In the *southern* part there was an entrance in each long wall which divided the house into two unequal parts. The width of the entrances varied from 1.1–1.65 m. More or less in one line with the southern side of the entrances stood one of the two heavy central posts which had been replaced when the house was in use. The third central post was placed in the short northern wall. Its counterpart in the short southern wall was absent. Wall-posts have been recovered from the rest of the construction between which were found the remnants of a foundation trench. It was difficult to distinguish between posts and trenches in some places where both had the same depth and the same brown, clean sandy fill. Some posts which could not be distinguished in the horizontal excavation level were visible in the vertical section. The distance between the wall-posts is extremely varied, especially in the short walls and the north-eastern long wall. The shallow foundation trench of the short southern wall is striking, as well as the absence of heavy corner posts.

The wall-posts of the *northern* part of the house are

Figure 13 Oosterhout: house plan III.



more deeply dug than those of the southern part. Of the four posts in each long wall, the north-western corner post has not been recovered. In the short wall stood a heavy central post, flanked at unequal distance by two other posts. Because both central posts in the southern part were replaced, in contrast to their northern counterparts, and because a few construction elements in both parts of the house differ from each other, it is supposed that the northern part was added as an annex to the southern part. Concurrent with the building of the northern part was the probable replacement of a number of posts in the long walls of the original house (in the south). That would explain the large number of posts in the southern part of the house, in contrast to the northern part.

Ditches

In the north of the excavated area (fig. 10) two parallel ditches were found. Both can be followed over a length of *c.* 45 m. The northernmost is 1.2 m wide and 40 cm deep. Because of the presence of several Roman sherds in the fill, this ditch probably served as a property divider which was linked with the house plans. The southern ditch of the above-named pair produced red-fired glazed pottery and late stoneware from the Middle Ages or later and thus was unrelated to the settlement from the Roman period.

Granaries and rows of posts

The excavation brought at least four configurations to light which have been taken to be granaries. One of these consists of 4×3 posts and measures 3×3.5 m (fig. 14: 1). These soil marks have not produced any finds,

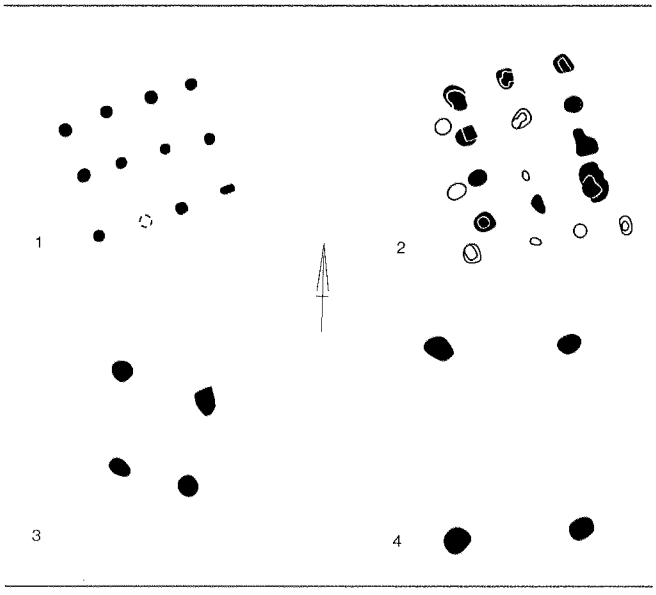


Figure 14 Oosterhout: granaries. Scale 1 : 200.

but this granary, because it was cut through by the building of house I, is seen as the oldest structure. Because of the absence of finds, it is unclear whether the granary belonged to the Iron Age or the earliest phase of the Roman period. From the posthole of a second granary, the rim of a so-called Arentsburg bowl came to light. The long walls of this granary consisted of four posts. In the short wall, a post stood between both rows. This granary, probably built in two phases, measured 3.5×3 m (fig. 14: 2). Both the other granaries are Late Medieval (trench 5). The smallest consisted of four posts and measured 2.5×2 m (fig. 14: 3). To the construction of the largest granary, which measured 4×4.5 m (fig. 14: 4), probably belongs the central post as well.

Finally, in the extreme north-east of the excavation two parallel rows of posts were identified (fig. 10). The distance between the posts varied from 1–2.5 m. The space between both rows measured *c.* 1.5 m and the rows were at least 7.25 m long. The rows were probably part of a building. The presence of a small road and recent trenches hindered the continuation of the excavation in this direction. There were no finds in the postholes.

FINDS

The finds consisted almost exclusively of pottery dating from the Roman period, more specifically from the 2nd century AD. Most of the *Roman* material was found in the pits from houses I and II and will be discussed in the section on the dating of the house plans. From the ditch which ran parallel to the northern side of house I a relatively large amount of pottery also came to light: fragments of terra sigillata type Drag. 31 and 45, colour-coated ware technique a, b, c, and d, Arentsburg bowls and bowls of type Stuart 210 from terra nigra-like material, a few two-handled flagons and coarse bowls. This pottery dates the fill of this ditch to the middle of the second half of the 2nd century. Between house I and the narrow ditch from the Roman period lay a pit which contained datable pottery. These included a decorated wall-fragment of a terra sigillata bowl Drag. 37,[9] a rim from a Belgic ware cup, and a rim from a two-handled flagon: pottery that can be attributed to the late 2nd century.

The only *native* material (one rim and two wall fragments) was found in the pit of house I. The 4×3 posts granary (fig. 14: 1), which held no finds, was cut through by house I and is therefore older than that house is. The granary may date from the Iron Age. *Late Medieval* pottery, consisting of a few Pingsdorf and Paffrath sherds, was found in both granaries and in a pit in trench 5 (figs. 10 and 14: 3–4). The position of the settlement from this period is unclear.

A special find, coming from the pit-fill of house I, was

9 Identification of wall fragment Drag. 37 according to Rheinzabern:

man with hood facing to the right	M 252
gladiator, reduced	M 216 a
fruit basket	O 27
three-part flower with foot	P 129
support	O 161
smooth double arch	KB 74

This sherd can be attributed to the production from Januarius II. A dating in the late 2nd century seems likely (Haalebos 1977, 124–5).

Figure 15 Oosterhout: bronze pendant. Scale 2:1

the small bronze head of a Silenus. Possibly it was a pendant from which the loop was broken off (fig. 15).

ANALYSIS OF THE CHARCOAL FROM HOUSE I

Besides the seed and phosphate investigations by J. Buurman (see the following article in this volume of the *BROB*), a small investigation was made of the charcoal from the pit-fill of house I. The charcoal analysis can provide information about which kinds of wood were used in and around this house and can tell us something about the house's environment. However, it cannot explain what function this deepened part of the house may have served.

During the excavation, soil samples were taken for seed analysis. From nine samples the charcoal was analysed as well. The selection criteria were the presence of charcoal in a sample and the place from which the sample was taken (see fig. 16). Because of the limited amount of time available for this investigation, only charcoal fragments greater than 4 mm were examined. From each sample, about twenty pieces of charcoal were identified with a reflected light microscope.[10] With the identification of each piece it was also determined whether there was evidence of trunk-wood (diameter greater than 5 cm) or branch- and twig-wood. Attention was also given to the presence of carbonized hyphal threads. This is because dead wood often contains microorganisms which are still visible in carbonized dead wood. Furthermore, dry dead wood carbonizes in a different manner than freshly-cut, sappy, green wood.

The results, given in mg, are recorded in table 2. The most commonly occurring species are *Quercus* sp. (oak), *Alnus* sp. (alder), and *Salix* sp. (willow). In a few instances, *Betula* sp. (birch), *Fraxinus excelsior* (ash), *Corylus avellana* (hazel), and *Rhamnus catharticus* (buckthorn) were found. The unidentifiable charcoal came

10 This microscope was made available by the IPL.

genus or species	wood type	sample number									total	%
		1	2	3	4	5	6	7	8	9		
Alnus sp.	trunk-wood	15	–	34	7	32	18	19	16	–	141	29,3
	branch-wood	–	–	–	–	–	2	2	4	5	13	2,7
	unknown	–	–	–	–	–	–	3	–	–	3	0,6
Betula sp.	branch-wood	–	2	–	–	–	2	–	–	–	4	0,8
cf. Betula sp.		–	–	–	2	–	–	–	–	–	2	0,4
Corylus avellana	branch-wood	–	–	–	–	1	–	–	–	–	1	0,2
Fraxinus excelsior	trunk-wood	–	–	–	1	6	1	–	2	–	10	2,1
Quercus sp.	trunk-wood	16	6	–	5	5	8	14	23	35	112	23,3
Rhamnus catharticus	trunk-wood	–	–	–	–	–	3	–	–	–	3	0,6
Salix sp.	trunk-wood	–	–	20	4	–	4	–	–	–	28	5,8
	branch-wood	5	37	24	12	14	4	25	14	10	145	30,8
	unknown	–	–	–	–	–	5	–	–	–	5	1,0
indet.		–	–	11	–	–	2	–	–	–	13	2,7
total		36	45	89	31	58	49	63	59	50	480	100,3

TABLE 2 Oosterhout: results, in milligrams, of the charcoal analysis of samples of house 1.

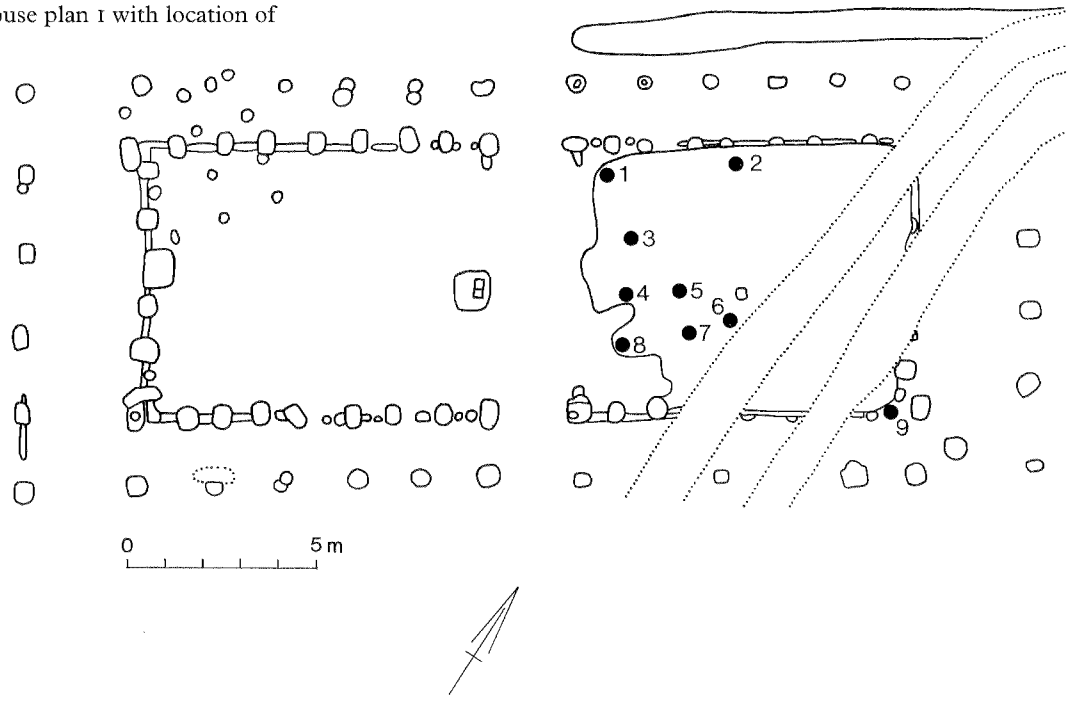
from fragments of knots whose characteristics were too distorted. The oak- and alder-wood consisted of 100% and 91% trunk-wood respectively. The charcoal from the willow is around 77% branch-wood. The question which now presents itself is, what purpose did the wood (or the charcoal) serve? Much of the analysed charcoal had been harmed by microorganisms before it carbonized, indicating dead wood. However, carbonized hyphal threads were not found in every piece of charcoal. That is not to say that such a piece, which to the eye appears to be without microorganisms, comes from freshly felled wood. It cannot be said whether these pieces of charcoal came from green or dead wood. But it can be concluded that the mould-affected branch-wood probably would not have been gathered for cattle-feed. Moreover, the types of branch-wood found here (birch, alder, hazel, buckthorn, and willow) are not used as cattle-feed. The wood may have been used as firewood, based on the fact that most coal is formed from dead wood. A third possibility is that construction wood, another sort of utility wood, or both are involved. Whether the charcoal is derived from firewood or construction wood cannot be established on the basis of the distribution of the coal over the pit in the house-site.

The charcoal analysis does provide information about the environment. The preferred location for the most frequently found types of wood here, such as willow, alder, ash, and birch, is in wet-to-moist places in open vegetation.[11] Buckthorn especially is found on humic ground in half-shaded vegetation in brook and river valleys.[12] None of these types of wood is so important

11 Weeda *et al.* 1985.

12 Weeda *et al.* 1987.

Figure 16 Oosterhout: house plan I with location of charcoal samples.



as utility wood that it required transportation over great distances. Thus a river or brook valley overgrown with bushes and trees probably lay in the neighbourhood of house I.

On the oldest edition of the Dutch ordnance survey map (1838–39), sheet 44, a brook is shown at a distance of *c.* 200 m to the south of the settlement from the Roman period. Nothing is known of the age of this brook, but it may have existed in the Roman period. As already written, the settlement lay on a spur of the coversands area. The Maas valley, which lay further north, was approximately 500 m removed from the findplace.

DATING OF THE HOUSE PLANS

The pottery upon which the dating of the Oosterhout houses is based comes exclusively from the pits of houses I and II. House III offered no datable material. Only four wall fragments were found in three postholes and the foundation trench of house III. They are from terra nigra-like, smooth, and coarse pottery, and Belgic ware. A rough date is the 2nd century.

Table 3 and figure 17 give an overview of the Roman rim sherds from houses I and II. In general, there is a broader representation of Roman pottery in the pit of house II (one-third more) than in that of house I. That is especially the case with the terra nigra, terra nigra-like, colour-coated, and thick-walled material, and to a lesser degree with the smooth pottery. It is notable that in house I almost one-fifth (18.7%) of the rims belong to the terra sigillata (in house II that amounts to 6.3%), there is an absence of colour-coated rims (although some colour-coated walls were found), and a relatively large amount of coarse ware came to light. Such differences and their significance will be discussed further in another context.[13] The form and fabric of the coarse ware have more in common with finds in the western Netherlands than with those in the east of Brabant.[14] As

13 Verwers, in preparation.

14 Brouwer 1986.

HOUSE I

HOUSE II

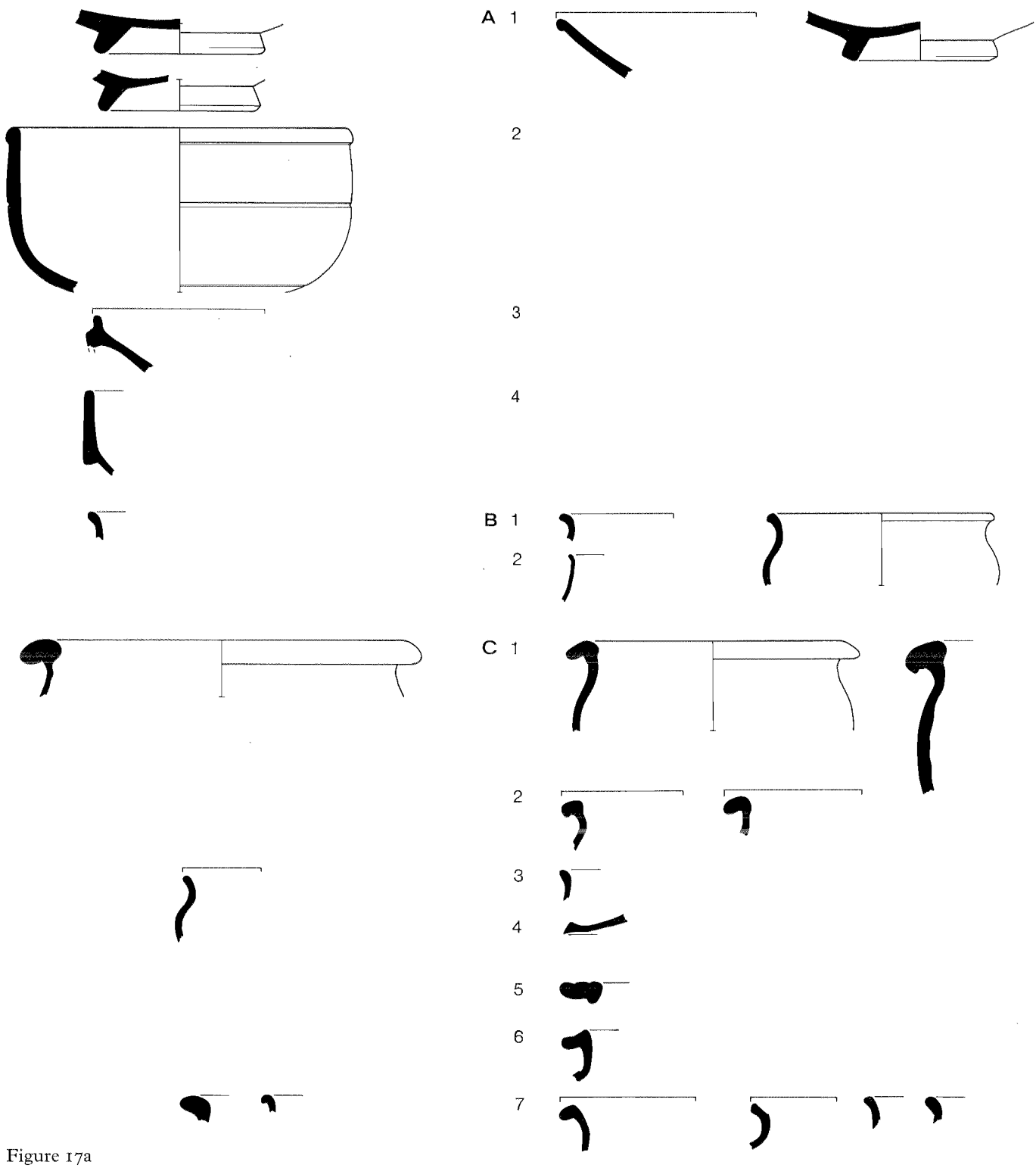


Figure 17a

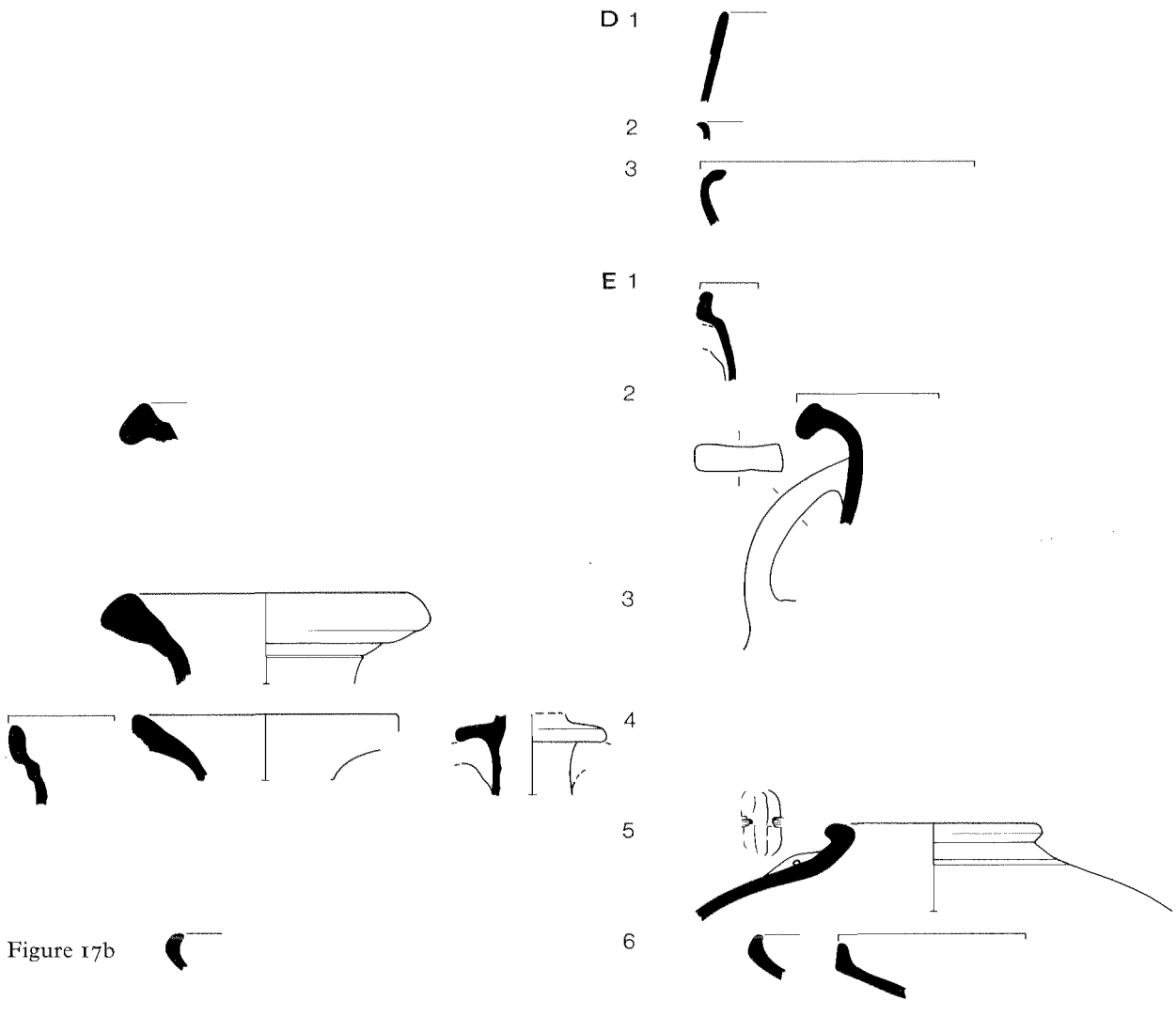


Figure 17b

Figure 17a–c Oosterhout: Roman import pottery from houses I and II. For fabric (A, B, etc.) and type (1, 2, etc.) see table 3.

far as the absolute dating of the houses is concerned, we have a number of data which roughly point to the second half of the 2nd century. In this connection can be noted terra sigillata mortars of type Drag. 45, dishes of type Drag. 43, and plates of type Drag. 31. The decorated sherds of the bowl, type Drag. 37, point in the same direction: mid-2nd century or later (fig. 18).[15] The presence of colour-coated pottery of technique c and d

15 Identification of rim fragment Drag. 37:

ovolo	Fölzer 954
prisoner	Oswald 1158
sea monster	Oswald 39
dog	Oswald 1568
rabbit	Oswald 2139

Compare Fölzer 1913, pl. 10: 60. The rim sherd from Oosterhout belongs to the so-called Alpinus-ware from *Werkstatt* II in Trier. Dating according to I. Huld 1969: middle 2nd century. Haalebos (1977, 122 and 126) does not rule out the possibility that this ware was manufactured up to 180 or even later.

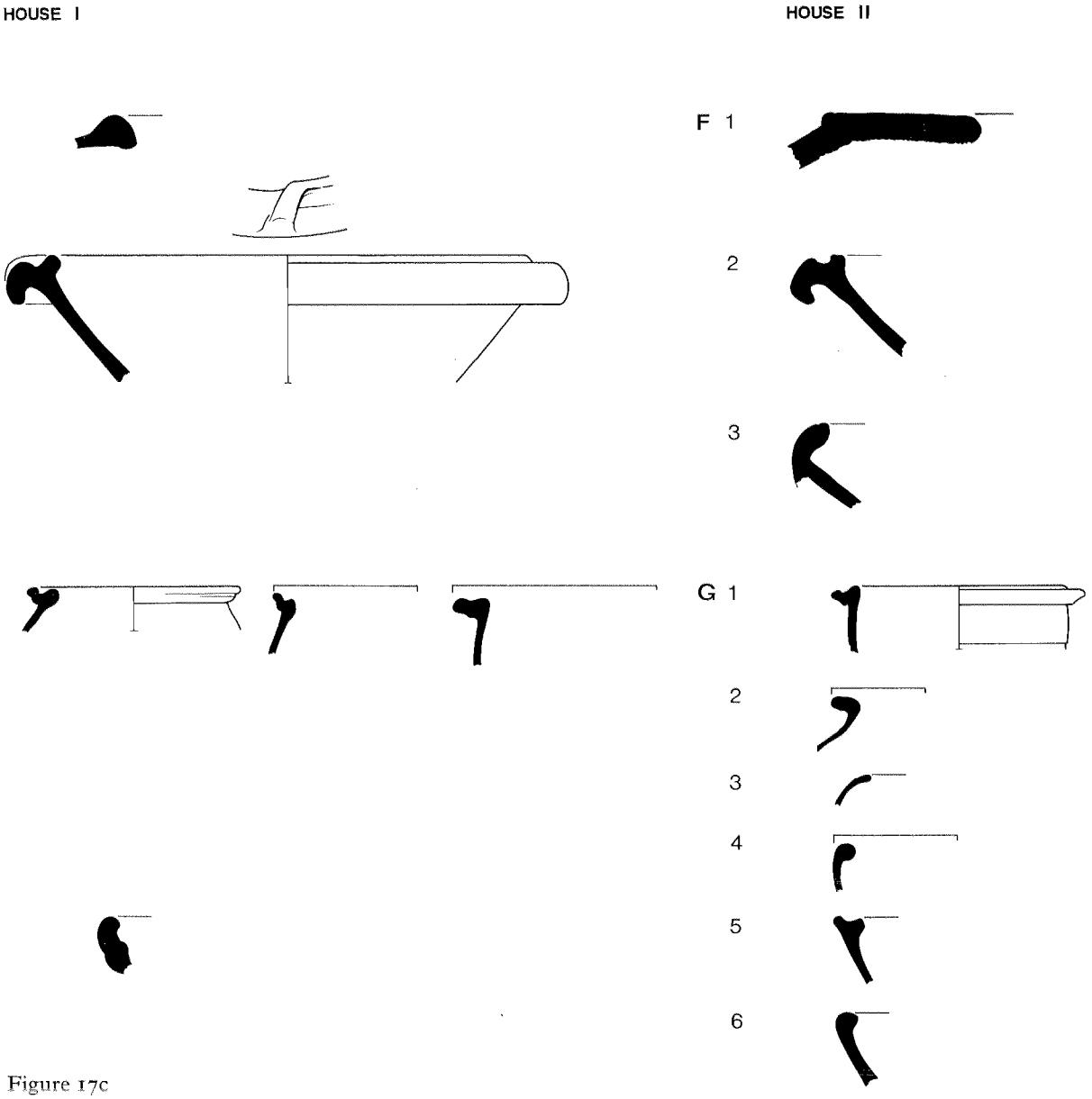


Figure 17c

in house I and only of technique c in house II suggests dating to the late 2nd century.[16] This is reinforced by the absence of terra sigillata bowls of type Drag. 27 and colour-coated cups with *Karnies* rims of type Stuart 2. The last is assumed to have gone out of use between *c.* 175 and 190.[17] The same is more or less true for type Stuart 210,[18] which is almost completely absent from Oosterhout. It can be stated on the basis of these data that the construction of houses I and II occurred after *c.* 160 or 170. In Niederbieber,[19] which after 190 was used as a fortress, a few forms are very characteristic: terra sigillata bowls type Drag. 40 and Niederbieber 11, terra sigillata plates type Drag. 32 and plates of coarse ware type Niederbieber 111, and colour-coated ware of

16 For techniques see Brunsting 1937, 70–2. For dating see Haalebos 1977, 60–1, 68.
17 Haalebos 1977, 70.
18 Stuart 1963, 78–9.
19 Oelmann 1914.

TABLE 3 Oosterhout: Roman imported pottery from houses I and II. The capitals A, B, etc. in the fabric column and the numbers 1, 2, etc. in the type column refer to those in figure 17.

fabric	type	number of rim fragments	
		house I	house II
A terra sigillata	1 Dragendorf 31	2	2
	2 Dragendorf 37	1	–
	3 Dragendorf 43	2	–
	4 Dragendorf 45	4	2
B terra nigra	1 Bloemers 1978, I/II	1	1
	2 beaker	–	1
C terra nigra-like	1 Holwerda 1923, 141–2	12	18
	2 Holwerda 1923, 140	–	2
	3 Bloemers 1978, I/II	1	2
	4 lid	1	1
	5 Stuart 1963, 210	–	1
	6 bowl	–	1
	7 misc.	2	6
D colour-coated	1 Stuart 1963, 3	–	2
	2 Oelmann 1914, 32	–	1
	3 Brunsting 1937, 17	–	1
E smooth	1 flagon	–	1
	2 jar-amphora A	3	3
	3 jar-amphora B	2	–
	4 diverse	2	–
	5 honey jar miscellaneous	–	1
	6 plate	1	4
F thick-walled	1 dolium	1	1
	2 Brunsting 1937, 36	1	3
	3 Brunsting 1937, 37	–	1
G coarse	1 Oelmann 1914, 89	10	5
	2 Stuart 1963, 201	–	1
	3 Brunsting 1937, 16	–	1
	4 Brunsting 1937, 9	–	1
	5 Brunsting 1937, 20	1	1
	6 Brunsting 1937, 21	–	1

techniques c and d.[20] Apart from the last type, which was found in scant quantities, the other types are virtually unrepresented in the find-complex at Oosterhout. That means that houses I and II fell out of use around 190. Whether the houses were built in different periods cannot be established on the basis of the find-material.

3 CONCLUSIONS

Characteristic of the territory of the Batavians, which corresponds to the modern central- and east-Netherlands river area, is the house type with a row of central posts.[21] This type can be identified by a rectangular

20 Compare Verwers 1975, 119–21; Haalebos 1977, 65, etc.

21 Van Es 1981, 77.

Figure 18 Oosterhout: rim sherd of terra sigillata bowl, type Drag. 37. Scale 1:2.

plan with posts in the middle which carry the ridge purlin. As far as is now known, this house type developed from the so-called Haps-house, which dates from the Middle Iron Age.[22] Examples of the native house with a row of central posts from the Roman period are to be found not only in the river area, such as at Druten, Wijk bij Duurstede, Ewijk, and Jutphaas, but also along the banks of the Maas in Oss and Escharen and on the coversands in Brabant and North Belgium, such as at Alphen, Hoogeloon, Riethoven, Oelegem, Kontich, Ekeren, Donk, Boxtel, Den Dungen, and Oosterhout. A variant of this type of house plan with central posts is found in Wijk bij Duurstede, Oss, and Den Dungen. There one part of the house had a central row of posts, the other was more or less aisled. This aisled part suggests the presence of a byre. The boundaries of the area where houses with central posts appear may be more precisely determined through future investigation. At this moment it is clear that the houses with central posts in the river area and along the banks of the Maas had hipped roofs or saddle roofs. This to some degree contrasts with the houses on the coversands in Brabant, which were found to have saddle roofs mainly as indicated by the position of the outermost central posts in the short walls.

Recent excavations on the coversands on both sides of the Dutch–Belgian border brought a number of native house plans from the Roman period to light. Although the construction of these houses is similar along broad outlines, a dichotomy can be reported: 1. house plans in which only the heavy central posts are identified; 2. house plans with heavy central posts and posts in the walls.

The first-named type has been found through excavations in, among other places, Boxtel, Goirle, Hoogeloon,[23] and Donk.[24] Slofstra assumes that with these

22 Verwers 1972.
23 Slofstra & Bazelmans 1985.
24 Van Impe 1983.

houses foot-plates were laid in shallow foundation trenches.[25] In these foot-plates the wall-stakes or planks were mounted. Because the foundation trenches were very shallow, they almost never are recovered through excavation. In fact, these house plans are identified only by the row of the heavy central posts. The length of these buildings lies between 3 and 27.5 m. It seems likely that the smallest, shorter than 5 m, served as barns. Buildings longer than *c.* 8 m were possibly intended as residences or farmhouses. The stated lengths are the smallest possible measurements. In the establishment of the length of a building it is assumed that the outermost central posts stood in the short wall and that the building thus was provided with a saddle roof. It is not impossible, however, that a hipped roof rested on these buildings, as may be assumed for the smallest buildings. In that case, the length of the buildings works out to be greater. Nothing is known of the position of the entrances. This type of house, identified exclusively by the existence of heavy central posts, is characteristic of the coversands in Brabant and North Belgium.

With the second type the central posts as well as the wall-posts can easily be recognized. Examples came to light in Alphen,[26] Boxtel (house I), Oelegem,[27] and Ekeren.[28] It is notable that these buildings measure no longer than 18.5 m. The width varies from 6–8.5 m. Only in the Ekeren house plan was an entrance more or less clearly indicated, which divided the house in two equal parts. With the rest of the house plans, the position of the entrance is difficult to point out. There is an impression that the houses consisted of unequal parts.

With house I in Boxtel, a house in Riethoven, and house IV in Hoogeloon the outermost heavy central posts stood in the short walls, providing the basis for the assumption that these houses had saddle roofs. Possibly the other houses, of which only the heavy central posts have been recovered, were fitted with the same type of roof. The presence of a hipped roof, however, may not be ruled out, as a house plan in Grobbendonk shows.[29]

The Oosterhout house plans II and III and the Boxtel house plan I are also comparable in size to house plans from the second type described above. In its original plan, house III was divided into more or less equal parts by both entrances, placed opposite each other. The same is assumed for house II. The absence of (heavy) posts in the short walls of both these houses from Oosterhout is striking. Because the distance between the outermost central posts and the short walls was too large for the construction of a hipped roof, it is likely that these houses had saddle roofs. Such houses are found not only on coversand; parallels are also known from the river area.[30]

Beginning in the 16th century, farmhouses are known to have existed with deepened byres, a so-called *potstal*. These farmhouses have been found mainly on the coversands in the Netherlands and had a specific function. The livestock were kept in the deepened part of the byre, the floor of which was strewn with grass or heather sods. When the sods became soaked with excrement, a new layer was brought in. The dung-impregnated matter created by this process was then spread over the fields to enrich the soil.[31] The result of this special way of preparing manure is an arable soil with an unusually thick A-horizon which is called a *plaggen* (sods) soil. It is known that these kinds of fields existed in the coversand areas of north Germany, the Netherlands, and Belgium.[32] The oldest probably can be dated to the end of the Early Middle Ages.[33]

Houses I and II in Oosterhout may have had the same function, but the proof for this is difficult to find. *Plaggen* soils older than the Middle Ages are still rare or have not yet been found. However, there are indications that fields were being manured during the Iron Age, but that the manuring had not resulted in a thickened A-horizon.[34] If livestock stood in the deepened parts of the Oosterhout farmhouses one would expect to find a higher phosphate content. Also, the assemblage of plant remains could point to cattle feed, sods, and straw.

The investigation of the function of these sunken-floor byres is discussed in the following article by J. Buurman. Her investigation reveals that the pits described here have been byres. Proof that the manure was mixed

25 Slofstra & Bazelmans 1985, 21.
26 Van der Sanden 1977, 113–4.
27 De Boe & Lauwers 1980.
28 De Boe & Lauwers 1980.
29 De Boe 1985.
30 Professor W.A. van Es and W.A.M. Hessing kindly drew my attention to comparable house plans in De Horden at Wijk bij Duurstede.
31 Slicher van Bath 1977.
32 Pape 1970.
33 Behre 1980.
34 Brongers 1976.

with sods could not be found. There is a possibility that the pits in houses I and II served other purposes as well because they contained a great deal of refuse, especially pottery. Other examples of sunken-floor byres from the Roman period are a non-aisled house plan in Donk[35] and plans with a row of central posts in Ekeren and Hoogeloon.[36]

The central part of house I in Oosterhout also fits the tradition of house construction with a row of central posts in the Roman period. Especially by its length, 27.5 m, this house plan has more in common with comparable house plans from the river area and the banks of the Maas in Brabant than with those which are known from the Brabant coversand area, including those described above. As examples, the lengths of house II in Druten,[37] a house in De Horden at Wijk bij Duurstede,[38] and one in Valkenburg[39] can be mentioned (25.5, 24, and 25.5 m respectively).

We cannot pay exclusive attention to the position of the central posts at the expense of other structural elements, such as the A-construction for carrying the ridge purlin and the portico. In the middle of the western short wall of house I at Oosterhout a large posthole was found, but it was not as deep as the other central posts. Possibly this post had another function. In each corner of the western short wall, exactly outside it, a heavy deep post was found. One of these had been recently disturbed, but the other could clearly be observed as having slanted inward. Undoubtedly, this pair of posts had carried the ridge purlin. A comparable situation is known in houses which were investigated in the western Netherlands, namely in Kethel[40] and Rockanje.[41]

The row of posts surrounding house I at Oosterhout remains to be explained. Until now such a row of outer posts was not known in native house plans from the Roman period on the Brabant coversand. They do appear in the river area and along the banks of the Maas in Brabant. Examples have been found in Valkenburg,[42] Druten,[43] Wijk bij Duurstede,[44] Kootwijk,[45] Oss,[46] and Den Dungen.[47] The distance between the long wall and the outermost row of posts at the last-named places amounts to less than 1 m. Such a measurement closely resembles that of the older houses of the Haps type: there the distance measures 50–80 cm.[48] This measurement suggests that the wall-posts as well as the outer posts served to carry the roof. For the houses found at Wijk bij Duurstede, Kootwijk, Oss, and Den Dungen, the same construction can be expected.

In the house plans at Druten, Valkenburg, and Oosterhout, the distance between the wall- and outer posts in the long walls amounts to more than 1.5 m, and in the short walls even more than 3 m. If, in reconstructing these houses, it is assumed that the outer posts also bore part of the roof weight, it means that with a roof incline of *c.* 45° and a wall height of *c.* 1.8 m the outer posts protruded only a few decimeters above the original ground level. The roofed-in space between the wall-posts and the outer posts, which is relatively large (in Oosterhout *c.* 130 m^2), could not have been used because of the low height of the outer posts. It would have been an inefficient use of building materials as well. If it is assumed that the outer row of posts reached a height of *c.* 1.5 m, so that the roofed-in space might have been well-used, then the long wall would have reached an extreme height of *c.* 3 m. Moreover, with a roof incline of *c.* 45°, the ridge purlin in that case would have been 7 m above the ground level. Therefore, it must be assumed that in Druten, Valkenburg, and Oosterhout, the outer row served no carrying function in the construction of the roof. It is more likely that the outer posts belonged to a portico around the house which perhaps served as a byre or storage area. In that case the roof would have angled off at the height of the wall-posts, resulting in a less extreme slant for the roof at the far end. Since the extension of the houses at Druten, Valkenburg, and Oosterhout gives the impression of a portico, differing in this respect from the development of the native house type such as we have learned

35 Van Impe 1983, fig. 7: K. If the western short wall of this building were situated 4 m further to the east, it would show more similarity to house II in Oosterhout.
36 De Boe & Lauwers 1980, fig. 1.
37 Hulst 1978.
38 Van Es 1981, fig. 138.
39 Hallewas 1986, fig. 7, 51.
40 Modderman 1973, 154–8; Van Es 1981, 173–4.
41 Hallewas 1984, 310.
42 Hallewas 1986.
43 Hulst 1978.
44 Van Es 1981, fig. 138.
45 Heidinga 1976, fig. 5.
46 Verwers 1983, 30, fig. 21; Van der Sanden & Van den Broeke 1987, 59–66.
47 *JROB* 1984, 66–7.
48 Verwers 1972, 83.

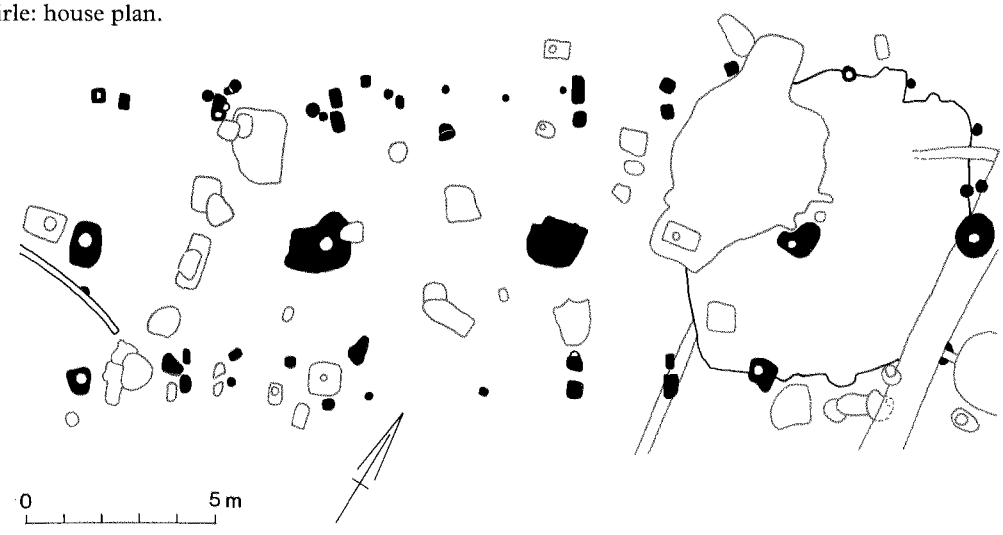
to recognize in its early form in Haps, it can be assumed that the portico developed under (Gallo-)Roman influence.
It is a question whether house I at Oosterhout had a hipped roof or a saddle roof. The heavy posts in the short walls in combination with the large distance between the short wall and the outermost central posts make it likely that this house was provided with a saddle roof. The roof of the portico was connected to the gable of the short wall. The circumference of the posthole in the middle of the short wall indicates that this post served a more important function than the other wall-posts. However, because the posthole was shallower than those of the other central posts, it probably did not carry the ridge purlin. Thus it was reasoned that the earlier-named slanted posts in the corner of the short wall served this function. The slope of the portico roof was even less extreme along the short walls than along the long walls. Perhaps the post in the middle of the short wall was part of the construction that bore the portico roof. A wall-plate may have been fixed on the wall-posts of the long wall which, together with the ridge purlin, carried the weight of the roof. The long walls may have been connected to each other by a number of tie-beams.
Entrances in the long wall divided house I in Oosterhout in two equal parts. The eastern part contained a pit whose depth and fill were comparable to those of the pit in Oosterhout house II. It is obvious in both cases that this part of the house was used as a sunken-floor byre. The fact that the two houses differ in length and that the measurements of other above-mentioned houses are not mutually consistent has more to do with function than with construction. Perhaps the availability of building materials, the social status of the inhabitants, and the local building tradition also played a role.

In summary: At Oosterhout a native settlement from the Roman period has come to light whose borders were fixed on three sides: the north, east, and south. The settlement was bordered to the north by a ditch which may have continued to the east and south. It is possible that the settlement extended further to the west, but because of the presence of roads and houses future excavation there is virtually out of the question. Plans of three houses have been exposed in Oosterhout. It is not clear whether these stood at the same time or whether they were built consecutively. The finds provide no solution. They do, however, reveal that houses I and II were built after AD 160 or 170 and cannot have been in use much later than AD 190. A more precise date than the 2nd century is not possible for house III.
As far as construction is concerned, the house plans at Oosterhout are as closely related to those in the western Netherlands, the river area, and the banks of the Maas, as to those on the coversands of Brabant. The composition of the Roman find assemblage does not deviate from Roman find assemblages found at other settlements in Brabant. Only the coarse ware shows more similarity in fabric with finds from the western Netherlands than with those from the eastern part of Brabant. Archaeobotanical research has shown that the deepened parts of the Oosterhout farmhouses were used as byres. It also demonstrated that the livestock was grazed on fallow arable land. This means that the inhabitants did not live solely by raising cattle; agriculture had a function in the economy as well.
At the Boxtel settlement, all boundaries were probably fixed. Nearly all ten buildings belong to the type with a row of central posts. Three of the buildings have been identified as barns because of their small size and their location. A fourth probably served as a granary. The other buildings may have functioned as dwellings with byres. From one house, not only the central posts but also the short and long walls were recovered. The plans of the other houses are exclusively recognizable by postholes of the heavy central posts. In this respect they closely resemble house plans on the coversands in De Kempen and North Belgium. Within the settlement, which was probably inhabited at least for the first 150 years of the Christian era, six phases can be distinguished, each phase represented by one dwelling. The finds which came to light in the settlement generally belong to the same ordinary utility pottery which characterizes other settlements in the Brabant area.

4 POSTSCRIPT

In 1989, the ROB excavated a settlement on the Groote Akkers at Goirle which was inhabited in the 11th and 12th century. During the investigation, Roman sherds also were uncovered. A few postholes and pits were attributed to the Roman period solely based on the absence of younger material.
Analysis of the data revealed a clear row of five very deep postholes. They were identified as central posts from a native house of the Roman period of at least 23.5

Figure 19 Goirle: house plan.



m in length; the building was *c.* 8 m wide. This house, which has a rough SW-NE orientation, is basically of the same type as the houses found in Boxtel and elsewhere more southward on the coversands. Between the third and the last central posts, remnants of a pit were found which reached down to *c.* 50 cm below the excavation level. The fill of the pit, which had been partly disturbed by a Late Medieval well and a ditch from the same period, consisted of humic material. As in Oosterhout, it is assumed that the pit served as a sunken-floor byre.

In figure 19, the postholes from the house are shown in black. Just to the west of the sunken-floor byre are two facing pairs of postholes. They show the position of one entrance. The pair of postholes from the southern entrance contained Roman sherds, as do the hole of the second central post and one posthole on the southern side of the sunken-floor byre. The remaining postholes which are shown in black contained no finds, but it is assumed that they belonged to part of the building on the basis of their location. Those postholes in which Late Medieval pottery was found do not belong to the native house plan of the Roman period. These are shown in grey. Those remaining postholes which contained no datable material are shown exclusively by their contours.

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JANNEKE BUURMAN

Carbonised Plant Remains and Phosphate Analysis of two Roman period House Plans with Sunken Byres at Oosterhout

Keywords: archaeobotany, *plaggen* soils, sod manuring, phosphate analysis, carbonised seeds, sunken byres, Roman period, Oosterhout, Province of Noord-Brabant, the Netherlands, 34 references.

During rescue excavations of a settlement site at Oosterhout from November 1984 to April 1985, three house plans of the Roman period were excavated by the ROB.[1] The houses are dated by pottery to the latter half of the second century AD. Two of the houses are divided into two parts, one of which is characterised by a large pit, interpreted by the archaeologists as a sunken byre. In an attempt to obtain more positive evidence regarding the function of these pits, carbonised plant remains and phosphate content of the soil were investigated. The results might also shed light on the agricultural system practised on the poor sandy soils of Brabant in the Roman period.

THE SITE

The site lies on a spur of Late Pleistocene coversands, at a distance of some 500 m from the Maas valley. This is on the periphery of the distribution area of the raised *plaggen* soils in north-western Europe, which extends across north-western Germany, the Netherlands and northern Belgium.[2]

During the excavation it was observed that a relatively thin *plaggen* soil was present on the site. However, this soil had been so much disturbed by recent activities that it was impossible to examine the original soil profile, let alone to sample it for seeds, pollen or archaeological remains.[3] Hence there is no exact date for this raised soil.

1 Verwers & Kooistra 1990.
2 Pape 1970.
3 Pers. comm. W.J.H. Verwers.

PLAGGEN SOILS AND SOD MANURING

Plaggen soils are man-made raised soils, resulting from the age-old practice of applying manure with a high mineral content. Cow dung and sheep droppings were collected during winter stabling and, in summer, during night stabling. The floor of the byre would be strewn with forest litter, heather turves or grass sods from the brook valleys to absorb the animal droppings. Plain sand or straw might also be added. The mixture of litter and dung would accumulate in the course of the stabling period. To allow for this, the floor of the byre would be made deeper than that of the living quarters of the farmhouse. The deep-litter byre, the *potstal* in Dutch terminology, would not be mucked out on a daily basis, as is usual in modern byres. It would not be done until the animals almost touched the roof with their heads.

The available evidence suggests that the earliest *plaggen* soils date from around AD 1000, a period in which there was a great need for agricultural intensification. The poor sandy soils saw the large-scale adoption of what came to be known in Dutch as the *eeuwige roggebouw* ('eternal rye' system), the cultivation of winter rye without fallow periods. This greatly increased the demand for manure.[4] Another possible explanation for the emergence of *plaggen* soils is the occurrence of long periods of drought, which forced farmers to increase the moisture-retaining capacity of the soil by applying sods.[5] This agricultural system, known in German as *Plaggenwirtschaft*, remained current until the introduction of chemical fertilisers at the end of the last century. Possibly the introduction of guano manure from South America also played a role in the demise of this system.

4 Behre 1976; 1980.
5 Heidinga 1987.

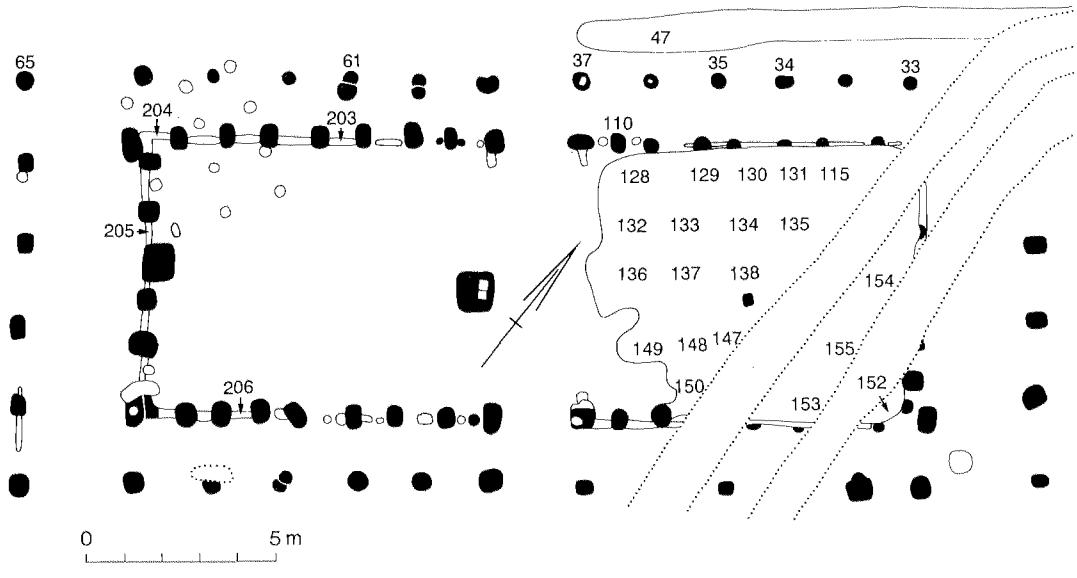

Figure 1 Oosterhout: house plan 1 with location of samples. House plan after Verwers & Kooistra 1990.

Yet there are even earlier indications pointing to sod manuring, going back as far as the Late Iron Age, the Roman period, and the Early Middle Ages, from the islands of Texel[6] and Föhr and from Archsum on the island of Sylt.[7] Extensive botanical analyses of the raised soils of Föhr and Archsum, up to 60 cm thick, have shown the sods to have been cut from heath and peat bogs of the Pleistocene landscape and from the grassland of the higher salt marshes. The agricultural system at these sites was not related to the *eeuwige roggebouw*. Barley was foremost, cultivated as a summer crop. The excavated sites did not reveal houses with sunken byres. The agricultural system here must have been different from the medieval *Plaggenwirtschaft* described above, which centred on growing winter rye.[8] Fokkens suggests a link between sod manuring and the Celtic fields, regarding the ridges as the location of compost heaps made up of soil from the actual fields, dung and possibly sods brought in from beyond.[9]

The occurrence at Oosterhout of houses from the Roman period with sunken byres in combination with the local raised soils, for which a date is not available, aroused curiosity about evidence regarding the agricultural system of the period; this might possibly be a forerunner of the medieval system of sod-manuring which gave rise to the *plaggen* soils.

THE HOUSE PLANS

The house plans have been extensively described and interpreted by Verwers.[10] Both houses had a central row of posts. Probably a transverse passage, about 1.8 m wide, divided them into two equally large parts, one of these featuring a large pit of irregular outline. House plan I (fig. 1) and house plan II (fig. 2) measure 27.5×11.3 m and 16.7×7.2 m respectively. The large pit in house I was 9×7 m and went down 32 cm below the excavated level at its deepest point. This may have been about 60 cm below the original surface. The pit extended right up to the walls, except in the southwestern part, where it gradually became shallower (for the orientation of the house see fig. 1). The uneven layout of the pit and the fact that it transects the fill of the postholes indicate that it was not constructed when the house was built, but was excavated during its occupa-

6 Pers. comm. P.J. Woltering
7 Kroll 1975; 1980; 1987.
8 Kroll 1980; Behre 1980.
9 Fokkens 1991, 129.
10 Verwers & Kooistra 1990.

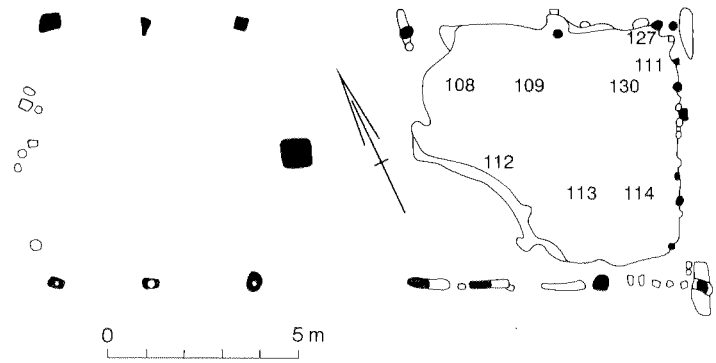

Figure 2 Oosterhout: house plan II with location of samples. House plan after Verwers & Kooistra 1990.

tion. This could support its interpretation as a byre. Along the margins of the pit, especially in the north-western part, bands of charcoal were clearly visible.
The large pit of house II measured 6×7 m. Its depth, shape, and fill were entirely similar to those of house I. The contents of both pits consisted of sandy, humic soil containing refuse, mainly pottery and charcoal.
So far, quite a number of farmhouses from the Roman period with sunken byres have been identified, and excavations are bringing even more to light. For parallels the reader is referred to the article by Verwers and Kooistra in this volume.[11] Recently, the ROB excavated a farmhouse from the Roman period with a large pit at Venray, which was also examined for plant remains. At the time of writing, yet another is being uncovered at Oosterhout.
According to Van Es,[12] the sunken sections of the house plans from the Roman period definitely are no deep-litter byres. In his opinion, the irregular bottom of these pits can be attributed to the way in which the byres were periodically mucked out. Shovelling away the manure, one might easily include a layer of the light sandy soil; in this way the floor would be progressively deepened, acquiring an irregular surface. The floor would remain higher towards the central passageway and the doors. In this way the dung would already contain some sand from the floor of the byre. Possibly people came to realise the advantages of such initially inadvertent mixing and started to introduce sods into the byre, as became common practice in the medieval *Plaggenwirtschaft* on the poor sandy soils.

11 Verwers & Kooistra 1990.

CARBONISED SEEDS AND FRUITS

A large number of samples (196) were taken for the analysis of plant remains from the fill of the large pits and postholes of both houses, from the foundation trenches, and from a ditch parallel to house I, which was clearly associated with it and contained a great deal of pottery. The samples were flotated, using sieves with meshes of 1.0 and 0.5 mm.
The seeds and fruits were preserved only in carbonised condition. Their state of conservation is poor. They are often distorted, puffed or corroded. This sometimes hampered identification.

House I
The results of the analysis of carbonised seeds and fruits from house I are shown in tables 1 and 2. Only a few of the flotated samples from the postholes and the foundation trench of this house were analysed; these contained so few carbonised seeds and fruits that it seemed pointless to analyse any further samples from these features.
From house I, 32 samples were analysed in full detail. Table 1 gives the volumes of the samples, the numbers of carbonised seeds and fruits, the densities of seeds and fruits per litre of soil, and the occurrence of charred sclerotia of the fungus species *Cenococcum geophilum*. The samples from the foundation trench contained only *Cenococcum* sclerotia. In the samples from the postholes, these sclerotia generally occurred in large numbers, whereas in only two of them a single seed was

12 Pers. comm. Professor W.A. van Es.

encountered. All but one of the samples from the fill of the large pit contained seeds, be it generally in low densities. *Cenococcum* sclerotia also occurred. The plant remains appear to be more or less evenly distributed throughout the fill of the pit. The densities are roughly similar. Therefore the contents of the pit may be regarded as a homogeneous whole, and the samples from it can be given equal status.
Table 2 lists the contents of the samples from house 1 that were found to contain carbonised seeds and fruits.

Crop plants
Hulled six-row barley (*Hordeum vulgare*) appears to have been the most important crop, followed by oat (*Avena* spec.). Owing to the lack of chaff remains it is impossible to tell whether the grains belonged to the cultivar *Avena sativa* (or even *Avena strigosa*) or to the wild *Avena fatua*, which occurs as an arable weed. However, *Avena sativa* is a well-documented cereal for this period. Therefore the grains are considered to derive from this cereal, although we must bear in mind that they may belong to the weed species. Emmer (*Triticum dicoccum*) and spelt (*Triticum spelta*) were both grown in the period under consideration. Yet the highly corroded condition of both the grains and the glume bases of *Triticum* makes it impossible to attribute these remains to either species. Broomcorn millet (*Panicum miliaceum*) and linseed (*Linum usitatissimum*) are also well-known crop plants of this period.
There are only a few chaff remains. Just a single rachis internode of barley was found. Of emmer or spelt wheat two glume bases were retrieved. Considering the small number of grains, this is a high score for *Triticum*. Experiments on the effect of charring on cereal plant components have shown that differential preservation does occur.[13] Rachis internodes of barley are among the first components to be lost through charring. Glume bases of glume wheats, on the other hand, survive carbonisation almost as well as the actual grains, and are far more likely to be retrieved. Moreover, internodes of barley are also much more vulnerable to subsequent damage than glume bases of hulled wheats, for example during incorporation in the sediment and at retrieval. Therefore it is possible that chaff of barley is underrepresented in comparison to wheat chaff.

Wild plants
Among the wild plant remains, the occurrence of a comparatively large number of caryopses of wild mil-

feature	sample number	volume	n	d	Cenococcum
large pit	115	2	1	0.5	×
	128	11	21	1.9	××
	129	14	186	13.3	××
	130	15	35	2.3	××
	131	18	34	1.9	×
	132	12	8	0.7	××
	133	18	53	2.9	××
	134	21	10	0.5	×
	135	16	23	1.4	×
	136	4	33	8.3	
	137	6	56	9.3	
	138	11	44	4.0	
	147	9	61	6.8	
	148	14	75	5.4	×
	149	4	9	2.3	××
	150	8	84	10.5	
	152	12	13	1.1	×
	153	15	18	1.2	
	154	9	0	0.0	
	155	11	1	0.1	××
postholes	33	?	0	0.0	×××
	34	?	0	0.0	×××
	35	7	0	0.0	×××
	37	8	1	0.1	×××
	61	4.5	0	0.0	×
	65	18	1	0.1	×××
	110	?	0	0.0	×××
foundation trench	203	6	0	0.0	××
	204	5	0	0.0	×
	205	5	0	0.0	×
	206	6	0	0.0	×
ditch	47	29	5	0.2	×

Table 1 Oosterhout: carbonized plant remains from house 1. Indicated are: sample number; volume in litres; total number of seeds, fruits and chaff; density (number of seeds, fruits, and chaff per litre); occurrence of Cenococcum (×: 1–10, ××: 11–100, ×××: >100).

13 Boardman & Jones 1990.

lets, especially of cockspur grass (*Echinochloa crus-galli*) and of seeds of plantain (*Plantago lanceolata*) should be noted. Together with unidentified caryopses of grass species (Gramineae) and the seeds of *Rumex* species they are the most numerous and the most frequent.
Identification of the wild millet-type fruits was sometimes difficult. In general, most grains meet the criteria for *Echinochloa crus-galli* (cockspur grass), characterised by a flat ventral side and a large radicle shield which extends over roughly three-quarters of the dorsal side. Yet it cannot be ruled out that grains of *Setaria* are among them. These are more rounded ventrally.
Knörzer[14] suggests that grains of *Echinochloa crus-galli* were collected for human consumption from the Neolithic onwards and that this plant was even cultivated in the Roman period. Grains of the species have been found in the stomachs of bog bodies.[15] Nowadays it is still cultivated in some regions (former USSR, Egypt), where it is a much-appreciated cattle fodder.[16] In the Netherlands, cockspur grass is a detested arable weed among summer cereals and root crops, particularly in well-manured fields. It also occurs in ruderal habitats.
The seeds of *Echinochloa crus-galli* are known to be very resistant to the digestive process. Experiments have shown that a high percentage of seeds swallowed and excreted by cattle are still germinable and viable.[17]
Plantago lanceolata is a very important plant in grasslands and ruderal places. In pollen diagrams its occurrence is regarded as a reliable indication of pasture and of a cattle-based economy. In particular cases, however, it may reflect arable farming, as it plays an important role in the recolonisation of fallow land. Notably fallow land that is left to be used as pasture is an ideal environment for this plant to establish itself and rapidly expand. Therefore it can be regarded as a diagnostic species for the system of rotational farming as well.[18]
In medieval settlements its charred seeds are often found together with cereal grains in charred condition.[19] Pals considers this plant as a true arable weed whenever, in a medieval context, its seeds, together with seeds of other pasture species, are only encountered in a charred condition.[20] As with cockspur grass, it is well known that the seeds of this plant may also leave the digestive tract of birds and mammals in an undigested condition.[21]
Several of the other wild plant species are common weeds of arables, such as *Spergula arvensis*, *Chenopodium album*, *Polygonum persicaria* and *lapathifolium*, *Polygonum convolvulus*, *Solanum nigrum*, *Raphanus raphanistrum*, *Stachys arvensis*, and *Rumex acetosella*. *Rumex acetosella* also occurs on very poor pasture.[22] Other grassland species are Gramineae, *Rumex* spec., *Papilionaceae*, and *Prunella vulgaris*. Species from moist habitats are also represented, be it in fewer samples and in lower numbers of seeds: *Eleocharis palustris*, *Carex otrubae/vulpina*, *Lycopus europaeus*, *Galium palustre*, and *Juncus bufonius*. One leaf fragment of Ericaceae indicates that heathland occurred in the vicinity.

Interpretation

The density of plant remains (the numbers of seeds, fruits and chaff per litre of soil) in the samples from house 1 is very low. In the foundation trenches no seeds or chaff at all were found. Both the postholes and the foundation trenches seem to have been back-filled with the same soil as soon as the posts were set in place. This will explain the virtual absence of plant remains in them. Only two of the postholes produced a single seed. That the settlement noise of this site is extremely slight can be deduced from the low density of plant remains in the fill of the ditch running parallel to the house, which did contain household refuse. Very few charcoal particles were found in the postholes and the foundation trenches. It seems that the settlement was built on a site not occupied before.
In general, the densities in the samples from the large pit are somewhat higher and they usually also contain numerous and larger pieces of charcoal. The samples, especially those with the highest densities, are remarkably uniform in the proportion of wild to cultivated plant remains. All of them are dominated by the seeds of wild plants. The average proportion of seeds of cultivated species, chaff, and seeds of wild species is 14:1:85. In the samples with the greatest number of remains and the highest densities, the seeds of wild plants even account for over 90% of the total.

14 Knörzer 1971.
15 Helbæk 1958.
16 Hegi 1979.
17 Schröder & Baart 1982.
18 Behre 1981.
19 Van Zeist & Palfenier-Vegter 1979; Van Zeist *et al.* 1986.
20 Pals 1987; 1988.
21 Weeda *et al.* 1988.
22 Weeda *et al.* 1985.

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feature	postholes		large pit								large pit											ditch	total	sample fr.
sample number	37	65	115	128	129	130	131	132	133	134	135	136	137	138	147	148	149	150	152	153	155	47		
volume in litres	8	18	2	11	14	15	18	12	18	21	16	4	6	11	9	14	4	8	12	15	11	29	276	
total number	1	1	1	21	186	35	34	8	53	10	23	33	56	44	61	75	9	84	13	18	1	5	772	
density	0.1	0.1	0.5	1.9	13.3	2.3	1.9	0.7	2.9	0.5	1.4	8.3	9.3	4.0	6.8	5.4	2.3	10.5	1.1	1.2	0.1	0.2	3.4*	
Hordeum vulgare	–	–	–	1	1	1	–	–	4	–	–	5	1	1	1	–	6	2	–	2	–	–	25	11
– internodia	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	1	1
Avena spec.	–	–	–	–	1	–	–	–	2	–	1	–	–	2	–	–	–	1	–	–	–	1	8	6
Triticum dicoccum/spelta	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	1	–	1	–	–	–	–	3	3
– glume bases	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	1	–	–	2	2
Cerealea indet.	–	–	–	–	–	–	11	2	13	2	1	–	7	17	7	1	–	–	–	6	–	–	67	10
Panicum miliaceum	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	1	–	–	–	–	–	–	2	2
Linum usitatissimum	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	4	–	–	–	–	4	1
Echinochloa crus-galli	–	–	–	1	14	3	2	–	2	2	1	8	5	–	6	13	1	11	–	1	–	1	71	15
Setaria spec./Echinochloa crus-galli	–	–	–	–	–	–	–	–	3	–	–	–	–	–	–	–	–	–	–	–	–	–	3	1
Setaria spec./Digitaria spec.	–	–	–	2	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	3	2
Plantago lanceolata	–	–	–	5	66	3	1	2	4	–	3	5	9	–	8	7	–	1	–	–	–	–	114	12
Gramineae	–	1	–	3	39	1	1	2	4	–	–	–	–	3	5	8	–	2	–	–	–	1	70	12
Rumex spec.	–	–	–	3	20	–	–	1	1	3	–	4	9	–	2	5	–	–	2	–	–	–	50	10
Polygonum lapathifolium/persicaria	–	–	–	1	3	–	2	1	1	–	–	–	–	1	1	–	1	–	1	–	–	1	13	10
Papilionaceae	–	–	–	–	3	12	–	–	3	–	–	–	–	–	2	7	–	1	8	–	–	–	36	7
Rumex acetosella	–	–	–	–	5	5	1	–	–	–	2	–	–	–	2	2	–	1	–	–	–	–	18	7
Chenopodium album	–	–	–	3	6	–	–	–	–	–	–	4	–	–	–	2	–	1	–	1	–	–	17	6
Chenopodiaceae	–	–	–	–	7	–	–	–	–	–	1	–	–	–	1	5	–	8	2	–	–	–	24	6
Spergula arvensis	–	–	–	–	1	–	1	–	2	–	–	–	–	–	2	–	–	1	–	–	–	–	7	5
Polygonum convolvulus	–	–	–	–	–	–	–	–	–	2	–	1	–	–	1	1	–	–	–	–	–	–	5	4
Eleocharis palustris	–	–	–	–	–	1	1	–	–	–	1	–	–	–	1	–	–	–	–	–	–	–	4	4
Prunella vulgaris	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	2	–	2	–	–	–	–	5	3
Compositae	–	–	–	–	1	–	–	–	–	–	1	–	–	3	–	–	–	–	–	–	–	–	5	3
Carex spec.	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	5	–	–	–	–	6	2
Euphrasia spec.	–	–	–	–	–	–	–	–	–	–	–	–	4	–	1	–	–	–	–	–	–	–	5	2
Solanum nigrum	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	2	–	–	–	–	–	–	3	2
Solanum spec.	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	1	1
Mentha arvensis/aquatica	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	2	2
Polygonum aviculare	–	–	–	–	–	–	1	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	2	2
Raphanus raphanistrum	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	1	–	2	2
Stachys arvensis	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	1	1
Carex otrubae/vulpina	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	1
Lycopus europaeus	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	1
Galium palustre	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	1	1
Juncus bufonius	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	1	1
Vicia spec.	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	1	1
Ericaceae leaf fragment	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	1	1
indet.	1	–	–	2	18	6	10	–	12	1	12	5	21	17	19	16	1	40	–	5	–	1	187	17
% seeds of cultivated plants	0.0	0.0	0.0	4.8	1.6	2.9	32.4	25.0	36.5	20.0	8.7	15.2	14.3	45.5	14.8	4.1	66.7	9.5	0.0	47.1	0.0	20.0	14.2	
% seeds of wild plants	100.0	100.0	100.0	95.2	98.4	97.1	67.6	75.0	63.5	80.0	91.3	84.8	85.7	54.5	85.2	95.9	33.3	90.5	100.0	52.9	100.0	80.0	85.8	

Table 2 Oosterhout: Numbers and frequencies of carbonized seeds, fruits, and chaff from house 1 (* = average).

In the byre of a farmstead we can expect to find refuse from different sources. In the first place from litter and fodder for the stalled animals, and, of course, from dung. But also the ashes from the hearth of the living quarters, containing charred fuel or waste from food preparation, left-overs from meals, and other household refuse would have been swept into the byre, where it became mixed with the dung.[23] Indeed, the byre may also have housed other activities, possibly with a working area and another hearth producing its own kind of waste.[24] Also stored products that were spilled may have been incorporated in the refuse. A variety of materials could have been used as fuel, such as wood, peat, waste from various stages of crop processing, and even dung.

The wild plant species that occur in most samples and represent the greatest numbers of seeds, together with the few remains of crop plants, may comfortably be interpreted as the remains of an assemblage growing on fallow land. One of the most important among these is *Plantago lanceolata*, in itself diagnostic of fallow arable land put to use as pasture.

What was said above about the seeds of *Echinocloa crus-galli* and *Plantago lanceolata* remaining undigested, applies to most other species as well. Experiments have shown that 10 to 40% of swallowed seeds pass through the digestive tract of cattle, sheep, and goat undamaged. Also the more robust chaff elements such as spikelet forks and rachis internodes are not digested, but culms cannot be recognised in the dung.[25]

Many authors have drawn attention to the fact that charred remains in excavations may well derive from burnt dung.[26] In arid and semi-arid areas in the Near East where wood is scarce, dung has been, and still is, used as fuel. Ashes from hearths were found to be an important source of carbonised plant remains.[27] Yet in the Netherlands too, the use of dung as a fuel has been demonstrated. In the treeless, marshy environment of the Assendelver Polders, an Early Iron Age farm was excavated where the ashes of the hearth contained carbonised goat pellets.[28]

The overall scarcity of cereal grains, chaff remains and seeds of other crop plants together with the abundance of *Echinichloa crus-galli* and *Plantago lanceolata* seeds especially may indicate that a large proportion of the charred debris in the large pit derives from animal dung. The animals may have grazed on fallow arable land. Unfortunately it is not possible to determine the livestock species from the vegetable remains.

In this area the natural vegetation must have been mixed oak forest. It seems unlikely that deforestation had already taken place to such an extent that people ran out of firewood and had to turn to other sources of fuel such as dung. On the other hand, cow dung is also known to be very suitable and widely used for firing open potter's kilns. Although no traces of such clamp kilns were found, it is quite possible that here too kilns were stoked with cow-dung, the ashes of which were tipped into the byre.

The material certainly does not derive from dung alone. The possibility exists that some seeds, e.g. grass seeds, come from hay or sods used as fodder or litter and that the leaf fragment from an Ericaceae species comes from a heather sod. However, the evidence is too scant for such conclusions.

Especially the seeds occurring in the lowest sample frequencies and in the lowest numbers may simply be settlement noise, waste material from a variety of activities, that came from different contexts, was scattered throughout the settlement, and ended up in the large pit on a piecemeal basis. Although the samples were taken as much as possible from the original floor level of the pit, it cannot be excluded that material entering the large pit after abandonment of the house also found its way into the sampled soil.

The preliminary results of the analysis of the carbonised plant remains in the sunken part of the farmhouse from the Roman period at Venray are in accordance with those of the present investigation.[29] At Venray the densities are even lower than in the Oosterhout samples, but the samples contain only seeds of wild plants and no cereal grains or chaff at all. Arable weeds, grassland and ruderal species are found; here too, *Plantago lanceolata* is one of the most important species.

23 Therkorn *et al.* 1984.
24 Therkorn *et al.* 1984.
25 Neef & Bottema 1991.
26 Lange 1990; Bottema 1984.
27 Bottema 1984.
28 Therkorn *et al.* 1984.
29 I am grateful to Mrs K. Hänninen for showing me the results of her research into the charred plant remains from Venray.

House II

From the large pit of house II the samples were not analysed in full detail. A quick screening of the flotated samples produced only a few seeds, apart from some charcoal and sclerotia of *Cenococcum* (see table 3). Sample numbers 109 and 112 did not contain any seeds. Further time-consuming examination of the samples was abandoned, as these contained even less than the samples from house I and seemed to be qualitatively similar to them.

sample number	108	111	113	114	127	130
Hordeum vulgare	8	–	1	–	1	–
Panicum miliaceum	–	–	–	–	1	–
Plantago lanceolata	–	–	–	–	1	–
Cenococcum	–	×××	–	×	×	×××

Table 3 Oosterhout: Numbers of carbonized plant remains from house II (×: 1–10, ×××: >100).

CENOCOCCUM

The occurrence of the *Cenococcum* sclerotia was also recorded. This fungus is reported to live in the humus layer of forests and heathland as well as in peaty soils.[30] As forest or heathland will have been the original vegetation at this site before the settlement was built, the occurrence of *Cenococcum* is not surprising. In house I, sclerotia occur in large quantities, especially in the postholes. But in the large pit of house II too, *Cenococcum* occasionally appears in very large amounts. It is doubtful whether recording it would be of any use. For example, Van Zeist found that in the postholes of some houses in the Iron Age settlement of Noordbarge *Cenococcum* occurred in great numbers, whereas postholes of some other houses of the same period yielded few if any sclerotia.[31] Yet one can imagine that in places where sods were used for any purpose (walls, roofing, litter, etc.) *Cenococcum* sclerotia might become concentrated in large numbers. In such cases, a large number of *Cenococcum* in postholes could indicate sod walls. Still, conclusions of this kind are much too far-reaching. Quantitative interpretation is very hazardous or indeed impossible.[32]

PHOSPHATE ANALYSIS

In the soil beneath the byre section of a farmhouse a higher phosphate content may be expected than in the soil underlying the living quarters. Therefore samples for phosphate analysis were taken in different places (on a grid) from the subsoil in both parts of the houses and from the fill of the large pit. Samples were also taken outside the house plans and outside the settlement.

The samples were analysed by M.H.M. van Ree under the supervision of J.N.B. Poelman of the former Stichting voor Bodemkartering (Soil Survey Institute) by means of the Eidt field method.[33] It is a simple and cheap, qualitative method, but gives only a rough indication of the phosphate content of a soil sample. It is based on visual differences in the size of a stain of blue colour and in the intensity of the blue, after chemical treatment of a pinch of soil on filtrate paper.

In the samples from outside the settlement there was almost no indication of phosphate. Therefore any phosphate in the samples from within the settlement would be associated with the habitation.

In house I the highest phosphate levels were encountered in the subsoil beneath the large pit. Only two samples from the fill of the pit produced a similar result. The other samples from the fill, as well as those from the living quarters, all showed lower, roughly identical phosphate levels. Nor was there any difference between these and samples from outside the house. As regards house II, no difference in phosphate content was observed between the two parts of the house, or even between the subsoil underlying the large pit and the actual fill of the pit.

The high phosphate content of the soil beneath the large pit of house I supports the archaeological interpretation of this part of the house as a byre. The soil would have been continuously infiltrated with phosphates from dung and liquid manure seeping down.

30 Natho 1957.
31 Van Zeist 1981 (1983).
32 Jensen 1975.
33 Van Ree 1985.

The manure itself will have been removed at intervals for spreading over the fields. Hence the excavated fill of the large pit probably represents only a short period of use of the byre, together with the debris of the house after its abandonment. The phosphate content of the subsoil under the large pit could thus indicate the duration of the use of the byre. The absence of phosphate in the large pit of house II may indicate a shorter or different use of this area.
The field method of Eidt is fairly crude. There was no reference to a standard series of known quantitative levels of phosphate. On the whole, the results from the samples showed too little differentiation. Possibly, if the analysis had been carried out with a more sophisticated chemical test,[34] the results would have been more satisfactory. There are several instances of investigations where phosphate analyses by a more elaborate method have led to excellent results in distinguishing living and byre areas of excavated houses, such as at Wijk bij Duurstede-De Horden, Flögeln-Eekhöltjen, Kootwijk and Oss-Ussen.[35]

CONCLUSIONS

The composition of the carbonised plant remains in the samples from the large pit of house I seems to indicate that for the greater part they derive from animal dung. An obvious conclusion may be that the large pit served as a byre. However, the dung was not necessarily part of the original fill of the large pit. It may have been produced somewhere in the farmyard, before being swept into the pit together with other refuse. Moreover, the pit was clearly dug out in at least one instance after the house was built. The samples were taken as much as possible from the original floor level of the pit, but almost certainly represent only the fill of a comparatively short, final period of use, together with carbonised debris which entered the pit after abandonment of the house.
However, in combination with the results of the phosphate analysis, which indicate the highest phosphate levels in the soil beneath the byre, these results underline the conclusion that the large pit functioned as a byre. In the daytime, the animals grazed the fallow fields and at night they were returned to the byre. Whether the animals were stabled on a litter of sods cannot be concluded with full certainty, hence these analyses do not allow a system of sod manuring to be definitely proved either.
Farmhouses from the Roman period with sunken byres are found only on the poor sandy soils within the Roman imperial frontier.[36] It is clear that at the time, when people took to living in a fixed place for longer periods, the need for manure steadily increased. Possibly the method of sod-manuring and the *Plaggenwirtschaft* system associated with the use of *potstallen* are rooted in the system encountered at Oosterhout, in which, as appears from the present study, the livestock possibly grazed out on the fallow fields by day and were returned to the byre at night. In this way the fields would benefit from every bit of manure available. Whenever the byre was mucked out, its floor, as a result of soil conditions, would be scraped out to a progressively deeper level.
It is hoped that in the light of these new insights, future excavations of such farmhouses will provide new opportunities for integrated archaeobotanical studies not only of the sunken byre sections but also of other features of the sites and of local soil profiles. Possibly more can then be said about the associated agricultural system.

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34 Steenbeek 1983.
35 Steenbeek 1983; Zimmermann 1986; Kamermans 1987; Van de Wetering & Wansleeben 1987.
36 Pers. comm. Professor W.J.H. Willems.

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S.G. VAN DOCKUM

Houten in the Roman Period, Part 1: a stone building in Burgemeester Wallerweg

with a contribution by R.M. van Dierendonck

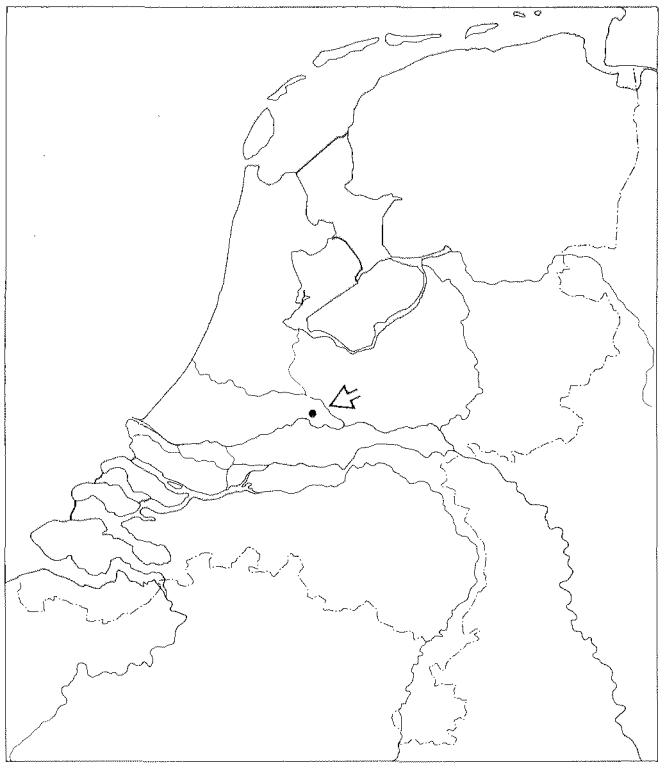
Keywords: excavation, native settlement, native Roman wooden house plans and stone house foundations, *villa*, description of the objects, Iron Age, Roman Period, Medieval Period, Houten, Province of Utrecht, the Netherlands, 61 references.

INTRODUCTION

In 1957, stone foundations dating to the Roman Period were discovered during the digging of a trench for a new sewer along Burgemeester Wallerweg (from now on referred to as Wallerweg) in the village of Houten.[1] The discovery was reported to ROB by the then mayor of Houten, Mr A.B. Haefkens. This resulted in a small excavation which lasted from 28th January until 2nd April.[2] Only a surface area of less than 350 m² was available in the Wallerweg for archaeological investigation. This site was located *c.* 20 m west of the tower of the present Dutch Reformed church (fig. 1). Three irregular-shaped excavation trenches were marked out in order to make optimal use of the area available. Wherever possible, new trial trenches were dug which more or less bordered the excavation. It also proved possible to dig a trial trench in the garden of parcel 1621, about 15 m south of Wallerweg. Apart from the Roman remains, other features appeared to date to the Iron Age and the (Early) Medieval Period.

The Wallerweg excavation was the first of a series of archaeological investigations in and around the village of Houten. Since the 1970s, this research has formed part of the ROB's Central River Area Project.[3] Intensive archaeological field survey yielded a large number of sites with finds dating to the Prehistoric, Roman and Medieval periods.[4] The rapid expansion of the municipality of Houten in the past decade has necessitated the excavation of several of these sites that were subsequently threatened by redevelopment.

During work further westwards on Wallerweg, on the site of the new offices for the Kromme Rijn Water



Map of the Netherlands, showing the location of Houten.

1 Coordinates: 139.50/448.74. *NKNOB* 14 (1957), 53, 118; Maandblad Oud-Utrecht 1 (1957).

2 the project was carried out under the supervision of Dr. J.E. Bogaers and H. Halbertsma. The technical aspects of the excavation were organised by R. Woudstra and G. Plug.

3 Van Es & Verwers 1985.

Board (fig. 1: a), Roman and Medieval remains were found.[5] Between 1981 and 1983, prior to the construction of the Doornkade industrial estate north of the village (fig. 1: b) , part of a Roman agrarian settlement had been excavated by provincial archaeologist W.J. van Tent. This settlement was shown to have been preceded by traces of occupation dating to the Middle and Late Iron Age.[6] Habitation on this site during the Roman Period was of a predominantly native character. The remains of the settlement discovered by Van Tent during building works in the district of Molenzoom in 1989 (fig. 1: c) on the other hand reflect more of a Roman influence.[7] Here, amongst other evidence, a for this region unusual type of wall painting and two rows of stone foundation supports were found. Unfortunately, the discovery came too late for any more extensive archaeological investigation. From 1985 to 1987 a large-scale excavation (over an area of 4 ha) was carried out under the direction of W.A. van Es and W.A.M. Hessing in the Tiellandt development area (fig. 1: d). This site was situated less than 200 m from the stone foundations in Wallerweg. The main objective of this excavation was to investigate an agrarian settlement from the Early Medieval Period, as a counterpart to the trading settlement of Dorestad, situated near the present town of Wijk bij Duurstede.[8] Among the features found on the Tiellandt site were the house plans of at least three native Roman farmsteads with yards. In addition, the excavation revealed Prehistoric and Medieval features and finds. To the north of Tiellandt, on the Wulven site (fig. 1: e), a number of cremation graves were found which formed part of a much larger native-Roman cemetery.[9]

This recent research emphasises the importance of the area around Houten. As far as the Roman Period is concerned, the area around Houten offers the possibility of studying the relationship between settlements (those excavated and those known from surveys) in the agrarian hinterland and the military fort at Vechten (Fectio), 3.0 km further to the north (fig. 1). In addition, this area was the hinterland of a new centre of trade in the Early Medieval Period: Dorestad. The area is also eminently suited for studying the transition between the two periods. It is the intention of the ROB to present archaeological research carried out in this region within a wider context in the future.

In order to include the Wallerweg site in this regional analysis, it was necessary to study the documentation and finds from the 1957 excavation. Attempting to interpret old excavation documentation naturally poses problems, and in many instances the data did not meet present-day recording requirements. For example, large

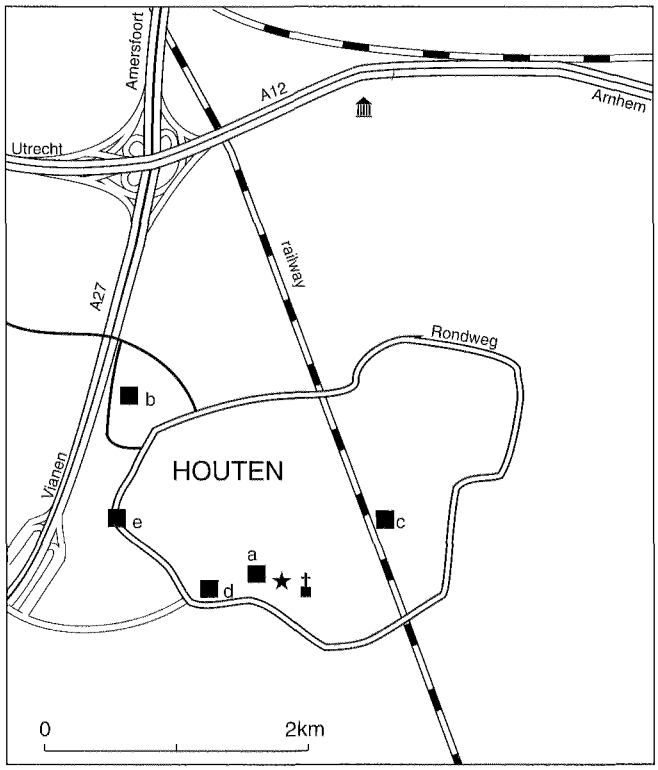


Figure 1 Houten: topographical situation. Legend: a Wallerweg, Water Board office; b Doornkade; c Molenzoom; d Tiellandt; e Wulven; ‡ Dutch Reformed church; ✶ Roman stone building; 🏛 *castellum* Fectio.

4 C.M. Blommesteijn (in prep.): *An Archaeological Map of the Kromme Rijn Region.*

5 *JROB* 1977, 37.

6 *JROB* 1981, 42–3; 1982, 42–3; 1983, 40. See also Van Tent 1988, 13–9.

7 *JROB* 1989, 57.

8 Interim reports in: *JROB* 1985, 49–51; 1986, 54–7; 1987, 46–8; Van Es & Hessing 1990, 81–90. The final results and publication of this excavation will take some years to complete.

9 *JROB* 1986, 57.

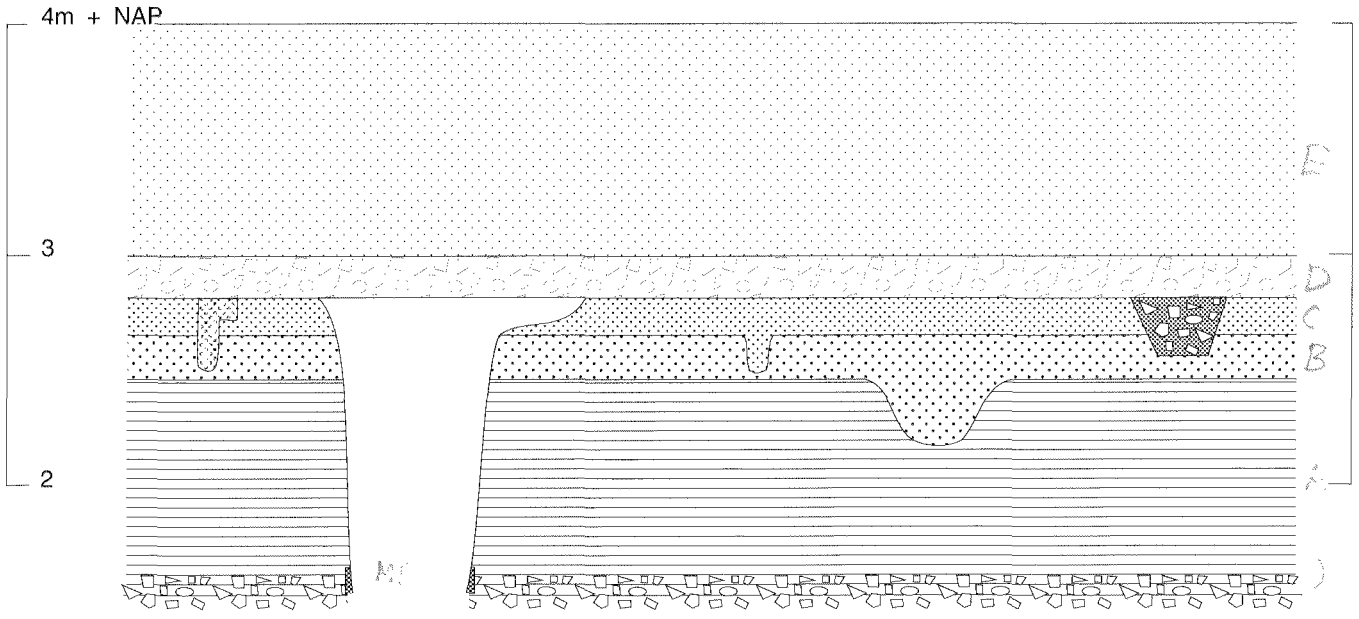


Figure 2 Schematic representation of a profile. Legend: A fluvial deposits with natural bands of gravel; B and C humous layers; D debris layer; E Late or Post Medieval layer; F Medieval well; G posthole Roman period; H stone foundation Roman period.

quantities of bones and roof tiles had been thrown away. That it has nevertheless proved possible to present the details of the Wallerweg excavation in this article is thanks to the high standard of excavation and detailed description of the features by the field technician at the time, R. Woudstra.[10]

LANDSCAPE BACKGROUND AND STRATIGRAPHY

Location of the excavation

Houten is situated in the middle of the Central Netherlands river area. The development of the landscape has been described in detail by Berendsen in 1982.[11] The physical geography of the area played a predominant part in people's prospects for settlement until the construction of dikes, which began in the 11th century, and the damming of the Kromme Rijn river at Wijk bij Duurstede in the year 1122. The high-lying stream ridges with their fertile soil provided good opportunities for habitation and agriculture.[12] The lower-lying, backswamps which consisted of heavy clay were unsuitable for habitation and agriculture, and were only used at best for summer grazing. A part of the backswamps was even permanently submerged.[13]

The Wallerweg excavation site is on the Jutphaas stream ridge, which is part of the former Linschoten river system.[14] This river system branches off from the Utrecht river system at Loerik, and continues in an easterly direction. Settlement on the higher parts of this

10 This article is a shorter version of a M.A dissertation for the University of Leiden by, S.G. van Dockum 1990: *Een villa aan de Limes?: Romeinse bewoning in Houten (prov. Utrecht)*. The translation of this article has been carried out by Ms. C. Jefferis. Editing of the English text has been undertaken by Ms. K.E. Waugh.

11 Berendsen 1982.
12 Van Es & Verwers 1985, 224–5.
13 Steenbeek 1990, 250–1.
14 Berendsen 1982.

Figure 3 Survey of the oldest features: Middle and Late Iron Age.

stream ridge must have been possible from the Late Bronze Age or Early Iron Age, although there is still no archaeological evidence for occupation at such an early date. Settlement on the stream ridge in the centre of the present-day village does not appear to have started before the end of the fourth century BC, judging from the 1957 finds. Running alongside the settlement, at a distance of *c.* 25 m, were the remains of a former river bed. Sections of this river bed were found in a trial trench in parcel 1621. From the finds, it appears that the river bed was still not completely silted up by the first centuries AD. The continuation of this river bed can probably be seen at Tiellandt, where, among other things, a Roman altar was found in the channel fill.[15]

The stratigraphy of the excavation site

The excavation site near the Dutch Reformed church is the highest point in the vicinity. A number of layers can be distinguished in the sandy alluvial deposits (fig. 2: A). These alternate with occasional layers of gravel and decrease in thickness in a westerly direction. The oldest layer, Prehistoric layer B, is on average 15 cm thick across the whole site (from 2.40 to 2.55 m NAP) (fig. 2: B). The next layer C, which was also formed in the Prehistoric Period, is on average 35 cm thick (from 2.55 to 2.90 m NAP) (fig. 2: C). Both layers consist of dark humous soil. According to the site notes, there were layers of reeds at the top of layer B. It is not clear whether this refers to natural layers of reed roots or to reeds brought in from elsewhere. The first suggestion would signify that the environment had become temporarily wetter. Layer D is characterised by a 10 cm thick layer of rubble from 2.90 to 3.00 m NAP (fig. 2: D). This is the level at which the Roman and Early Medieval features are found. The layer of rubble is covered by a Late and Post Medieval layer which extends up to the present surface at 4 m NAP.

15 *JROB* 1986, 54ff.; Van Es & Hessing 1990.

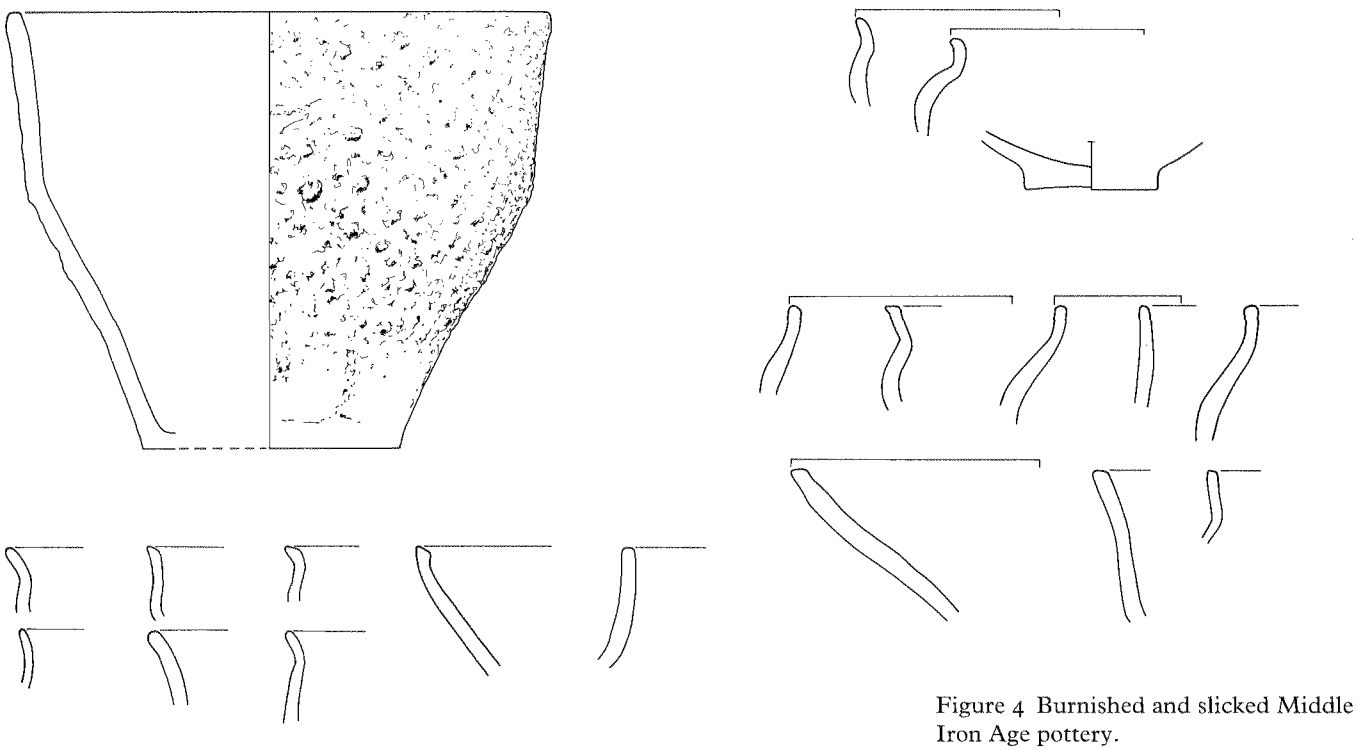


Figure 4 Burnished and slicked Middle Iron Age pottery.

FEATURES

Iron Age

The oldest features on the site date from the Iron Age (fig. 3). These comprise postholes, post pipes and pits and are concentrated in the north-east corner of the excavation. It seems that, originally, approximately 25 pointed posts and a dozen straight posts had been set into round postholes. As far as can be understood from the documentation, the postholes are between 40 and 60 cm deep. It is possible that a number of them represent small barns or granaries. However, the site excavated is too small to draw any definite conclusions. From amateur archaeological research it appeared that the features continue at least 15 m further east, under the tower of the Dutch Reformed church.[16]

16 Amateur archaeologists from the local society 'de Historiche Kring tussen Rijn en Lek' discovered this in 1975–6 (pers. comm. L. de Keijzer).

Two pits were excavated just to the south of the postholes. The southernmost pit is virtually circular in plan. The pit extends from 2.55 m NAP down to a depth of 1.80 m NAP and has a surface diameter of 1.75 m. The second pit which again is almost circular, is slightly smaller with an average diameter of 1.10 m and is shallower: from a depth of 2.55 to 2.15 m NAP. Pottery and burned clay were found in both pits.

With these oldest features belong the remains of the north-south oriented skeleton of an adult male (*c.* 2.70 m NAP), which lay to the west of the postholes. Although the bones had been disturbed by later activity on the site, with the skull being removed first and the feet and lower legs at a later stage, it was still possible to determine that the skeleton must have been approximately 1.76 m in height and that the deceased had originally been buried in a supine position. It would appear that the skull was apparently discovered and removed, to be replaced by a *tegula*, during the digging of a wall trench for a subsequent Roman building. A shallow

curved trench with a bucket-shaped profile to the west of the skeleton (2.80 to 2.40 m NAP) may be the remains of a circular ditch.
The excavation records are not sufficiently detailed to determine the layer in which the various postholes were originally cut (layer B or C). However, the NAP levels of both the pits and the skeleton are known, and can thus be related to the layers. The finds from the pits which belong to the oldest settlement phase of the site, date from the second half of the Middle Iron Age.[17] Typical of this period are tall vessels with slicked exterior surfaces as well as vessels with long necks (fig. 4).
The layer in which the skeleton belongs (C) is harder to date. Some slicked wall sherds tempered with coarse lumps of grog were found associated with the skeleton. Amongst the pottery were sherds of a Late Iron Age date (fig. 5). On the basis of these, layer C can probably be dated to the end of that period.

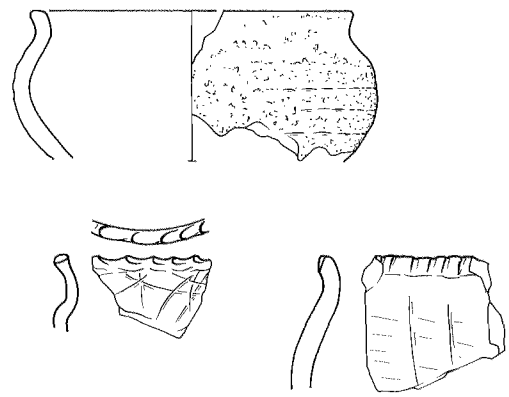


Figure 5 Late Iron Age pottery.

The Roman Period

Wooden building phase A
The Roman stone foundations, the discovery of which instigated the excavation, were found to have been preceded by at least two earlier wooden houses (fig. 6: a). Both structures had been built on virtually the same site and east-west orientation as the later stone building. The level of the ground surface also remained the same throughout the Roman Period, that is between 2.80 and 3.00 m NAP.
In the case of the earliest house plan A (fig. 6), it was possible to excavate the northern half, a large section of the wall trench, one long side and rather more than half of one short side of the building as well as two central postholes. The total plan must have measured 26.50×6.80 m. In the wall trench which was 45 cm wide and 95 cm deep, rectangular postholes measuring 10×20 cm had been placed at short intervals. On each side of the wall trench postholes measuring 30×25 cm were found, mostly in pairs. These would have contained posts which would have served as support for the wall and the edge of the roof. The two central postholes measuring 35×40 cm, (from 3.00 to 2.05 m NAP on average) were dug at a distance of 3.50 m of the north wall.
As was usual in the Central Netherlands river area[18], at least part of the building proved to be a structure with a central row of posts. The entrance was most likely to have been where the wall-supporting posts were set closer together, i.e. 2.30 m apart. The roof supporting postholes in the western part of the building could not be excavated. It therefore remains unclear whether the whole structure has a row of central posts. The part with a central row of posts measures 11 m, and the west part 15.5 m in lenght. The possibility of a plan partly aisled and partly with a central row of posts cannot be excluded.
During construction of the wall trench for this building, the previously-mentioned Iron Age skeleton was cut through.
A boundary or drainage ditch, situated at a distance of *c.* 11 m from the wall trench was sectioned in four places, three times in a trial trench and once in the excavation pit. The ditch was 1.5 m wide at the top, *c.* 0.20 m wide at the base, and *c.* 1.40 m deep.

17 That is Van den Broeke phase G, and possibly phase F. A preliminary absolute dating for phase F: 450/425–400/375 BC, and for phase G: 400/375–350/325 BC. Pers. comm. P. van den Broeke (IPL).

18 Van Es 1982, 146; Van Tent 1988, 13–9.

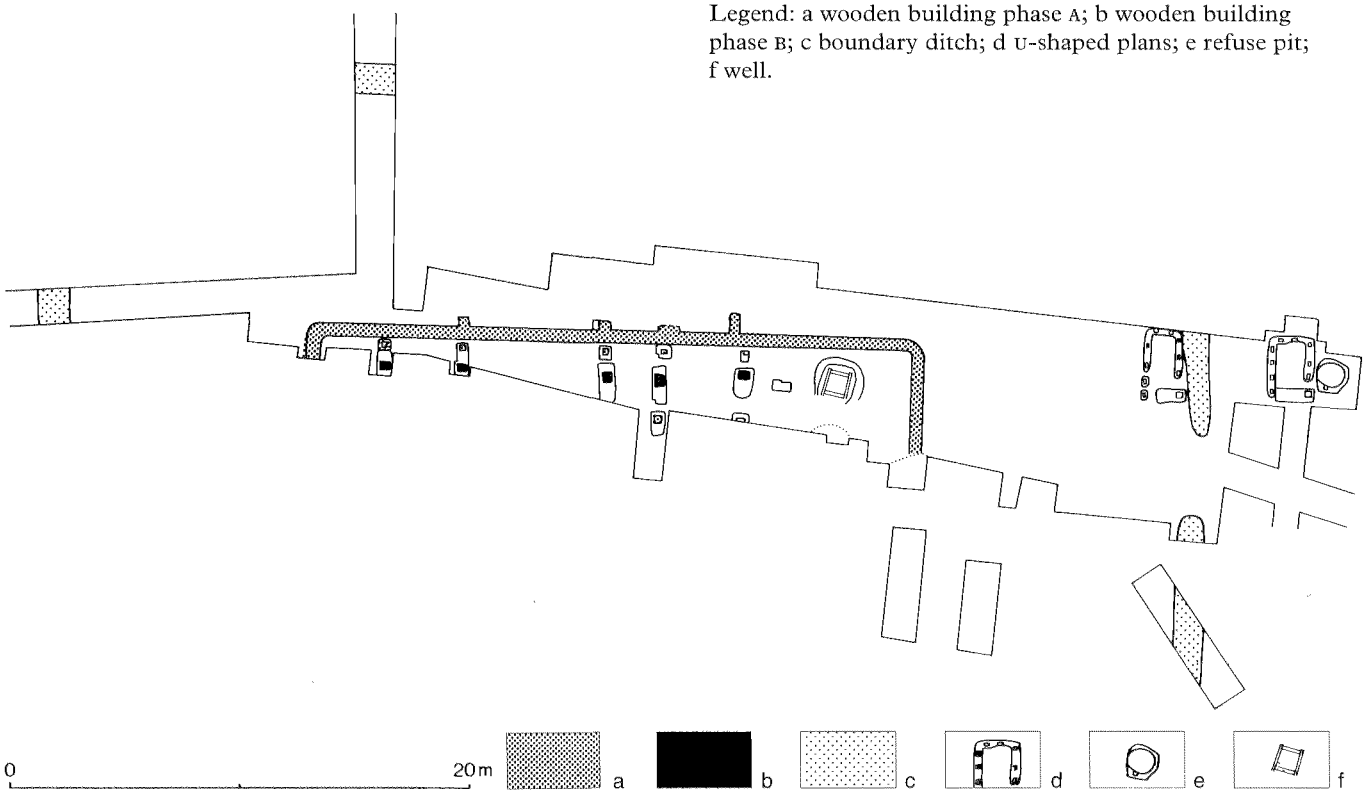


Figure 6 Survey of the features from the Roman Period. Legend: a wooden building phase A; b wooden building phase B; c boundary ditch; d U-shaped plans; e refuse pit; f well.

Wooden building phase B

The plan of the next wooden building phase B is also incomplete (fig. 6: b). Only five large rectangular postholes measuring 50×50 cm were excavated which were more than 1 m deep (from 3.00 to 1.80 m NAP). One of the posts had originally been founded on a wooden plank. The size and depth of these postholes suggest that they represented a row of central posts.[19]

The boundary or drainage ditch may still have been in use at this stage, but the site of the new house had clearly shifted slightly to the west of the earlier one. A well was sunk, perhaps simultaneously with wooden building phase B, on the now vacant spot, cutting through one of the central postholes of phase A. The square-shaped well measuring 1.08×1.08 m from a depth of 2.90 to 0.80 m NAP, situated to the east of wooden building phase B, was founded on a natural layer of gravel in the sandy stream ridge deposits. The lower part of the lining was found to be still intact and could therefore be excavated. The lining consisted of wooden planks 30 cm wide and 10 cm thick. These were joined together by means of a notch joint (fig. 7). Before beginning the construction of the stone foundations for the following building phase, the well was partly filled with rubble. Charred remains of wood were found in the upper layer of the fill.

Other features

East of the wooden house plans, two U-shaped plans measuring 2.80×1.40 m were excavated (fig. 6). These were 3.80 m apart. The virtually identical plans consisted of U-shaped foundation trenches with rectangular postholes measuring 10×20 cm. The posts would have

19 This phenomenon is more common on sandy soils in the province of Brabant.

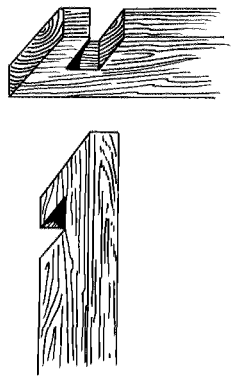


Figure 7 Well construction: notch joint.

been quite deeply set, from 3.00 to 2.20 m NAP. In the western plan, there were two posts set in separate postholes. In the south-east corner of both plans there would have been a heavier post measuring 30×30 cm, set into a holster-shaped posthole. This corner post was surprisingly deeply set (3.00 to 1.60 m NAP). The function of the 'small buildings', which may not all have been in use contemporary is not clear. The unusually heavy corner post may well have had more than a mere supportive function. The western plan cuts the boundary ditch belonging to wooden building phase A. On the basis of this, the U-shaped plans probably date from phase B.

East of the U-shaped plans, a deep (3.00 to 1.20 m NAP), almost circular (diameter *c.* 1.45 m) refuse pit was excavated which contained a large number of sherds as well as building rubble. It is not clear whether the pit belongs to phase A or B.

The stone building phase

The excavation data has not been sufficient to determine whether the stone foundations represent one or more building phases (fig. 8). The foundations discovered make up a rectangle measuring 27.75×11.35 m, with the occasional interruption.[20] However, the foundations probably extended beyond the excavation site.[21] The walls were approximately 62 to 72 cm wide and, according to the old excavation notes, were constructed of slate from the Ardennes or the Eifel, with mortar in between. The mortar used contained shell grit as well as chalk and gravel. The depth of the foundations varies from 1.20 m (3.00 to 1.80 m NAP, east room) to 0.80 m (3.00 to 2.20 m NAP, other foundations). Trenches running alongside were probably necessary for the construction of such deep foundations. On the foundations of a small corner room, a wall was visible still reaching a height of 20 cm above the original (Roman) ground level. The wall was made of two courses of triangular-shaped, hewn tuff stones with the flat cut edge of the stone facing outwards. The angular part of each stone was embedded in a core filled with mortar and coarse rubble (fig. 9). At a higher level, the wall would have consisted of a timber framing. The roof must have been tiled in view of the quantities of roof tiles that were found. In the central part of the plan, four separate rooms can be distinguished. They are 3.70 m in width and comprise, from east to west, a corner room of 3.65 m, a smaller room of 2.65 m and a longer section of 7.75 m. With an interruption of slightly more than half a metre there is another room of 10.25 m which is not closed off by a foundation on the west side. The foundation of the east corner room was set 30 cm deeper. This perhaps indicates a heavier and taller super-structure. In this room there must once have been a fire, judging from a thin burnt layer that was found. This burnt layer was later covered with a thin layer of clean clay. It could not have been a stokehole since the space under the floor level was too shallow (30 cm). In the same room, lumps of charred wood have remained in a layer of debris several cm thick with traces of burning. Some of this has been interpreted as construction timber.[22] What is remarkable is that the wood had been attacked by woodworm before it was exposed to fire. Altogether it was possible to identify four fragments of *Pinus* sp (pine) and two fragments of *Abies alba* (silver fir). Both types of wood did not occur naturally in the Netherlands during the Roman Period. It was at the north-east corner of this room that the wall fragment described above was found.

In the largest, most western, section of the central area part of the original floor level was discovered at about

20 All measurements are taken from the outside walls.

21 The features do not, in any case, extend much further to the north. During a watching brief in 1990, no Roman remains were found at a distance of *c.* 15 m to the north of the Wallerweg.

22 The analysis was carried out by Ms. L.I. Kooistra (ROB).

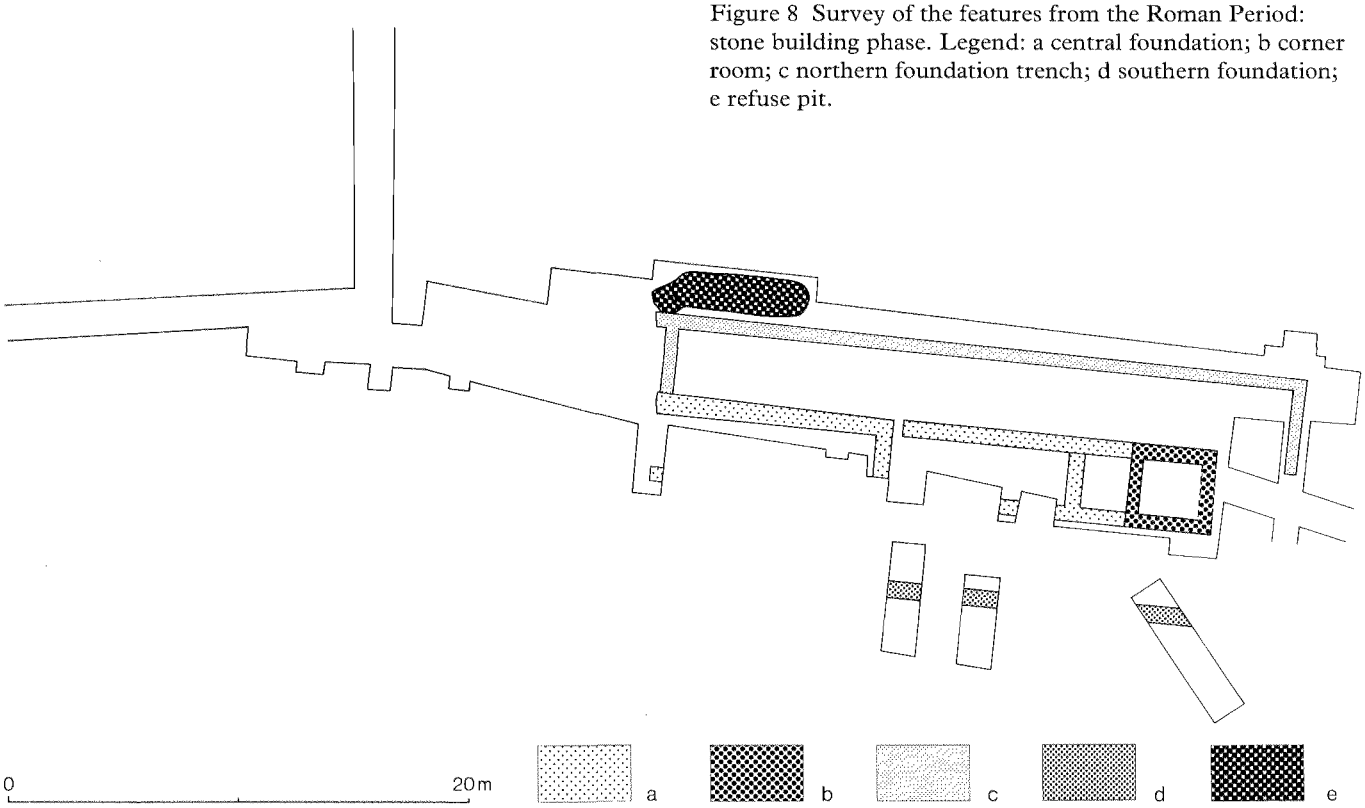


Figure 8 Survey of the features from the Roman Period: stone building phase. Legend: a central foundation; b corner room; c northern foundation trench; d southern foundation; e refuse pit.

2.90 m NAP. This floor consisted of a layer of levelled tuff stones, covered with an 8 cm thick layer of red rubble and large stones embedded in mortar, over which a layer of fine red-coloured cement (*opus signinum*) was spread. The total floor construction was 30 cm thick. In order to prevent the floor subsiding, a thicker layer of tuff stones was laid over the area where the flooring covered a posthole remaining *in situ* from the earlier wooden building, phase A. To the south of the central section there was also a stone foundation. This was located in only three of the trial trenches. As far as depth and method of construction are concerned, these foundations are identical to those of the central section.

To the north of the central section on the other hand, no stone foundations had been used. Instead a foundation trench (53 cm wide) had been filled with well-rammed clay. A number of stones were found on top of the foundation trench, but these have not been described. It is likely that they formed the upper part of the foundation, or the base of the above-ground structure. The wall here would have been lighter than in the case of the stone foundations. The trench was possibly the foundation for a gallery or *porticus*. Both the south and north foundations, which 'embrace' the central foundations, have a gap of 2.40 m on the east side.

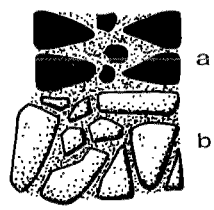


Figure 9 Wall construction: a above-ground wall; b foundation.

A piece of wall was found in a large refuse pit north of the clay foundations. This was found to have been constructed in the same way as the wall fragment described above. In the more heavily founded area, a few lumps of mortar with a uniform pinkish-red wall plaster were found. In addition, pieces of good quality window glass were excavated. No *hypocaust* or any stokehole belonging to one could be located, although the discovery of twelve *tubuli* indicates the presence of some sort of hot-air heating in the building.

The dating of the wooden and stone building phases

On the basis of a number of finds from the wall trench and the boundary ditch, a coin, a *firma* lamp and terra sigillata sherds, wooden building phase A can be dated between AD 50/75 and 100/120. There are virtually no Roman imported finds dating from the first half of the first century (table 1 and 2). On the basis of several terra sigillata sherds which were found in the foundation trenches, the stone building cannot have been constructed before AD 150/175. It is not possible to establish with certainty when the stone building was abandoned and fell into disuse. The finds suggest that this must have taken place in the second half of the third century. This date is, however, based on the presence of pottery types which had a long period of use. It is therefore quite possible that the decline of the stone building phase could have occurred some decades earlier. Neither can the possibility be excluded that habitation continued into the Late Roman Period and even into the Early Medieval Period. Two fourth-century sherds and others of Merovingian and Carolingian date support this supposition.

There are no finds available for dating wooden building phase B. However on the basis of the dates given to wooden building phase A and the stone building, this phase is dated between AD 110/120 and 150/175.

The Medieval Period

Two wells from the Carolingian period were excavated, situated a short distance from each other. The southern well had a diameter of 80 cm and is *c.* 2.65 m deep (from 3.00 to 0.35 m NAP). The northern well is somewhat wider at the base: 1 m. The wells, like those from the Roman Period, are sunk into a natural layer of gravel within the alluvial deposits. In the south side of the excavation area, a round well from the Late Medieval Period was found. This well, of which no further details are known, was built of red bricks measuring 22 × 10 × 3.5 cm.

THE DEVELOPMENT AND FUNCTION OF THE SETTLEMENT

Prior to the Roman Period, the Wallerweg site was occupied in the Middle and Late Iron Age. As stated before, continuity between these periods and between the Roman Period is difficult to establish on the basis of the finds. This does not however mean that there was no continuity. A number of factors play a role here: first, the native pottery cannot be dated exactly, second, the excavation comprises a small site (*c.* 350 m^2), and one has to take into account the fact that in the course of time there may have been slight shifts in the location of settlements in the area, due to the increased wetness of the soil.[23]

As far as the Roman Period is concerned, it may be assumed that there was a continuous period of habitation. The Roman remains form part of a civilian settlement on the periphery of the Roman Empire, which probably had its origin in the (Late) Iron Age. During the Roman Period the agrarian settlement developed into a *villa*-like complex, part of which was excavated in 1957.

The first structural plans (wooden building phases A and B) have a native appearance, but are associated with Roman imported finds. These buildings can be dated on the basis of the finds and the stratigraphy to between *c.* AD 50/75–100/120 and between AD *c.* 110/120–150/175 respectively. Around the middle of the second century, a *villa*-like building was constructed, partly in stone, on the former site of these wooden structures. Although the incomplete plan of the building cannot be compared to the main building of the extensive, symmetrically-built *villa* complexes found in the south of the Netherlands,[24] a comparison with the small stone buildings found in the eastern river area (in Overasselt, for example) and the structure built partly of stone at Rijswijk-De Bult (Zuid-Holland) is possible.[25] Both these types have been interpreted as *villa*-like buildings situated on the border of the Roman Empire. The

23 Steenbeek 1990, 250–1.

24 For instance Willems 1986b; Willems & Kooistra 1986.

25 Willems 1986a, 115–8; Bloemers 1978.

building at Houten had wall paintings, window glass and a form of hot-air heating.

Apart from the above-mentioned morphological reasons for referring to the Wallerweg structure as *villa*-like, there are other indications for considering it to be part of a farmstead which was integrated to a large degree into the Roman economic and social system. The interpretation of the settlement that was excavated on the Tiellandt site (fig. 1: d) plays an important part in this assumption. Although the results from this excavation have not yet been fully analysed, it is quite possible that the building at Wallerweg and the structures a short distance away at Tiellandt may have been part of a single economic unit. During excavations at Tiellandt, it was possible to determine the western boundary of Roman activity on this site. A votive altar was found near this boundary in 1986, on the south-east bank of the former riverbed channel already mentioned which linked the sites of Wallerweg and Tiellandt. The altar had been dedicated to the god Hercules Magusanus by a certain Volusius Vetonianus.[26] This altar does not date before the second century, and probably dates to the second half of the second or the first half of the third century AD. The *villa*-like building at Wallerweg was certainly in use at this time. Van Es and Hessing (1990) assume that the original site of the altar was not far from the find spot. This means that the altar was erected at the edge of the settlement at Tiellandt, on the bank of the former river bed which ran alongside Wallerweg and Tiellandt. On the basis of other finds, the above-mentioned authors also surmise that a certain sanctity must have been attributed to this spot in the Roman Period and even as early as the Late Iron Age. The altar may have formed part of a shrine belonging to an agrarian *villa* estate, the main building of which was the *villa*-like building at Wallerweg.

As a result of the integration of the settlement into the Roman economic system during the period of Roman occupation, the production of a marketable surplus became an essential requirement. It may have been for this reason, if the assumed relationship between Wallerweg and Tiellandt is correct, that centralisation within the settlement took place. There may well have been a certain level of dependency between the farmers of Tiellandt and the occupant or owner of the *villa*. This person, who would have maintained direct contacts with the market, possibly the *castellum* Fectio (Vechten), may have been a direct descendant of the original inhabitants of the site. On the other hand, there is equally the possibility that he was a relative newcomer to the area, possibly acquiring the land in some other way (for instance, as a veteran soldier).

This now gives rise to the question of what the surplus production from Houten may have been. The exact economic function of the *villa* estate can only be guessed at. A more detailed analysis of the excavation results from Tiellandt must be undertaken before this and other questions can be answered. To date, there have been no indications to suggest any industrial activities on the site, although a relatively high percentage of bronze horse harness fittings were found during the Tiellandt excavation.[27] Although further zoological research is necessary to confirm the theory, it may be that the economy in the Houten area was primarily based on supplying horses to the army at Vechten, only *c.* 3.0 km away.[28]

With this the Wallerweg-Tiellandt complex fits into a series of settlements which, often from much older origins, developed into *villas* or *villa*-like estates during the Roman Period. From an economic point of view, these settlements were highly integrated elements of the Roman surplus economy. Examples of such developments can be found in Hoogeloon (Noord-Brabant) and in Rijswijk-De Bult (Zuid-Holland).[29] In both settlements there is a main building partly constructed of stone with associated farmsteads that together formed an economic unit. Whether such a socio-economic status as that accorded above to the Wallerweg-Tiellandt settlement in the territory directly behind the Limes, was exceptional, can not be determined from present evidence. There are indications for other stone buildings which can be dated to the Roman Period at several other findspots in the Houten area. The relationship between the various settlements, both excavated and known from field surveys, the function of the Wallerweg site and the surmised economic interaction

26 Van Es & Hessing 1990. The authors do not exclude the possibility that the dedicator of the altar found at Houten had a military background.

27 Pers. comm. J. van der Roest.

28 A similar assumption has also been put forward for the settlement at Wijk bij Duurstede-De Horden, where a high percentage of the bronze small finds were found to be from horse harnesses and fittings. See also Bloemers 1989, 32–3.

29 Slofstra & Bazelmans 1985; Slofstra 1987; Bloemers 1978.

between the region and the neighbouring *castellum* Fectio (3.0 km), can only be properly discussed when all the evidence has been analysed and included in the investigation.

It is not certain when occupation of the central area of Houten came to an end. On the basis of the dates attributed to the finds, a continuous use of the site until into the Medieval Period can not be excluded. Nevertheless, it seems as if the stone building had already fallen into ruins by the Early Medieval Period. Merovingian pottery was found among the layers of stone building rubble. It is, however, possible that the site was reoccupied not very long after the collapse of the stone building.

Houten is first mentioned in the historical sources in a property register drawn up between AD 885 and 896.[30] This register mentions property owned by the bishop of Utrecht before the Viking invasion in AD 863. The list states that a certain Herlulf donated the church at Villa Haltna (the centre of the old village) with 5 *hoeven* of land to the bishopric of Utrecht.[31] It is possible that this church had a Merovingian predecessor, built partly of tuff stone removed from the Wallerweg complex. This Early Medieval church may well have been situated on the same site as the present Dutch Reformed church, only several metres away from the original site of the Roman building.

As well as at Wallerweg, more or less continuous occupation from the Late Iron Age or Roman Period is also likely at Tiellandt. Here too, Early Medieval finds were discovered, which, on closer examination, may well throw more light on the origin and development of the village of Houten itself. In contrast with other villages in the area, Houten was not situated in the immediate vicinity of the Kromme Rijn river in the Medieval Period, but was nevertheless still able to maintain its position as an relatively important centre. Whether this fact can be traced back to a particular role or function of this area in the Roman Period still remains an open question.

30 Gijsseling & Koch 1950, 1 no. 195.

31 The same list states that the bishop possessed an estate near the Villa Turre. This had also been donated to him by Herlulf. This estate is situated on the Tuurdijk at 't Goy, a few km from the village of Houten. Field survey on this site revealed the remains of yet another stone building which dates to the Roman Period.

32 Van den Broeke 1987, 105–9, phase G. See also note 17.

DESCRIPTION OF THE FINDS

The *c.* 2000 finds from Wallerweg are described in this chapter. Since the assemblage is not suitable for the closer dating of native handmade and Roman wheel thrown pottery, the most common published form typologies were used for the identification. The pottery forms of Roman wheel thrown pottery are shown in table 1. Table 2 gives the numbers of rim fragments found per pottery form. If it was possible to attribute wall and base sherds to a certain form then this is also mentioned in the table. The total number of base and wall sherds found is also given. Terra sigillata sherds with decoration are described below (see also fig. 10).

Iron Age

Handmade pottery

A total of 1308 rim, wall and base fragments of handmade pottery were found. This material can be divided into two main periods: Middle Iron Age and Late Iron Age or Early Roman Period. The way in which the material was collected made a more precise classification impossible. The two groups are almost equally divided: 665 in the former and 643 in the latter.

Middle Iron Age pottery

The majority of the pottery that can be attributed to the Middle Iron Age is tempered with grog or sand (fig. 4). In the latter case it is not clear whether this material was already present in the clay or whether it had been added at a later stage as temper. The pottery is often burnished.

A number of vessels with tall straight necks (> 10 cm in height) are very reminiscent of Marne pottery.[32] In addition, a number of large barrel-shaped, slicked vessels were found in the assemblage which could perhaps be dated to the same phase, or possibly a bit older. Characteristic is the infrequent occurrence of rim and wall decoration (only 14 decorated wall sherds, including a piece of *Kalenderberg* decoration and 12 decorated rims compared to 31 decorated walls and 23 decorated rims from the Late Iron Age or Roman Period). This assemblage of finds dates of the second half of the Middle Iron Age.

Among the finds from the Middle Iron Age there was a clay spindlewhorl. The temper consists of sand which was possibly already present in the clay.

Figure 10 Decorated terra sigillata.

Late Iron Age or Early native-Roman pottery

The category of handmade pottery from the Late Iron Age or Roman Period contains a large quantity of sherds with organic tempering (fig. 5). This kind of temper is not found in the older material. A small percentage is shell-tempered.[33] Rims and walls are frequently decorated (see above).

A second clay spindlewhorl was found, which was also tempered with organic material. Both, the Late and the previous mentioned Middle Iron Age spindlewhorl, had been damaged.

Wood

Five pieces of charred *Alnus* sp. (alder) from the Iron Age were found. This had originally been a thick piece of wood with a diameter of > 7 cm. Before the wood was charred, the cell walls had already decayed.

33 There are indications that the shell-tempered pottery is of a late date, for example the third or fourth century AD. Pers. comm. W.A.M. Hessing.

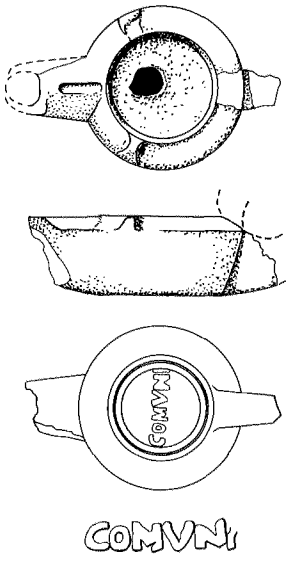


Figure 11 Roman oil lamp. Scale 1 : 2; stamp 1 : 1.

Roman Period

Roman wheel thrown pottery (tables 1 and 2)

Decorated terra sigillata (fig. 10: a-d) Four rim fragments, five wall fragments and two very small fragments which could not be identified precisely.[34]

South Gaulish decorated terra sigillata
Find no. 52: a very small fragment of South Gaulish decorated ware, not further identifiable. Dating: first century AD.
Find no. 75: wall sherd Drag. 37 (fig. 10: a). Deer: Oswald 1738; Karnitsch 1959, Tafel 19, 2; Knorr 1919, Tafel 53, 17. Moulding: Müller 1968 (Bützbach), Tafel 4, 57, 63; Knorr 1919, Tafel 53, 17. Floral motif: Hermet 1934, Planche 68, 29. Dating: AD 75–100.
Find no. 53: rim sherd Drag. 37 (fig. 10: b). Moulding: Haalebos 1977, tafel 34 (68); Knorr 1919, tafel 57 (19).

Table 1 Identified pottery forms found. Scale no. 5 1 : 6; no. 26 1 : 7; no. 37 1 : 10. ▷
Literature: Brunsting 1937; Chenet 1941; Dragendorf 1895; Dressel 1899; Gose 1950; Holwerda 1923, HBW, Holwerda 1941; Niederbieber, Oelmann 1914; Stuart 1977.

Dating: Last quarter of the first century AD.
From the same find no. a wall sherd of atypical fabric, not further identifiable.

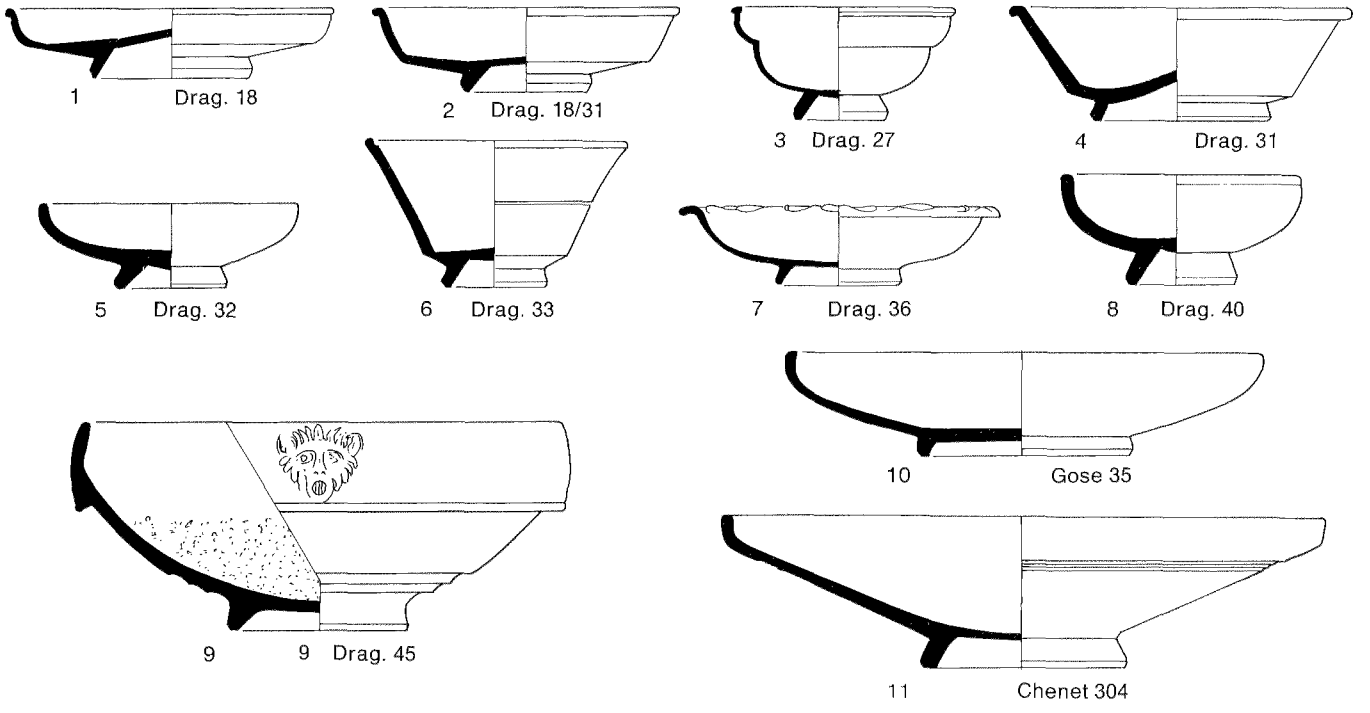
Central-Gaulish decorated terra sigillata,
Lezoux
Find no. 12 (fig. 10: c): wall sherd Drag. 37. Gladiator: Oswald 691; Stanfield and Simpson 1958, Ioenalis Style 39/454; Rogers 1974, P10. Garland: Stanfield and Simpson 1958, P1 67, no. 9 Potter X5; medallion: X5. Dating: Hadrianic (AD 117–136).

East-Gaulish decorated terra sigillata,
La Madeleine
Find no. 51 (fig. 10: d): wall sherd Drag. 37, but with moulding A1: Ricken 1934, Tafel 10,1 (A1); Müller 1968 (Bützbach), Tafel 14, 365. Border ornament under moulding: Ricken 1934, Tafel 7, 50, cf. also Müller 1968 (Bützbach), Tafel 14, 365. Leaf: Ricken 1934, Tafel 7, 50. Man: Oswald 345a (perhaps incomplete?); Haalebos 1977 (Zwammerdam), Tafel 42, 221; Ricken 1934, Tafel 7, 83. Dating: AD 110–140.

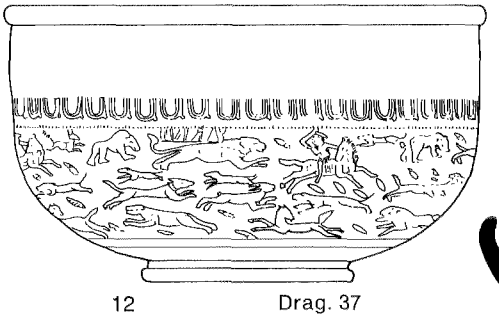
Oil lamp
In a trial trench on the west side of the site a Roman oil lamp was found in the parcel boundary ditch of phase A (fig. 11). The handle and spout were damaged. It is a '*firma* lamp' of the Loeschke 9b type.[35] The name '*firma* lamp' refers to the factory stamp on the base of these lamps. The dating of such lamps is still under discussion.[36] In general, the dating Flavian-IIA (second half of the second century AD) is adhered to.[37] This lamp found bears the firm stamp COMUNI, in relief.
The stamp COMUNI occurs on other lamps in several variations.[38] This North Italian manufacturer is known to have made lamps in the Flavian period; its products

34 I am grateful to W.J. van Tent for his help with the determination.
35 Loeschke 1919.
36 Leinbundgut 1977, 109.
37 Baily 1988, 150.
38 For the different versions of the company stamp COMUNIS, see: CIL III: 3215, 4, 6008, 14, 10184, 1, 12012, 5; CIL V: 8114, 28; CIL VII: 1330, 10; CIL IX: 6081, 20; CIL X: 8052, 5, 8053, 55; CIL XI: 6699, 57; CIL XIII: 10001, 100; CIL XV: 6382.

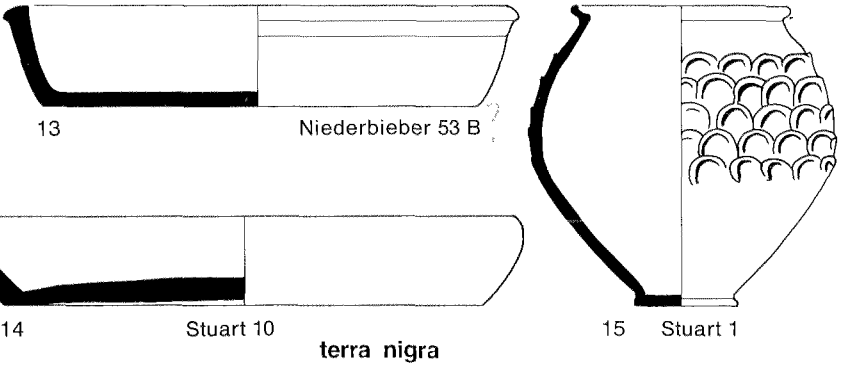
undecorated terra sigillata



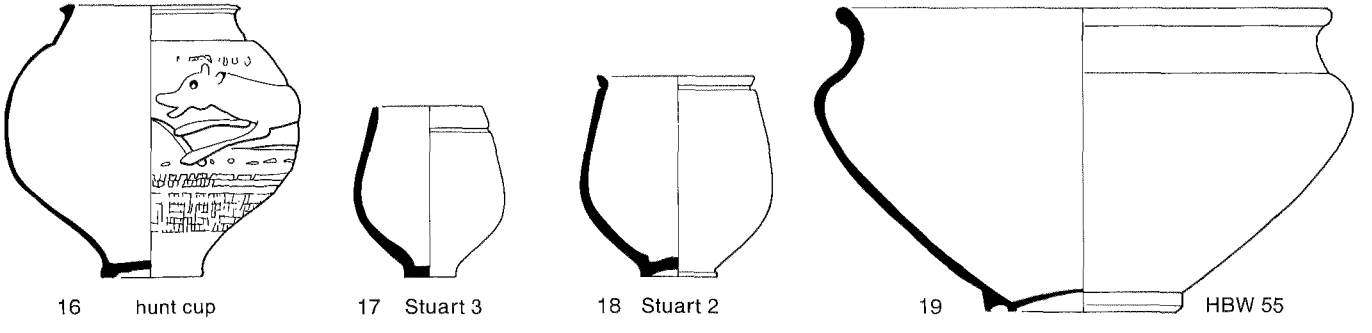
decorated terra sigillata



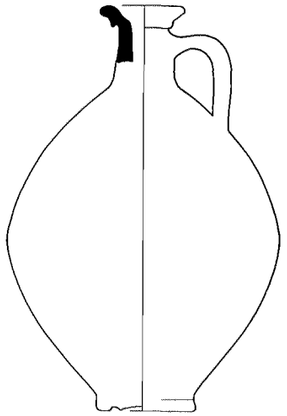
colour-coated ware



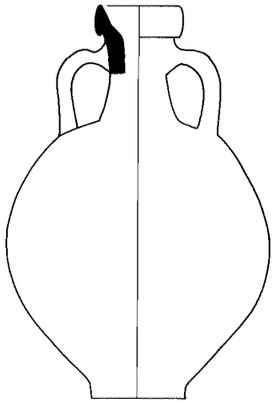
terra nigra



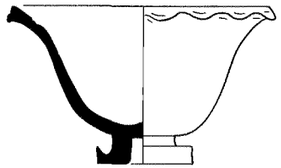
smooth-walled pottery



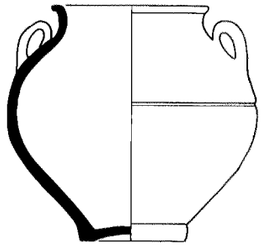
20 Stuart 110 A



21 Stuart 129 A

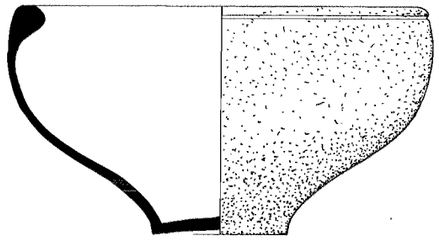


22 Stuart 145

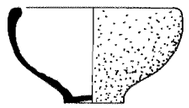


23 Stuart 146

coarse ware

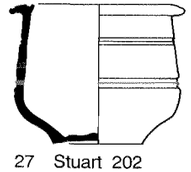


24 Niederbieber 104

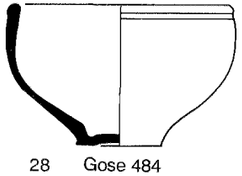


25 Gose 486

26 Brunsting 20

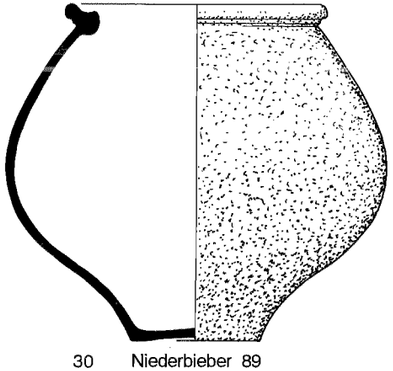


27 Stuart 202

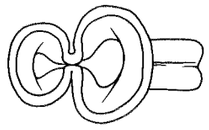


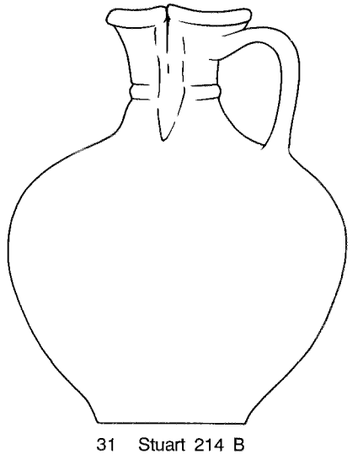
28 Gose 484

29 Niederbieber 120



30 Niederbieber 89

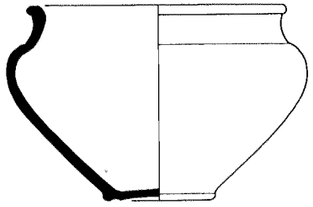




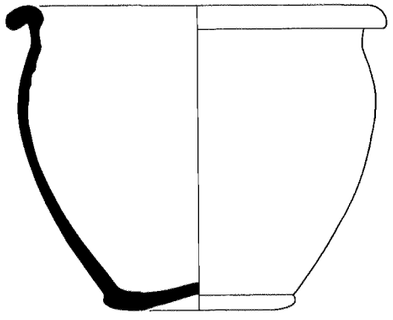
31 Stuart 214 B

Table 1 (continued)

Belgic ware

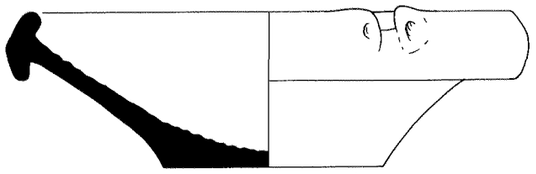


32 Holwerda 134

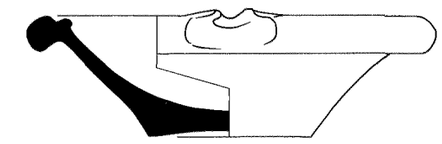


33 Holwerda 142

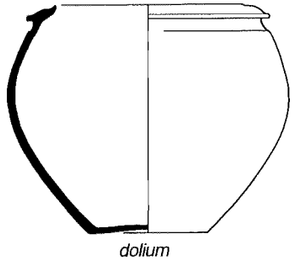
thick-walled pottery



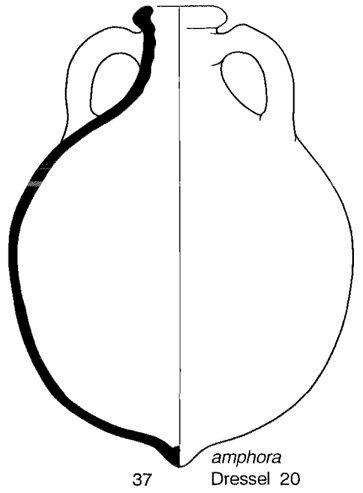
34 *mortarium* Stuart 148



35 Stuart 149



36 *dolium* Stuart 147



37 *amphora* Dressel 20

fabric and region	type	rim	wall	base
terra sigillata, undecorated				
South Gaulish	Drag. 18	1	–	2
	Drag. 18/31	1	–	–
	Drag. 27	1	1	1
	Drag. 36	1	–	–
	other	–	2	–
Central or East Gaulish	Drag. 27	1	–	–
	Drag. 31	1	–	1
	Drag. 32	1	–	–
	Drag. 33	–	1	–
	Drag. 40	2	–	–
	Drag. 43/45	–	1	–
	other	–	1	1
East Gaulish	Gose 35	1	–	–
Argonne	Chenet 304	1	–	–
	total	11	6	5
terra sigillata, decorated (fig. 10)				
South Gaulish	Drag. 37	3 (fig. 10: b)	3 (fig. 10: a)	1
Central Gaulish	Drag. 37	1	–	1
Lezoux	Drag. 37	–	1 (fig. 10: c)	–
La Madeleine	Drag. 37	–	1 (fig. 10: d)	–
	total	4	5	2
terra nigra	HBW 55	1	–	–
	other	–	10	4
	total	1	10	4
colour-coated ware	Stuart 1	1	–	–
white paste with	Stuart 2	3	–	–
reddish colour-coat	Stuart 10	3	–	–
Brunsting 1937 techn. a	oillamp	–	1	–
	other a	–	13	2
white paste with	Stuart 1	1	–	–
black slip	Stuart 2	6	–	–
Brunsting 1937 techn. b	Stuart 3	1	–	–
	hunt cup	–	1	–
	other b	–	51	8
	Niederbieber 53 B	1	–	–
	total	16	66	10

Table 2 Numbers of sherds of Roman wheelthrown forms identified. (See also opposite page.)

fabric and region	type	rim	wall	base
smooth-walled pottery	Stuart 110 A	1 (complete)	–	–
	Stuart 129 A	1	–	–
	Stuart 145	2	–	–
	Stuart 146 C	1	–	–
	Stuart 119	2	–	–
	other	–	77	10
	total	7	77	10
coarse ware	Stuart 202	4	–	–
	Niederbieber 89	10	–	–
	Niederbieber 120 A	10	–	–
	Brunsting 20	1	–	–
	Gose 484	2	–	–
	Gose 486	8	–	–
	Niederbieber 104	3	–	–
	Stuart 214 B	1	–	–
	other	–	69	3
	total	39	69	3
Belgic ware	Holwerda 131	1	–	–
	Holwerda 142	5	–	–
	other	–	19	7
	total	6	19	7
thick-walled pottery				
mortaria	Stuart 148	5	–	–
	Stuart 149	2	–	–
dolia	Stuart 147	5	–	–
amphora	Dressel 20	1	–	–
other		–	13	3
	total	13	13	3

have been found at Pompeii, among other places. A much larger quantity of COMUNI lamps have been found in the northern provinces. It is, however, assumed that these were produced locally. It is not known whether the workshops in the north were connected with those in Italy or whether potters in the northern provinces simply copied the imports.[39] COMUNI lamps can be dated to the last quarter of the first-century AD. Production possibly continued until into the first quarter of the second century AD.[40] The lamp was made in technique D[41]. The clay at the break is yellowish-red, and the colour-coat or slip, which must originally have been brownish in colour, has become bluish-grey from the high firing temperatures. The exact

39 Bailly 1988, 96.
40 Ibid.
41 Loeschke 1919, 264.

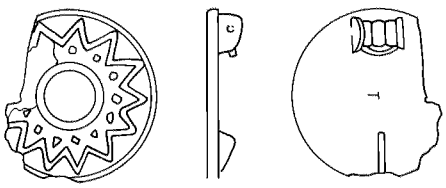


Figure 12 Roman (?) disc brooch. Scale 1 : 1.

origin of the lamp is difficult to determine; heavy mineral analysis of the clay may well be able to provide a solution in the future.

Glass

During the excavation, a small quantity of Roman blue-green glass was found. The assemblage contains quite a lot of crackle glass. This may be the result of a production fault, or it may be due to recent factors. Heavy pressure on the glass can also result in the same sort of crackling effect. Among this material are fragments probably from square bottles, as well as other undiagnostic sherds affected by heat.

There are also fragments (find nos. 12, 52, and 53) of at least two rectangular bottles of a type (Isings 50) that was in use from AD 50 until the third and possibly even fourth century.[42] In view of the remains of the handles (these had also been affected by fire) a date from AD 50 to 200 at the latest seems feasible. In a base sherd (find no. 53) a circular pattern is visible, which, judging from its irregularity was probably applied by hand. Dating: AD 50–200 (at the latest).

Within the assemblage are also a number of pieces of window glass (find no. 12). The fragments are of good quality and were probably cast in a ceramic mould. The edges are straight, and on the surface traces can still be seen of the 'drawing-out' of the molten glass.[43]

Metal

Brooch Within the layer of rubble (layer D) an unusual enamelled disc brooch was found (fig. 12). The ornament has a spiral construction between two hinges, which seems to be exceptional. The catch plate is broken off. The brooch has been decorated with a circle in the centre around which there is a thirteen-rayed star. In each ray there is a metal-point. Traces of enamel are still present.The decoration conforms to Bushe-Fox 1949, pl. LXXXIX, 45: thirteen-rayed star, diam. 2.1 cm; Curle 1911, pl. LXXXIX, 10: thirteen-rayed star, diam. 2.1 cm (construction unknown); Hull 1967, fig. 21, 291–2: ten-rayed star, diam. 2.1 cm, with lug and spring construction. All these examples date of the second century AD.

Webster 1975, fig. 109, 3, also shows the same thirteen-rayed star (diam. 2.5 cm) as well as the exceptional construction of the Houten brooch. Webster however dates this type of brooch to the Early Middle Ages.

Coins In the wall trench of wooden building phase A, a Claudian *sestertius* (AD 41–54) was found (fig. 13). The coin was minted between AD 41 and 54 (a more precise date cannot be given).Obverse: head (undet.) <TI CLAVO C.>AESAR AV<, with four countermarks and a mint or countermark. One countermark is, except the letter 'R', illegible, as is the mint mark or countermark. The other countermarks are: PRO, BON, IMP.

Reverse: smooth; diameter: 3.4 cm; weight: 27.2 g.

Countermarks are usually found on coins from Augustus to Nero. Although a countermark only gives a *terminus post quem*, their use remains more or less restricted to the first century AD. As to the function and origin of countermarks, opinions differ. The coin in question from Wallerweg was considerably worn. With countermarked Claudian coins it is probably a matter of extending the period in which the coin was used.[44] The IMP and PRO (*Imperator probavit*) countermarks have frequently been found on Claudian *sestertii* and *dupondii*. The countermark BON is probably post-Claudian.[45] Kraay's late dating in the Trajan period is refuted by various authors.[46] The frame in which BON stands is punched in much more deeply and can be seen more clearly than PRO and IMP. This countermark was probably added later. The third countermark is illegible.

42 Isings 1957, 63–7.
43 Boon 1966, 41ff.
44 De Weerd 1977, 268.
45 De Weerd 1977, 269; Haalebos 1973, 263 and 1977, 205.
46 Chantraine 1968, 29; Haalebos 1973, 263.

Figure 13 Claudian *sestertius* with countermarks. Scale 1 : 1.

The countermarked *sestertius* can be dated roughly to the last decades of the first century AD.

A second coin (find no. 75) came from the oval pit north of the northern foundation of the stone building. This was a M. Aurelius *denarius*, minted in honour of Faustina II, AD 161–176.

Obverse: bust; FAUSTIN [<A>] AUGUSTA.

Reverse: draped throne with two children sitting on it (Commodus and Antoninus ?); SAECVL <I FELICI> RIC (M.AUR.) 710–711, cf. Cohen 1880–92, 190.

Diameter: 1.6 cm; stamp: 6 h.; weight: 2.15 g. The coin is perforated.

Roman wall paintings (by R.M. van Dierendonck)

From the excavation only four fragments of wall painting were recovered at two different findspots within the same debris layer. Although the fragments (find nos. 1 and 11) were unfortunately not kept separate, they probably belonged to decorations that were applied to the walls of the room in which they were found. Other dating evidence shows that they must have been applied after AD 150/175.

Based on the composition of the mortar layers and the finishing of the surface, the fragments can be divided into two groups. The fragments of both groups probably belonged to the most common decoration scheme in the Roman provinces, the panel decoration.

47 Van Dierendonck & Swinkels 1983, 158.

In the description data relating to each group are given in the same order as known from earlier publications.[47] However the description of the mortar composition has been somewhat extended and standard deviations are not given.

Group 1

a 3
Pink surface 3
b 0.0028 m²
c *1* White stucco
2 Coarse white mortar consisting of coarse sand, lime and small pebbles, 27 mm
e Layer of paint almost 1 mm thick

Group 2

a 1
Red surface 1
b 0.006 m²
c *1* White stucco
2 Coarse white mortar consisting of coarse sand and lime, 8 mm
3 Fine grey mortar consisting of fine sand, lime and some pieces of chalk, 38 mm
e Smooth

Building materials

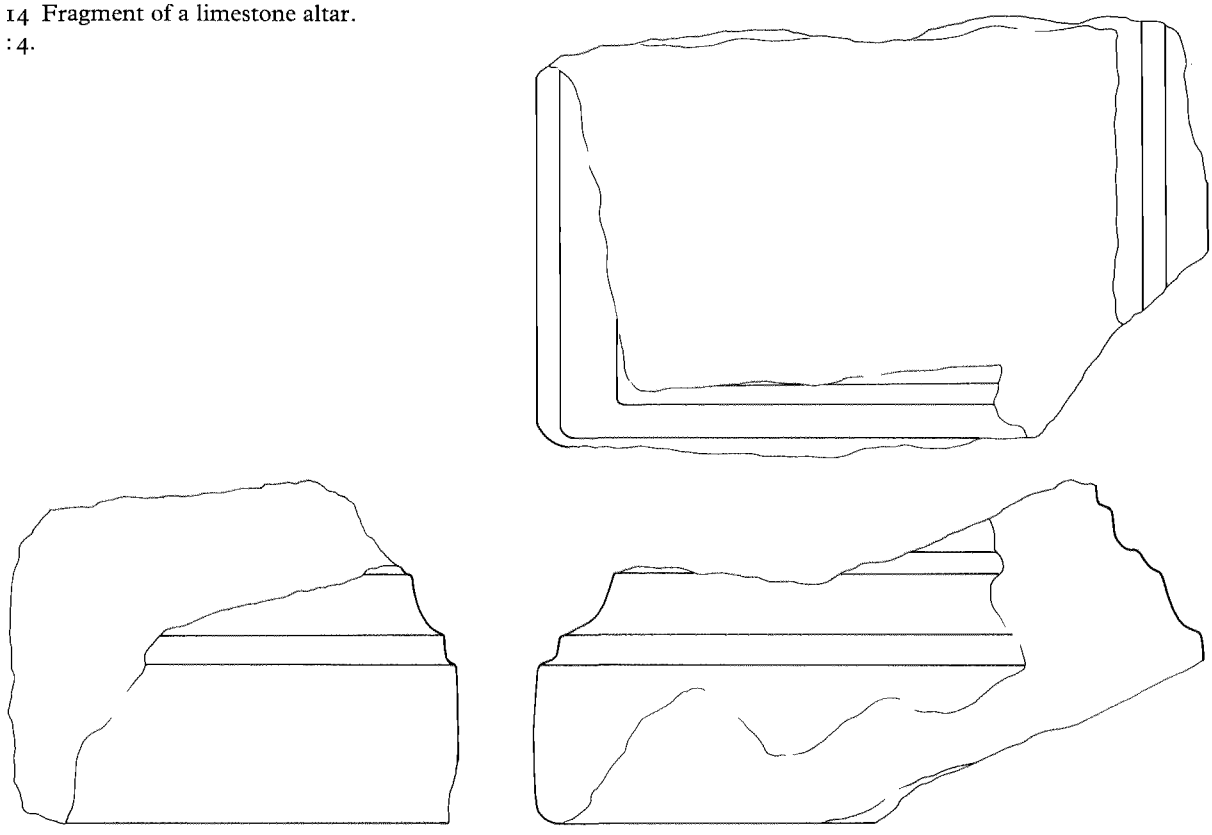
From the oldest period several lumps of wattle and daub have been preserved (find nos. 5, 19, 30, 54, and 64).

As already stated, large quantities of building material from the Roman stone building phase were thrown away during the excavation. The roof tiles were checked at the time for stamps, but none were found.

The foundations were built of slate (in German: *Grauwackenschiefer*); the superstructure consisted, at least partly, of tuff stone. The make up of the floor sections found in the central area has already been described. Twelve fragments of heating pipes or *tubuli*, were preserved. Situated underneath these were five corner pieces (find nos. 15 and 26 twice, and 40 once). It was possible to determine the length of one *tubulus* as being 26 cm (find no. 40). Only three fragments of *tegulae* were still present among the finds, including two rim fragments (find nos. 15 and 38).

From find nos. 16 and 52, two pieces of brick with remnants of mortar were recovered.

Figure 14 Fragment of a limestone altar.
Scale 1 : 4.



Bone[48]

The amount of bone material preserved is too small to draw any conclusions. As said before, large quantities were probably thrown away during the excavation.

species	number	weight in g
cow	41	4627
pig	6	148
sheep/goat	9	136
horse	4	411
red deer	2	88
undet. large	6	44
subtotal	68	5454
human	19	1844
total	87	7298

Wood

Roman stone building phase: three pieces of charred *Pinus* sp (pine), 2 pieces of charred *Abies alba* (silver fir) (find no. 12). The pieces show signs of woodworm which indicate construction wood.

Rubble layer of debris from stone building phase: one piece of charred *Pinus* sp (pine), a thick piece of wood with traces of woodworm (find no. 14).

Natural stone

A great deal of stone was thrown away during the excavation. The fragments that were kept are described below. One piece of worked limestone was found (fig. 14). The stone, which is of the same mineral composition as the altar from Tiellandt, is a piece of white bioclastic

48 The bone material was analysed by F. Laarman (ROB).

limestone which originated in France.[49] One side of the stone had been left rough, the shorter sides smoothed and the face of the stone bears a kind of cornice. We can only speculate as to its function: it probably formed part of a small altar.
In addition, a small quantity of basalt lava was found on the site, mostly in small lumps. There are, of course, no visible tool marks on the smallest fragments, but in view of the material they will have been the remains of millstones. One fragment probably came from the nether stone of a quern.
Two oval grindstones were found, one of which was damaged.

Medieval Period

Pottery
Merovingian and Carolingian pottery was found over the whole site in the debris layer of the Roman stone building phase as well as in wells. Altogether nine Merovingian rim sherds, thirteen wall sherds and two base sherds were found. In the Carolingian wells two rim sherds: type Dorestad W IIC-1b and W IIIB-1b were found. Three wall sherds of Dorestad fabric W 1 with rouletting were also discovered. One wall sherd is of the Dorestad W 1-1e type.[50]
Various late Medieval glazed sherds and a fourteenth-century floor tile were found on the surface.

Wood[51]
Early Medieval Period: wood removed from the well, comprised two pieces of *Alnus* sp (alder) with an original diameter > 10 cm (find no. 76) and the bark are still remaining, as well as four fragments of *Quercus* sp (oak) and two undiagnostic fragments (find no. 70).

49 Kars 1981, 443–5.
50 Van Es & Verwers 1980.
51 The analysis of all the wood was carried out by Ms. L.I. Kooistra (ROB).

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J.H. VAN DER WERFF

Bemerkungen zu einer Pinselinschrift aus Xanten

Keywords: epigraphy, onomastics, long distance trade of wine, amphoras, type Haltern 70, Early Roman Period, Province of Baetica, Germania Inferior, Xanten, Germany, 28 references.

Während der Grabungsarbeiten 1987 in der Insula 39 der Colonia Ulpia Traiana (CUT) in Xanten kamen unter einem coloniazeitlichen Baubefund die Umrisse einer älteren Grube zutage. Die Grube wird von einer Planierungsschicht, die aus der Gründungszeit der Colonia um 99 n.Chr. stammen dürfte, überlagert. Da die Grube sehr tief, d.h. ca. 2,70 m, in den gewachsenen Boden eingegraben ist, verwundert es nicht, daß sich eine Vielzahl von Auffüllschichten abzeichnet. Unter den daraus geborgenen Funden soll hier eine Amphorenscherbe mit Resten einer Pinselinschrift (Fundnummer C 26 770; Abb. 1) vorgestellt werden.[1]

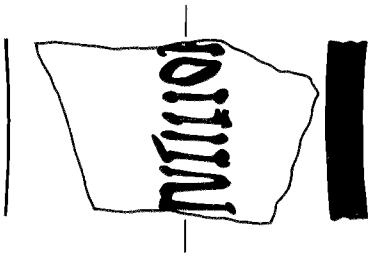

Abbildung 1 Halsfragment mit Pinselinschrift einer Amphore aus Xanten. M 1:2.

Die Halsscherbe einer Amphore, die es hier zu besprechen gilt, zeigt einen hart gebrannten Ton von hellbraungrauer Färbung (Munsell 7.5 YR 7/4). Die Bruchkanten bieten eine dichte Struktur, die reichlich quarzartige Magerungspartikel aufweist. Die Oberfläche hat auf der Außenseite einen Überzug aus weißlichem Feinton. In der petrographischen Analyse, durchgeführt von Dr. H. Kars (ROB, Amersfoort), konnten die Kristalle als Quarz und Plagioklas metamorphen Ursprungs identifiziert werden. Vereinzelt sind auch farbloser Glimmer und Biotit im Ton vertreten. Aufgrund seiner makroskopischen und petrographischen Merkmale läßt sich das Xantener Fragment eindeutig dem Typ Haltern 70 zuordnen.

Die Spitzamphore vom Typ Haltern 70 (Abb. 2)[2] gehört, wie schon aus ihrer Anwesenheit in Haltern und Oberaden hervorgeht,[3] zum frühesten Begleitmaterial der römischen Expansion im nordwestlichen Gebiet der späteren Germania Inferior. In tiberischer und claudischer Zeit war sie hier noch relativ stark vertreten, z.B. in der Militärstation Bentumersiel (etwa zwischen 15 und 28 n.Chr.), im Kastell Velsen 1 (15 bis 30 n.Chr.), in den älteren und mittleren Phasen der Militärsiedlung auf dem Kops Plateau in Nijmegen und im

Vorbemerkung: Der Verfasser möchte sich herzlich beim Landschaftsverband Rheinland – Archäologischer Park und Regionalmuseum Xanten bedanken, der ihm das Stück freundlicherweise zum Studium zur Verfügung stellte. Dank gebührt ebenfalls Dr. Henk Kars (ROB) für die petrographische Bestimmung des Fragments, Dr. Gudrun Gerlach (Rheinisches Amt für Bodendenkmalpflege, Bonn) für die Erläuterung der Fundumstände und Dr. Brigitte Christern (Heidelberg) und Annette Wagner für die Übersetzung. Die Zeichnungen haben H.M.C. de Kort (ROB) und A. Nijs (ROB Nijmegen) angefertigt.

1 Dazu demnächst Boelicke 1991.

2 Literaturhinweise in Van der Werff 1984, 356 und 379ff. Nachträge bei Tchernia 1986, 140ff. und 249f.; Fitzpatrick 1989, 24ff.

3 Loeschcke 1909, 256f.; 1942, 99ff.

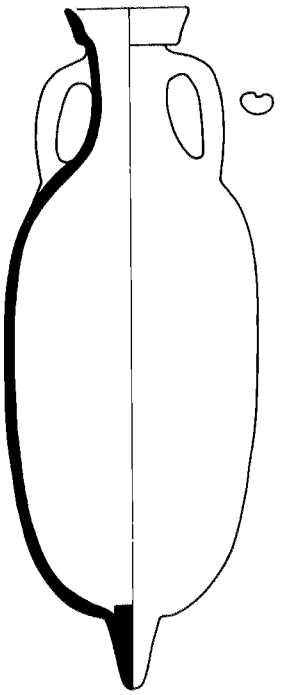

Abbildung 2 Amphore Haltern 70 aus Haltern. Nach Loeschcke 1909, Tafel 13. M 1:10.

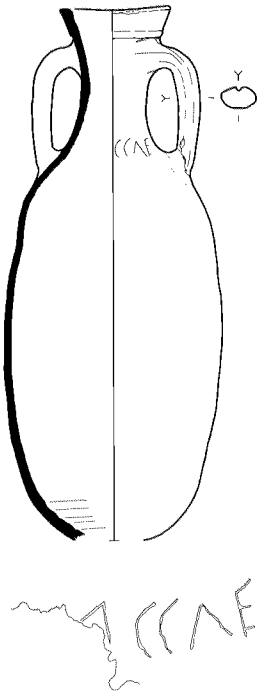

Abbildung 3 Amphore Haltern 70 aus Nijmegen, Ausgrabungen Kops Plateau 1988. M 1:4 (Graffito) und 1:10 (Amphore).

Neußer Militärbereich (ungefähr 25 bis 50 n.Chr.).[4] Nach der Mitte des 1.Jahrhunderts n.Chr. aber scheint dieser Typ zu verschwinden. Daher ist es sehr wahrscheinlich, daß unsere Amphore erst noch einige Jahrzehnte in Xanten verweilte, bevor ihre Scherbe am Ende des 1.Jahrhunderts in die Grube gelangte, in der sie kürzlich entdeckt worden ist.

Haltern 70 diente zum Transport von Wein und vor allem von *defrutum* und *sapa* (aus eingekochtem Most hergestellter Wein) oder in *defrutum* bzw. *sapa* eingelegten Oliven.[5] Diese likörartigen Weine (frz. »vins cuits«) werden hauptsächlich am Tisch und in der Küche der in Xanten stationierten Offiziere sehr geschätzt gewesen sein. Wieviel Liter »vin cuit« die Xantener Am-

4 Bentumersiel: Ulbert 1977, 58, Taf 11: 129 und 130, Taf. 12: 140. Velsen 1: Pers. Mitt. Boudewijn Goudswaard (ROB, Amersfoort). In den noch laufenden Ausgrabungen auf dem Kops Plateau in Nijmegen gehört Haltern 70 zu den in der Periode von Augustus bis in die Mitte des 1.Jahrhunderts n.Chr. gängigen Amphorentypen. Neuß: Filtzinger 1972, 14f.

5 Zu den in Amphoren des Typs Haltern 70 transportierten Nahrungsmitteln s. Colls, Etienne, Lequément, Liou & Mayet 1977, 86ff. und Van der Werff (Anm. 2) 379ff. Die Vermutung, es handle sich bei *defrutum* und *sapa* in der Tat um Wein, wird von P. Sealey nach wie vor bestritten; s. u.a. Sealey & Tyers 1989, 59: »There is no authority in the ancient sources to suppose that fermentation of defrutum or sapa was undertaken after their preparation«. Schon bei flüchtigem Lesen von Plinius, *Naturalis Historia*, Buch 14 zeigt sich, daß mit *defrutum* und *sapa* gar nichts anderes als Wein gemeint sein kann. Wenn Plinius es hier (wie in fast allen Fällen) unterließ, ausdrücklich auf Fermentierung hinzuweisen, so ist dies nur damit zu erklären, daß sie für ihn (und seine Leser) eine nicht erwähnenswerte Selbstverständlichkeit war.

phore etwa enthalten haben mag, läßt sich nur annähernd bestimmen. P.R. Sealey nimmt aufgrund von vier unversehrt erhaltenen Exemplaren eine durchschnittliche Kapazität von 30 Litern an.[6] Zwischen dem Maximal- und dem Minimalwert besteht jedoch eine erhebliche Differenz: Das Volumen schwankt zwischen 25,5 und 34,76 Litern (Amphore aus Colchester bzw. aus dem Schiffswrack Port-Vendres II). Die Differenz verschärft sich noch, wenn wir eine fast vollständig erhaltene Amphore vom Kops Plateau in Nijmegen heranziehen (Abb. 3). Diese 1988 entdeckte Amphore stammt aus einem Fundensemble der Zeit um 40 bis 50 n.Chr. Obwohl der Fuß fehlt, läßt sich das Volumen ziemlich genau mit 21,4 Litern angeben.[7]

Übrigens sei erwähnt, daß die Nijmegener Amphore auf der Schulter, in der Mitte zwischen den Henkeln, die nach dem Brand eingeritzte Inschrift ACCAE, »von Acca« trägt. Acca ist bekanntlich ein weibliches *cognomen* (Beiname), das sich von der mythischen Ziehmutter von Romulus und Remus herleitet. Es ist ein seltener Name,[8] und es wäre zu fragen, wie es kommt, daß ein so spezifisch römischer weiblicher Name zur Zeit des Claudius, also bereits in der Frühzeit der Romanisierung, in Nijmegen auftauchen kann. Die Inschrift zeigt außerdem, daß Amphoren in sekundärer Verwendung offensichtlich nicht nur, wie weitgehend üblich, Besitz von Männern sein konnten, sondern auch von Frauen. Auf diese Frage können wir im Rahmen dieses Aufsatzes nicht näher eingehen.

Zur Herkunft des Amphorentyps Haltern 70 fehlen bis jetzt eindeutige formale Anhaltspunkte. Die Analogien, die zum Amphorentyp Oberaden 83 (Abb. 4) und zu dessen Nachfolger, dem dickbauchigen Typ Dressel 20 bestehen, bieten überzeugende Anhaltspunkte für eine Ableitung sowohl des erstgenannten als auch des zweiten Typs.

Betrachten wir zuerst die Analogien zu Oberaden 83, so

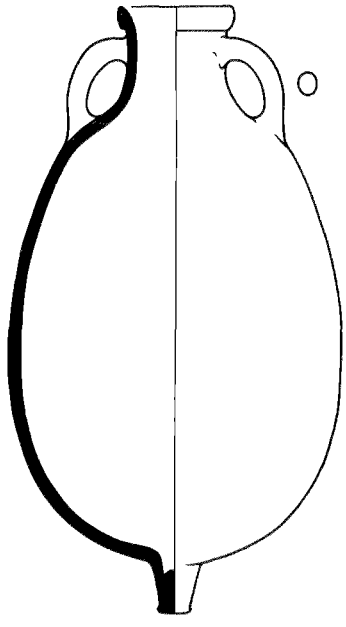

Abbildung 4 Amphore Oberaden 83 aus Oberaden. Nach Loeschcke 1942, Tafel 35. M 1:10.

stellen wir fest, daß der für beide Amphorentypen (Haltern 70 und Oberaden 83) verwendete Ton oft fast der gleiche ist; Wandscherben sind meist kaum auseinander zu halten. Weiter zeigt die Ausformung des Fußes unverkennbare Übereinstimmung. Dieser besteht in beiden Fällen aus einem sich nach unten verjüngenden Zylinder, der an der Innenseite mit einem Tonpfropfen verschlossen ist. Dazu kommt außerdem noch, daß beide Typen auf dem Fuß ähnliche, vor dem Brand eingeritzte Töpfermarken tragen (Abb. 5)[9].

6 Sealey 1985, 62.

7 Fundnr. Nijmegen 257–42. Die Kapazität ist bis zur Oberkante des Randes mit Tempex-Kügelchen (Durchmesser 2–3 cm) gemessen.

8 Die Oberfläche des Gefäßes ist links vom Graffito leicht beschädigt. Dennoch kann kein Zweifel daran bestehen, daß die Inschrift vollständig erhalten ist. Kajanto 1965, 178 erwähnt drei Beispiele von Acca als *cognomen*, zwei aus Spanien und eines aus Rom: *CIL* II 2808, 5771 und VI 5189 (letzteres anscheinend aus tiberischer Zeit). Den beiden spanischen Beispielen können zwei weitere hinzugefügt werden, die ebenso wie die älteren in Burgos und dem nahe gelegenen Palencia gefunden worden sind: *AE* 1985, Nr. 592 und 1987, Nr. 615b. Es läßt sich kein Zusammenhang zwischen der Nijmegener Nennung des Namens und den spanischen Beispielen nachweisen. Acca ist auch als weibliche Form des *gentilicium* Accaus oder Accauus üblich. Im Nijmegener Fall verbietet sich jedoch eine solche Interpretation.

9 Nijmegen, Ausgrabungen Kops Plateau 1988–1989, Haltern 70: Fundnr. 293–19 (1), 287–76 (2); Oberaden 83: 257–49 (3), 292–186 (4).

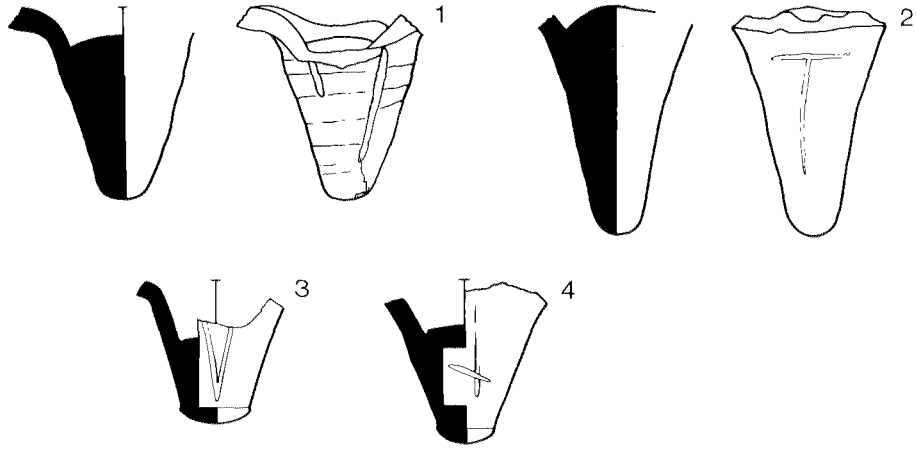

Abbildung 5 Bodenfragmente von Amphoren Haltern 70 (1 und 2) und Oberaden 83 (3 und 4) aus Nijmegen, Ausgrabungen Kops Plateau. M 1:4.

Die Verwandtschaft zwischen Haltern 70 und Dressel 20 ist nicht technologischer Art, sie betrifft die Epigraphik. Hier hat das Schiffswrack Port-Vendres II neue Erkenntnisse gebracht, die in unserem Zusammenhang bedeutsam sind. Die Ladung des 45–50 n.Chr. untergegangenen Schiffes bestand weitgehend aus Amphoren des Typs Dressel 20, daneben auch aus einem nicht unbedeutenden Kontingent an Haltern 70. Die Vermutung, daß beide Amphorentypen im gleichen Hafen verladen worden sind, wird bestärkt durch die Tatsache, daß Amphoren beider Typen die Pinselinschrift Q(uinti) VRITTI REVOCATI tragen.[10] Ein noch engerer Zusammenhang zwischen Haltern 70 und Dressel 20 ergibt sich inzwischen aus dem Stempel C.FVF.AVITI, der bekanntlich auf beiden Typen vorkommt.[11] Aus der Übereinstimmung der Stempel kann gefolgert werden, daß die Töpfereibetriebe, in denen die betreffenden Amphoren herstellt worden sind (und demzufolge das Produktionsgebiet der Ware, die sie enthielten), in unmittelbarer Nachbarschaft zueinander zu suchen sind.

Welche Schlüsse können wir aus den oben aufgezeigten Analogien ziehen? Das Produktionsgebiet der Amphore Dressel 20 ist bekannt, es befand sich in Südspanien, in der Ebene, die sich zwischen Cordoba und Sevilla erstreckt.[12] Hier sind Spuren unzähliger Töpferwerkstätten der Amphore Dressel 20 gefunden worden. Es wird allgemein angenommen, daß auch ihr unmittelbarer Vorgänger, die Amphore Oberaden 83, dort hergestellt worden ist. Aus der engen Verwandtschaft ergibt sich auch für Haltern 70 die gleiche Herkunft. Bestätigt wird diese Schlußfolgerung durch die Tatsache, daß die beiden genannten Stempel C.FVF.AVITI auf Amphoren des Typs Haltern 70 sich in Sevilla finden.

Der enge Zusammenhang zwischen Haltern 70 und Oberaden 83 – Dressel 20 kann uns auch in unserer Bestimmung der Xantener Scherbe weiterbringen. Die Buchstaben der vertikal verlaufenden Inschrift des Fragments sind mit dem Pinsel in schwarzer Tinte aufgebracht (Abb. 1). Die Höhe der Buchstaben beträgt 1,6 bis 2,0 cm. Sechs Buchstaben sind vollständig erhalten: -]VTILIO[-. Vor dem V ist noch eine gerade Haste, die von einem N oder M stammen kann, erhalten; im Anschluß an das O zeichnet sich der Anfang eines P oder R ab. Am ehesten bietet sich die Lesung MVTILIORVM, »von den Mutilii«, an.

Mutilius ist ein römischer Geschlechtsname, nicht zu verwechseln mit dem Beinamen Mutilus, was verstümmelt heißt. Die älteste bekannte Nennung dieses *gentili-*

10 Colls, Etienne, Lequément, Liou & Mayet 1977, 62 und 71. Die Anzahl der Erwähnungen des Q.VRITTI REVOCATI beträgt einer späteren Angabe zufolge 15: sechsmal auf Dressel 20, achtmal auf Haltern 70, einmal auf Dressel 28 (Colls & Lequément 1980, 183). Es handelt sich hier um Pinselinschriften von einem Typ (Dressels *tituli picti β*), auf den ich weiter unten eingehen werde.

11 Colls, Etienne, Lequément, Liou & Mayet 1977, 27ff. und 141ff.

12 Martin-Kilcher 1987, 49f. und die dort zitierte Literatur.

cium wurde in Praeneste (Palestrina) gefunden und stammt noch aus der Zeit, als die Nominativendung -us als -o(s) geschrieben wurde,[13] also spätestens aus der 2. Hälfte des 2.Jahrhunderts v.Chr. Ein anderer Mutilius ist aus dem ebenfalls östlich von Rom gelegenen Nomentum bekannt.[14] Vielleicht ist das Stammland des Geschlechtsnamens der Mutilii das nordöstliche Latium gewesen. Die Tatsache, daß in Rom selbst zwölf Träger dieses Namens dokumentiert sind,[15] besagt in diesem Zusammenhang nichts: In einer Metropole kommen durchweg alle Namen häufig vor. Vom 1.Jahrhundert n.Chr an finden wir eine beachtliche Anzahl von Mutilii[16] an der Nordküste der Adria: in Aquileia, Triest und Pula.[17] Träger dieses *gentilicium* scheinen von dort aus weiter nach Noricum und Dalmatien gezogen zu sein.[18] In Aquileia sind einige Mutilii zu Ansehen gekommen, einer von ihnen schaffte es, Gemeinderatsmitglied (decurio) zu werden, ein anderer war Nachkomme eines Senators, Zeitgenosse von Plinius d.J.[19] Soweit bisher bekannt, kommt dieser Geschlechtsname in Spanien – und somit in Baetica, der Herkunftsprovinz der Amphoren Haltern 70 – nicht vor,[20] was einer Deutung der Inschrift auf dem Xantener Fragment aber nicht im Wege stehen muß. Gehen wir dafür noch einmal die Informationen, die sich aus den Amphoren Dressel 20 gewinnen lassen, durch.

Wie bekannt, tragen die Amphoren Dressel 20 häufig Gruppen von Pinselinschriften (*tituli picti*). Heinrich Dressel, der große Epigraphiker und Numismatiker, dem die moderne Amphorenforschung bahnbrechende Arbeiten verdankt, teilte diese Inschriftengruppen in vier Kategorien ein, die er mit den griechischen Buchstaben α bis ε bezeichnete. Die Inschriften enthalten Angaben kommerzieller Art: Taragewicht der Amphore, Gewicht des Inhalts, Namen des Erzeugers der Ware (Olivenöl) und des Aufkäufers. Im 2. und 3.Jahrhundert kommen dazu noch Angaben, die mit der Verzollung zu tun haben.[21] Das Modell einer Amphore (Abb. 6) zeigt die Stellen, an denen die verschiedenen

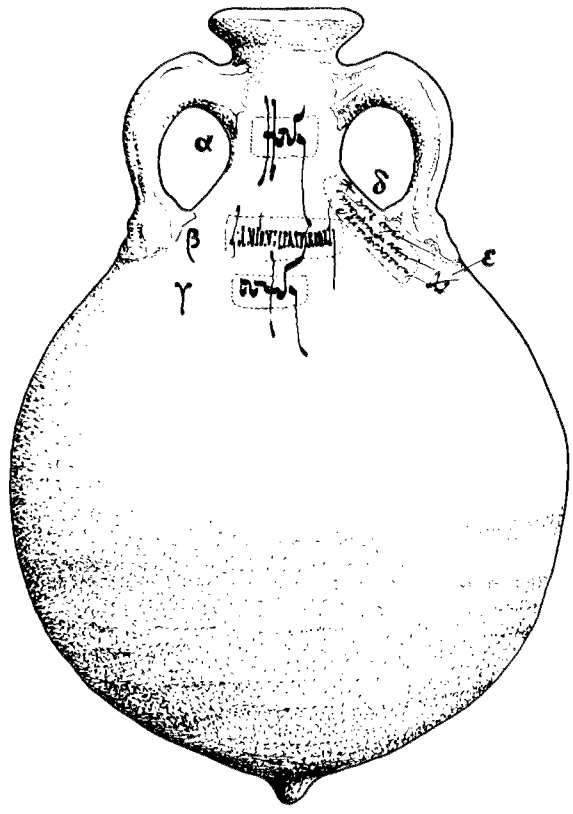

Abbildung 6 Modell einer Amphore Dressel 20 mit Angabe der Stellen, an denen die *tituli picti* α–ε aufgetragen sind. Nach Rodríguez-Almeida 1984, Abb. 71.

Kategorien der Inschriftengruppen üblicherweise zu finden sind. Uns interessiert hier die Kategorie β nach Dressel. In dieser erscheint in der Regel ein Name (*praenomen* und *gentilicium*) im Genitiv, z.B. C(ai) ATILI

13 *CIL* I 120 = *CIL* I$_2$ 201 = *CIL* XIV 3171/2: M.MVTILIO(s).Q.F und *CIL* I 121 = *CIL* I$_2$ 202 = *CIL* XIV 3173: Q.MVTILIO(s).

14 *CIL* XIV 3949.

15 *CIL* VI 220,19, 12738, 18796, 22047, 22779, 22780, 22781, 26421 und 37904.

16 Es findet sich gelegentlich auch die Schreibweise Mutillius. Schulze 1904, 440ff. schreibt die Verdoppelung des L dem Schwanken der Orthographie zu.

17 Aquileia: *CIL* V 822, 876, 1310, 1311 und 1342; Pais 1884, Nr. 93; *NSc* 1925, 24 = *AE* 1926, Nr. 111; *NSc* 1925, 25. Triest: *CIL* V 515 und 606. Pula: *CIL* V 93 und 208.

18 *CIL* III 2806, 4714 und 9960.

19 *NSc* 1925, 24 = *AE* 1926, Nr. 111: C. MVTILLIVS C(ai) F(ilius) / DECVRIO AQVILEIENSIS. *CIL* V 876: Q. Mutillius Sura Accianus Nepos; vgl. M. Fluss, *RE* 16 (1933) 939.

20 Nach pers. Mitt. von G. Chic-García, Sevilla.

21 Ausführliche Behandlung und Interpretation der *tituli picti* bei Colls, Etienne, Lequément, Liou & Mayet 1977, 91–103 und Rodríguez-Almeida 1984, 175–251.

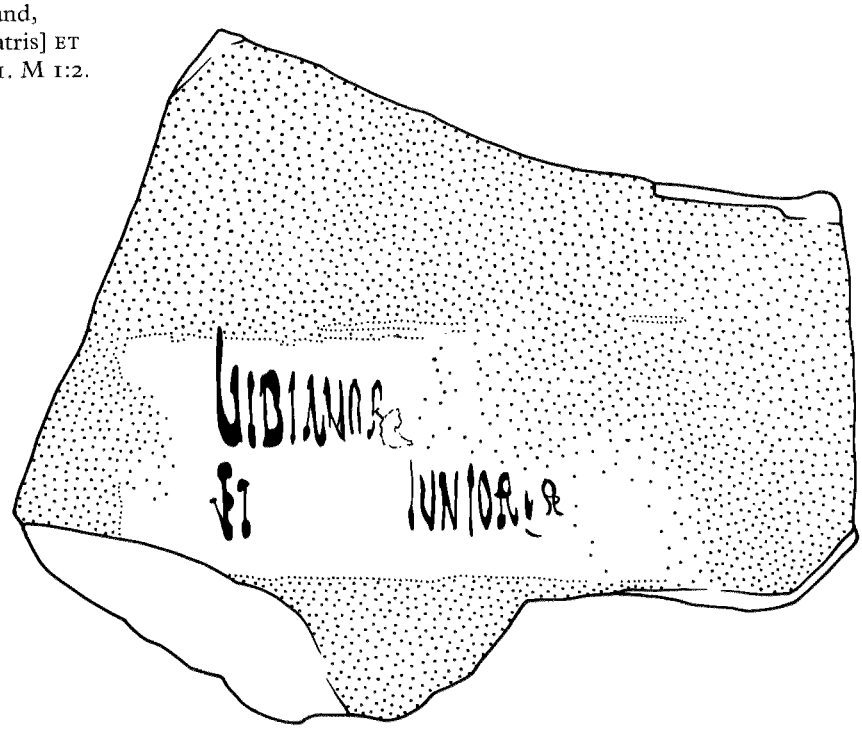

Abbildung 7 Valkenburg (Provinz Zuid-Holland, Niederlande): *titulus pictus β*: VIBIANORVM [patris] ET IVNIOR[is]. Nach Van der Werff 1990, Abb. 41. M 1:2.

SECUNDI, »von Caius Atilius Secundus«. Ein *titulus* dieses Namens wurde bei den Ausgrabungen des Castro Pretorio in Rom entdeckt, für das als terminus ante quem ungefähr die Mitte des 1.Jahrhunderts n.Chr. gilt.[22] Werden mehrere Namen genannt, dann ist allein das *gentilicium* angegeben: VIBIANORVM PATRIS ET IVNIORIS (»von Vater und Sohn Vibianus«) oder AEMILIORVM ET CASSIORVM (»von den Aemilii und Cassii«). Beispiele des erstgenannten *titulus* haben sich auf dem Monte Testaccio in Rom sowie in Valkenburg (Provinz Zuid-Holland, Niederlande; Abb. 7) gefunden und sind in die Mitte des 2.Jahrhunderts n.Chr. zu datieren,[23] des zweiten in Vindolanda (England), in einem Fundkontext, der vor 95 n.Chr. zu datieren ist.[24] Weiterhin kann auch einfach ein *gentilicium* im Plural stehen, wie COELIORVM (»von den Coelii«), wofür es mehrere Beispiele im Material des Schiffswracks Port-Vendres II gibt.[25] Hier ist der Fundkontext von ganz besonderer Bedeutung, denn in Port-Vendres II begegnen sich die Schlußphase von Haltern 70 und die Anfangsphase von Dressel 20. Zieht man die enge Verbindung zwischen den beiden Amphorentypen in Betracht, so ist daraus zu folgern, daß der *titulus* MVTILIORVM auf einer Amphore Haltern 70 dem *titulus β* auf Dressel 20 entspricht und in gleicher Weise interpretiert werden muß.

Heinrich Dressel ging, der damaligen Lehrmeinung entsprechend, davon aus, daß die Stempel auf Töpferwaren (also auch auf Amphoren) den Hersteller der Ware repräsentieren. Dies führte ihn von selbst dahin, in den im *titulus β* genannten Personen »die Fabrikanten

22 Dressel 1879, 155; *CIL* XV 3637–3638.

23 *CIL* XV 4044 und 4045; Van der Werff 1990, 79ff. Die Behauptung Dressels, daß die Inschrift *CIL* XV 4044 wegen des Fundortes in das Jahr 179 n.Chr. datiert werden müßte, ist nicht stichhaltig. In dem hier zitierten Aufsatz, S. 86f., habe ich gezeigt, daß es sich um das Konsuljahr 154 n.Chr. handeln muß.

24 Funari 1991, 70f., Nr. 4.

25 Colls, Etienne, Lequément, Liou & Mayet 1977, 51ff.; Colls & Lequément 1980, 183: 7 Exemplare.

oder Producenten der einst in dem Gefäss enthaltenen Materie« zu sehen.[26] Diese Deutung ist nicht mehr haltbar. Schon vor längerer Zeit hat A. Héron de Villefosse darauf aufmerksam gemacht, daß sich unter den in *titulus β* genannten Namen die zweier prominenter Bürger von Narbonne befinden: Sex. Fadius Secundus und P. Olitius Apollonius.[27] Es ist schlecht vorstellbar, daß diese zugleich Einwohner von Narbonne und Erzeuger von Olivenöl in Südspanien hätten sein können. Und tatsächlich wird P. Olitius Apollonius in der entsprechenden Inschrift als *navicularius* bezeichnet. Diese Spur führt uns zum Seehandel, in die Welt der großen Kaufleute, Schiffsmakler und Reeder: Personen, die als Eigentümer oder als deren Vertreter mit dem Einkauf, dem Seetransport und dem Verkauf von Olivenöl aus Baetica zu tun hatten. Es ist eine Welt mit einer reichen Palette an Funktionen, die oft nicht einfach auseinanderzuhalten und zu definieren sind: *mercatores*, *negotiatores*, *diffusores*, *navicularii* und *navicularii marini*,[28] ein Wirtschaftssektor, in dem das Geschäftsrisiko, durch Unwetter, Verderben oder Verlust verursacht, erheblich war. Daraus erklärt sich, daß die *tituli β*, wie wir schon sahen, häufig Gemeinschaften von Familienmitgliedern oder Familien-Gemeinschaften nennen (COELIORVM, VIBIANORVM PATRIS ET IVNIORES, AEMILIORVM ET CASSIORVM.[29]

Ich möchte annehmen, daß auch die Mutilii der Xantener Inschrift in diesen wirtschaftlichen Kontext gehören. Sie werden Handelsgesellschafter gewesen sein (*mercatores* oder *negotiatores*), die ihre Ware in Baetica einkauften und dann verschifften. Daß sie sich nur mit dem Weinhandel befaßt hätten, ist unwahrscheinlich. Im Gegenteil: in Anbetracht des baetischen Angebots an landwirtschaftlichen Erzeugnissen ist sogar vorauszusetzen, daß Olivenöl in ihrem Unternehmen die größte Rolle gespielt hat. Das besagt nicht, daß die Mutilii notwendig von Südspanien aus operiert hätten. Wie wir oben sahen, hatten Sex. Fadius Secundus und P. Olitius Apollonius ihren Sitz in Narbonne. D. Caecilius Onesimus und L. Marius Phoebus, *diffusor* bzw. *mercator olearii ex provincia baetica*, deren Namen wir aus verschiedenen *tituli β* kennen, waren beide in oder in der Nähe von Rom ansässig.[30] Dies trifft offensichtlich auch für C. Sen[ti]us Regulianus zu, der seine Laufbahn als Kapitän auf der Saône begann, zum *negotiator vinarius* in Lyon aufstieg und als *diffusor olearius ex Baetica* in den Ritterstand aufgenommen wurde, sowie für eine *negotiatrix olearia ex provincia baetica*: Beide sind jedenfalls in Rom gestorben.[31]

Es ist nicht auszuschließen, daß auch die Mutilii der Xantener Inschrift in Rom gelebt haben. A. Tchernia hat kürzlich auf die besondere Stellung hingewiesen, welche die Stadt Rom für die Händler in Nahrungsmitteln gehabt haben muß. Nirgends war es für sie wichtiger, den Verkauf ihrer Waren aus der Nähe (persönlich oder durch einen vertrauenswürdigen Vertreter) zu beobachten als in Rom, das nun mal der größte und aussichtsreichste Absatzmarkt für sie war.[32] Wir sahen bereits daß Mutilii in Rom gelebt haben (und ganz allgemein im nordöstlichen Latium zu Hause waren). Weiter würde sich noch die Möglichkeit anbieten, daß unsere Mutilii irgendwo im Norden des Adriagebietes ansässig waren, vielleicht in Aquileia, wo sich elf der 35 Nennungen auf Steininschriften dieses im übrigen seltenen *gentilicium* finden.[33] Letztere Möglichkeit ist weniger spekulativ, als es auf den ersten Blick erscheinen mag. An der nördlichen Adria wurden im 1.Jahrhundert n.Chr. große Mengen Wein (in der Ebene im Nordosten Italiens) und Olivenöl (in Istrien) produziert. Aquileia hatte im Handel mit diesen Produkten

26 Dressel 1894, 74. Im *CIL* XV,2, 560 hat Dressel seine These etwas abgeschwächt: *(nomen) negotiatoris interdum esse posse non omnino negaverim, sed magis crediderim, in omnibus nominari eum qui rem in amphora conditam confecit (der Fabrikant, der Producent)*.

27 Héron de Villefosse 1915. *CIL* XII 4393 und 4406 (Narbonne); *CIL* XV 3863–3873, 3974–3975 (Rom, Monte Testaccio). Vgl. Rodríguez-Almeida 1984, 227 und 229; Rougé 1966, 250f.

28 Rougé 1966, 233f., 239–55, 274–91; Panciera 1980; González-Fernández 1983.

29 Zahlreiche Beispiele derartiger Teilhaberschaften in der Liste von Rodríguez-Almeida 1984, 223–31.

30 Panciera 1980, 242, Abb. 2: D. CAECILIO / ONESIMO / VIATORI / APPARITOR[i] / AUGVSTOR[um] / DIFFVSORI [oleario] / EX BAET[ica] / HERE[d(es) FEC(erunt)]. *Tituli* : *CIL* XV 3782 und 3783; Rodríguez-Almeida 1984, 225. *CIL* VI 1935: D.M. / L. MARIO / PHOEBO / VIATORI / TRIBVNICIO / DECVRIAE MAIO/RIS MERCATORI / OLEI HISPANI EX / PROVINCIA / BAETICA. *Tituli* : *CIL* XV 3943–3959; Rodríguez-Almeida 1984, 229.

31 *CIL* VI 29722; Panciera 1980, 244f., Abb. 4.

32 Tchernia 1980.

33 S. Anm. 17.

eine Schlüsselposition inne. Istrisches Olivenöl, gefüllt in Amphoren Dressel 6B, fand vor allem in Noricum Absatz; der Wein, transportiert in Amphoren Dressel 6A, wurde nach Westen gebracht, unter anderem nach Rom.[34] In Rom, dem Bauch des Imperiums, dürfte den Kaufleuten aus Aquileia die Existenz jener anderen Öl und Wein produzierenden Landschaft nicht entgangen sein: das Gebiet des unteren Guadalquivir. Vielleicht brachte die Kunde davon einige von ihnen – z.B. die Mutilii – auf den Gedanken, ihr Glück in Baetica auf einem Markt zu versuchen, der ihnen von Hause aus ja vertraut war.

So ließe es sich erklären, wieso auf einer südspanischen Weinamphore ein *gentilicium* erscheint, das wir eher mit Rom oder Aquileia in Verbindung bringen als mit Südspanien. Die Tatsache, daß die von ihnen verhandelte Ware letztendlich in Xanten konsumiert worden ist, dürfte nicht Sorge der Mutilii gewesen sein. Denn wo immer sie als Kaufleute auch ansässig gewesen sein mögen, der Horizont ihrer Handelsinteressen reichte nicht über das Mittelmeergebiet hinaus.

34 Zu den Amphorentypen Dressel 6A und 6B gibt es eine umfangreiche Literatur. Die wichtigsten Informationen bei Carre 1985, 209–25 und Tchernia 1986, 129–33 und 148–54.

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Thirty Years of Archaeological Investigation in Alkmaar's Town Centre

Keywords: survey of occupation history, archaeological investigation on building sites, historical evidence, location of settlement sites, development of medieval town, historical topography, Late Bronze Age, Early Iron Age, Late Iron Age, Roman period, Early Middle Ages, Late Middle Ages, Alkmaar, Province of Noord-Holland, the Netherlands, 89 references.

HISTORICAL INTRODUCTION

The city of Alkmaar, situated *c.* 40 km north of Amsterdam, grew up on one of the sandy ridges (Older Dunes) which run parallel to the coast of the Western Netherlands. Alkmaar was connected to the hinterland by the Zeglis and the Voormeer, a lake which during the Early Middle Ages still reached the base of the dune-ridge at high tide. The area thus offered conditions favourable for the development of an agrarian settlement into a commercial centre. Indeed, under the protection of the nearby Egmond abbey, Alkmaar did develop into a regional market and trade centre at the end of the 11th and the beginning of the 12th century, with the market and toll as the characteristic features.

The development of Alkmaar was accelerated in the 13th century as a result of political events. Alkmaar was granted its town charter in 1254 and then grew rapidly, as archaeological findings show. By 1299 Alkmaar had become one of the seven towns in the County of Holland. By then, it had developed a fortified character; in 1297, with the insurrection of the West Frisians after the assassination of Floris V, the count's army was assembled within the town '*in de vesten, tot Alcmare*' as reported by the Dutch chronicler Melis Stoke.[1]

During the 14th and 15th centuries Alkmaar was drawn repeatedly into various political controversies which accounts for the slower and more gradual growth of the town in this period. During the *Hoekse en Kabeljauwse twisten* (the conflict between the 'Hooks' and the 'Cods'), Alkmaar made an unfortunate choice in picking sides and was punished by the loss of its charter. From thenceforth, its status was reduced to that of open village. In 1445, however, the doors in the town gates were re-hung. But as a consequence of the uprising of the *Kaas- en Broodvolk* in 1491–92, the punishment was even more severe: Alkmaar not only lost its town privileges but also had to demolish its fortifications and

Figure 1 The Netherlands: location of Alkmaar.

1 Stoke 1885, II, book V, verse 977.

Figure 2 Alkmaar and its surroundings in 1573. Detail of a map by Louris Pietersz., showing the old and new fortifications.

gates.[2] Not surprisingly, the town fell easy prey to plunderers from Friesland and Gelderland in 1517. Finally, in 1528 Alkmaar received permission to build new fortifications. These fortifications have been included on the oldest town map, drawn by Jacob van Deventer in *c.* 1560, and on the map drawn by Louris Pietersz. in 1573, illustrated in figure 2. These maps depict a medieval town on the eve of a tumultuous development. The favourable conclusion of the siege of Alkmaar in 1573 brought the town not only much prestige but also a number of favours through which it enjoyed a period of obvious prosperity in the 17th century. The draining of several lakes and, as a consequence, the development of an organized system of water management, gave Alk-

2 While the number of homesteads at that time totalled 1007, 24 houses stood empty and many of the wealthy citizens had abandoned the city.

maar above all a new central function: the seats of the various polder councils were in the Alkmaar town hall. Alkmaar officially became the first city of West Friesland and the Noorderkwartier.[3]
In the following centuries, Alkmaar remained a marketing centre dominated by tradesmen and the service professions. However, in the 19th century Alkmaar's image sank to that of a stagnating provincial society. In spite of the construction of the Noordhollands Kanaal (North Holland Canal) in 1824 and the connection of Alkmaar to the national railway network in 1867, Alkmaar's isolation from national and international commerce continued. Added to this was the absence of an institution of higher learning which, among other factors, caused Alkmaar's cultural life to be but a glimmer of that achieved elsewhere in the Netherlands.
After the First World War, Alkmaar experienced a period of rapid expansion with the development of large areas of land outside the medieval centre. This process continued after the Second World War. However, the town centre, which survived the war undamaged, continued to manifest the provincial character inherited from the preceding centuries. A renovation of the inner town began in 1958. The large building trenches which this work required, provided possibility for archaeological investigations in the town centre.

ARCHAEOLOGICAL INVESTIGATIONS IN ALKMAAR: INTRODUCTION

Incidental archaeological observations in Alkmaar had already been made in the last century. Some of these observations are still of importance, for instance, the discovery of a Madelinus coin in 1853,[4] the measuring of the foundations of the 13th-century Torenburg castle, which were found in 1835 whilst straightening the curve in the Noordhollands Kanaal as it went around the Frisian outer gate,[5] and Jacob Masdorp's investigations during the digging of the sewers in the inner town in 1885.[6] During this work, Masdorp maintained contact with Dr W. Pleyte of the Rijksmuseum van Oudheden in Leiden (RMO), who dated the finds from 'the time of Louis the Pious'[7] with the exception of a piece of a quern stone (*handmolen*) from *Niedermendigertras* (probably tephrite is meant) and the base of a terra sigillata dish (fig. 11). The former fragment has been lost. The dish sherd bears the stamp of the potter Julius Talussanus, who worked between AD 120 and 160 in Les Martres-de-Veyre near Clermont-Ferrand.[8] Also among the finds, which are now known to be predominantly local pottery from the 12th to 14th centuries, was a fragment of a *reliëfband* amphora dating to the 10th century.[9] The finds, discovered 'in the highest part of the town',[10] then formed an important acquisition for the newly-established (1875) Municipal Museum of Alkmaar, the first municipal museum in the Netherlands, which came into being thanks to the initiative of the municipal archivist, C.W. Bruinvis (1829–1922). During that culturally-impoverished period he was the 'quiet but driving force' in Alkmaar[11] who created the climate in which many archaeological observations could be undertaken and the resulting finds safely stored.
From 1900 to 1957 few significant archaeological discoveries were made in Alkmaar. But in January 1958 a large trench was dug in the Langestraat for the building of the Hema department store. The archaeological investigations which were then carried out on the building site by W.J. Reder from the Department of Public Works, formed the starting point for later systematic research in Alkmaar's town centre.
Dr W.C. Braat of the RMO, made a limited investigation at the Heul in 1961. In 1964, on two trenches for the construction of the new central telephone exchange at the Heul and a post office in the Gasthuisstraat, respectively, investigations took place in cooperation with the Rijksdienst voor het Oudheidkundig Bodemonderzoek (ROB) and the Geological Survey of the Netherlands (RGD) which clearly showed that deposits in Alkmaar contained evidence of prehistoric settlement.[12] When in 1968 a large trench was dug for an extension of the town hall, it was possible for the first time, with the cooperation of the municipal authorities and under the

3 Cordfunke 1980, 9.
4 Cordfunke 1973, 156–7.
5 Cordfunke 1972, 144; 1974, 28.
6 Cordfunke 1969, 104 ff.
7 Pleyte 1877–1903, *West-Friesland* part; Cordfunke 1969b, 106.
8 Calkoen 1958, 2; Haalebos 1971, 35.
9 Dated by W.J.H. Verwers (ROB): post-Dorestad; the pottery is coarse and hard-fired.
10 Bruinvis 1911, 30.
11 Kamp 1974, 56–7; compare Cordfunke 1978, 19.
12 De Jong & Van Regteren Altena 1972, 25 ff.

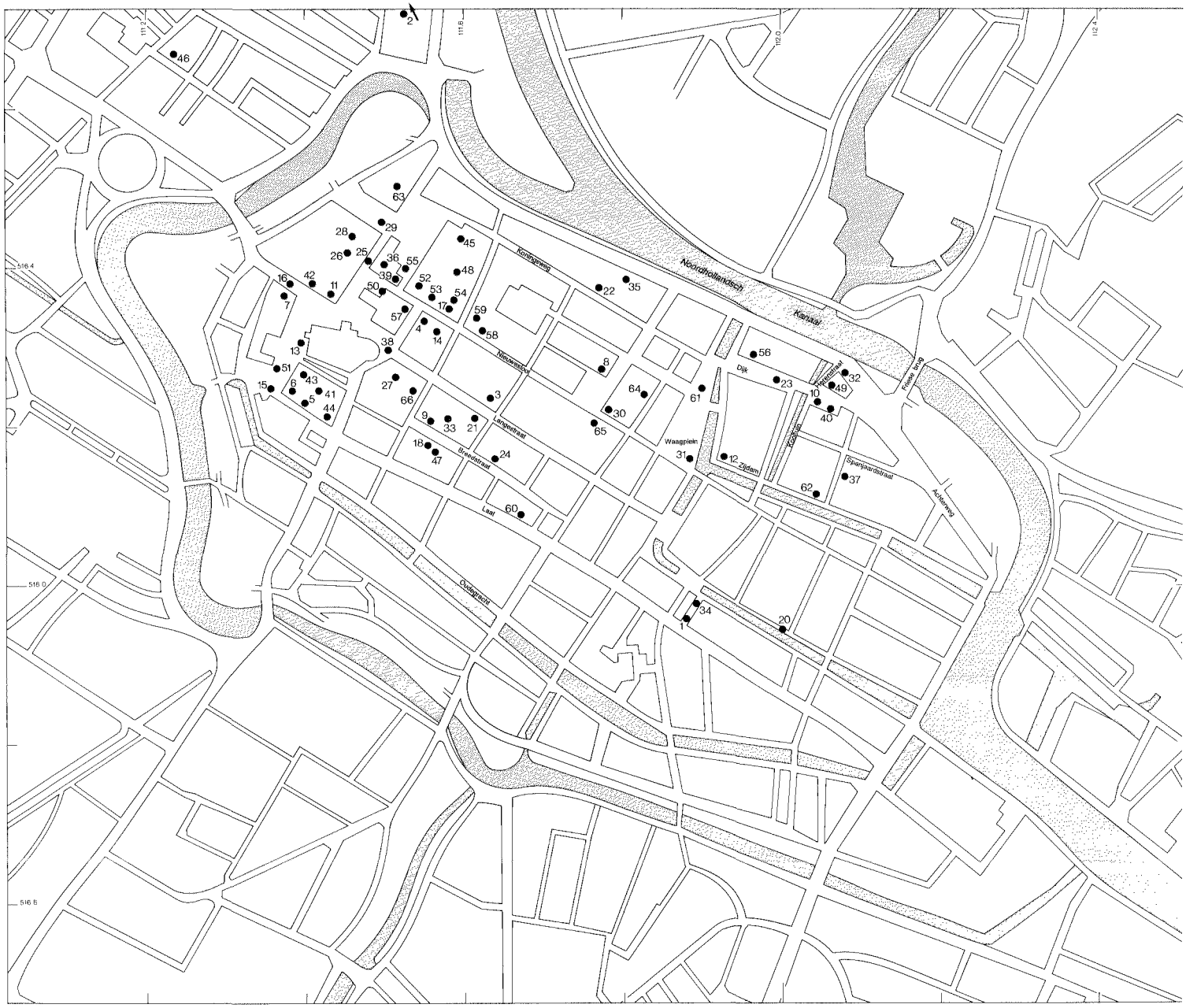


Figure 3 Alkmaar: the investigated sites. The numbers 1–66 correspond to those in the catalogue. Scale 1:7500.

supervision of the ROB, to carry out archaeological investigations right from the onset of the work.[13]

Since 1968 sizeable building and development activities have taken place in Alkmaar, creating opportunities for archaeological observations and investigations in many places throughout the inner town. The municipal authorities realized the necessity for archaeological supervision of these activities and set up an 'archaeological

13 Cordfunke 1968, 49.

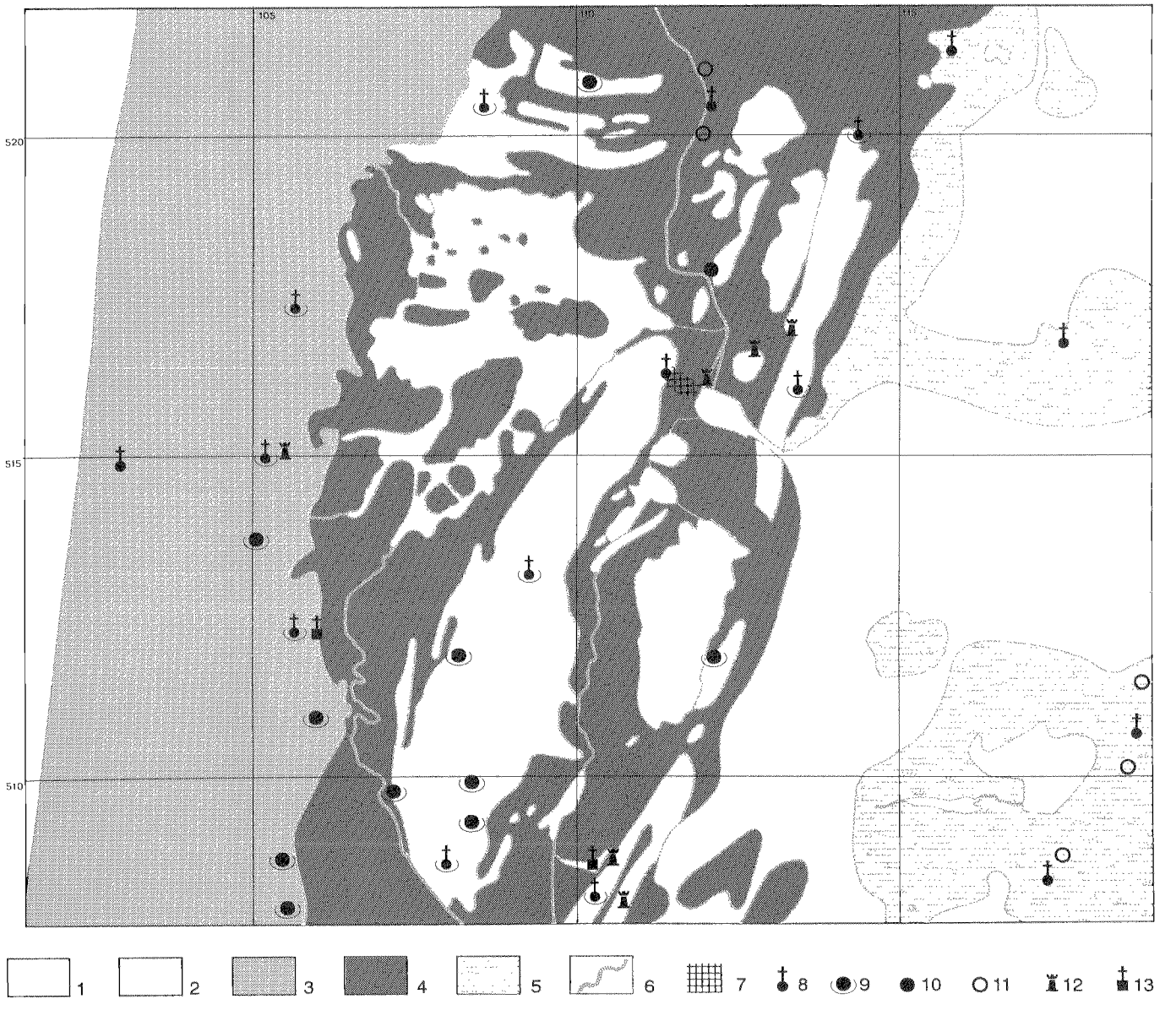


Figure 4 Alkmaar and its surroundings *c.* 1350. Map after the Archaeological Map of the Netherlands 1:100 000, sheet: Holland's Noorderkwartier *c.* AD 1350. Scale 1:100 000. Legend: 1 water; 2 Older dunes; 3 Younger dunes; 4 tidal deposits, mostly clay; 5 peat; 6 watercourse; 7 the town of Alkmaar; 8 village with church; 9 *geest* village; 10 hamlet; 11 linear settlement; 12 castle; 13 monastery.

committee' in 1969, granting sufficient financial and technical support to make research possible. Since that time, every archaeological investigation has been prepared by the Department of Public Works, which also offered both manpower and material; all projects have been done by the author (until 1978 in cooperation with W.J. Reder). On behalf of the ROB, supervision was initially provided by Dr H. Halbertsma and, after 1974, by P.J. Woltering. Since 1950, 66 large- and small-scale excavations have thus been carried out. A catalogue of

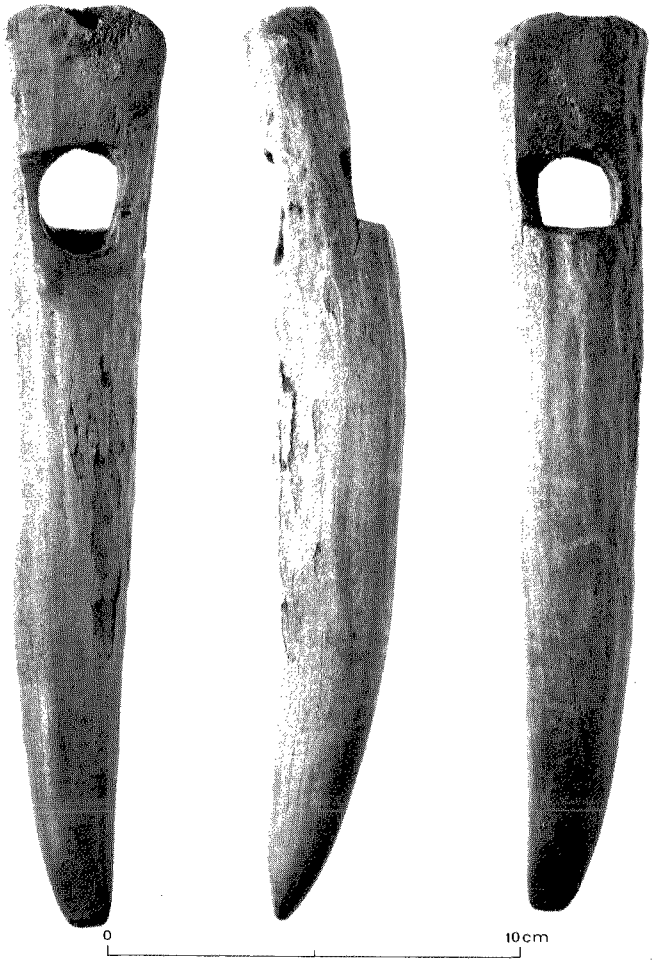


Figure 5 Site Cat. No. 28: tool made from deer antler, length 21,3 cm.

these investigations is provided as an appendix to this article. The numbers in the catalogue (Cat. No.) correspond to the numbers on the map of Alkmaar in figure 3, as do the references in the text. Some of the excavations and observations which have taken place over the years have already been published.[14] The present contribution provides a summary and a synthesis of the most important results.

14 Cordfunke 1968; 1972; 1978; 1982.
15 De Jong & Van Regteren Altena 1972, 41–2; 56–7; Cordfunke 1978, 30–3.
16 GrN 5217, sample Alkmaar De Heul 1, 2 sigma confidence level. Calibration of this and the following radiocarbon dates according to CIO Groningen Radiocarbon Calibration Program (Van der Plicht & Mook 1987).
17 De Jong & Van Regteren Altena 1972, 35–8.

PREHISTORY

The centre of Alkmaar, the area around the Grote Kerk (Great Church), lies on a ridge formed by drift-sand of the Older Dunes on top of one of the coastal barriers running parallel to the North Sea coast (fig. 4). Alkmaar's ridge, on which are also situated the villages of Heiloo and Limmen, has been populated since its formation, except for interruptions during periods of sand-drift. The picture of the prehistoric settlement coincides largely with observations from other parts of the coastal region made in the last thirty years.

The oldest traces of human activity in Alkmaar which have been found so far have been from the banks and gullies of the system of creeks which, until the middle of the Bronze Age, cut through the salt marshes in the area where the post office, the Grote Kerk, and the Cultural Centre De Vest stand today. The scarce, stray finds from this period, among them wattle remnants, animal bones, and a few implements made from deer antlers (fig. 5),[15] in all probability date to the Early or Middle Bronze Age, since the period after that was dryer and the creeks had gradually silted up. The result of ^{14}C dating of the base of the peat layer which lies on top of the creek fill is 3140 ± 50 BP (between 1520 and 1310 BC),[16] establishing a *terminus ante quem* for this silting process.

From pollen analysis it has been determined that the formation of peat came to an end in the Late Bronze Age, or at the latest, the beginning of the Iron Age.[17] The considerable amount of grains in the pollen diagram indicates agricultural activity and hence habitation in the immediate area. At various places on the surface of the peat and in the drift-sand overlying it, pottery fragments have been found *in situ* which are dated to the Late Bronze Age–Early Iron Age.

The first finds were collected in 1964 during foundation work for the central telephone exchange at the Heul (Cat. No. 6). These included, among others, fragments of a biconical, sand-tempered pot, dated to the transition from the Late Bronze Age to the Early Iron Age, and a rim sherd of black, burnished pottery, tempered with quartz. Both fragments are pictured in figure 6. The stratigraphic position of these finds (found on top of the peat or in the humic sand directly overlying the

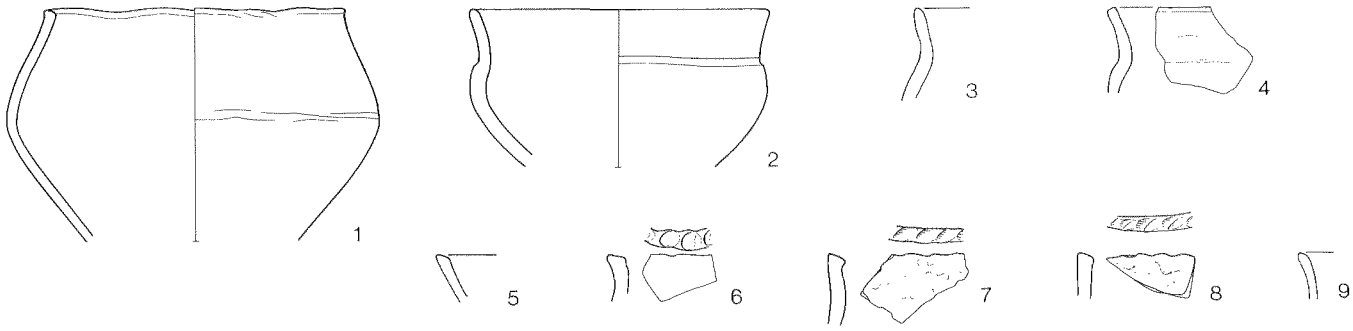


Figure 6 Alkmaar: Early Iron Age pottery. Legend: 1–2 site Cat. No. 6; 3–6 site Cat. No. 43; 7–8 site Cat. No. 15; 9 site Cat. No. 11.

peat) was not known with certainty at the time.[18] The discovery of new finds have made it possible to create a more precise picture.

In 1970, during an investigation behind the Grote Kerk (Cat. No. 13),[19] and in 1972 in connection with the laying of a sewer system along the Heul (Cat. No. 15),[20] more sherds were found in the occupation level in the sand directly on top of the peat. At a few locations the sherds were pressed into the surface of the peat, but their upper parts remained in the sand.

A flint artefact had been found in a comparable stratigraphic position in 1956 (fig. 7). Although commonly called a 'flint sickle', this type of tool could, according to recent research, have been used for the cutting of sods.[21] This object, the first prehistoric find in Alkmaar, was discovered in an excavation in front of the 50-kV provincial electric station on the Helderseweg and, according to the find report, was *in* the sand overlying the peat (Cat. No. 2).[22] The 'sickle' is covered with a deep black, marsh patina and has the following dimensions: greatest length 15.7 cm, greatest width 4 cm, and greatest thickness 1.1 cm.[23]

Figure 7 Site Cat. No. 2: flint 'sickle', length 15.7 cm.

18 De Jong & Van Regteren Altena 1972, 39–40.
19 Cordfunke 1972, 21–2.
20 Cordfunke 1972, 17–8.
21 Van Gijn 1988, 720–1. Based on the direction of the scratches, this author rejects the hypothesis recently advanced by Bruijn (1984, 84 ff.) that the 'sickles' were part of a primitive plough.
22 Haalebos 1959, 26*; cf. Cordfunke 1972, 13, and 24 n. 13.
23 The 'sickle' was stolen from the collection of the Alkmaar Stedelijk Museum on 16th August 1970.

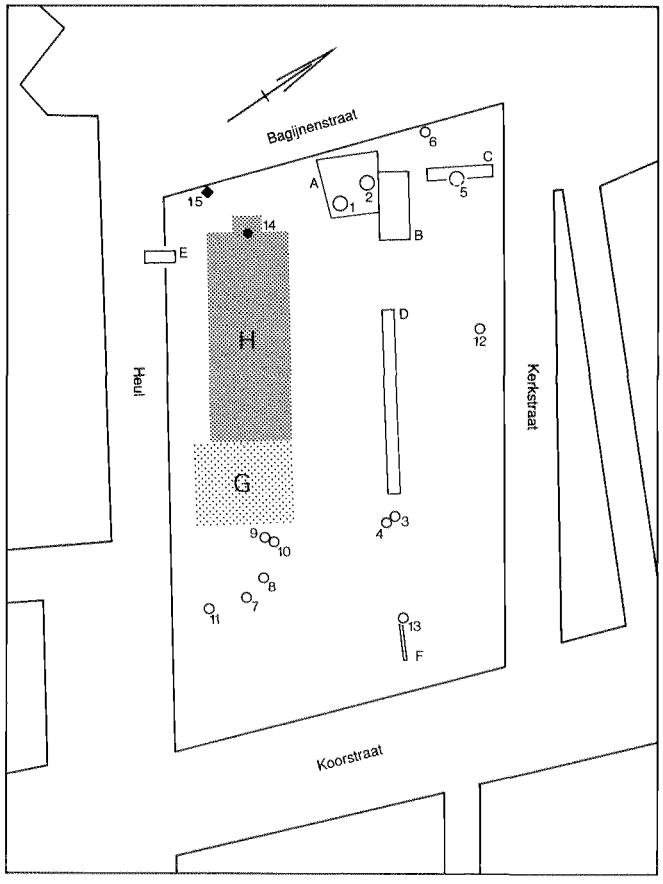


Figure 8 Alkmaar: location of trenches near the Heul. Scale 1:1000. Legend: A–C site Cat. No. 43; D site Cat. No. 41; E site Cat. No. 15; F site Cat. No. 44; G site Cat. No. 5; H site Cat. No. 6; 1–13 wells and pits; 14 site Cat. No. 6, west side; 15 site Cat. No. 15.

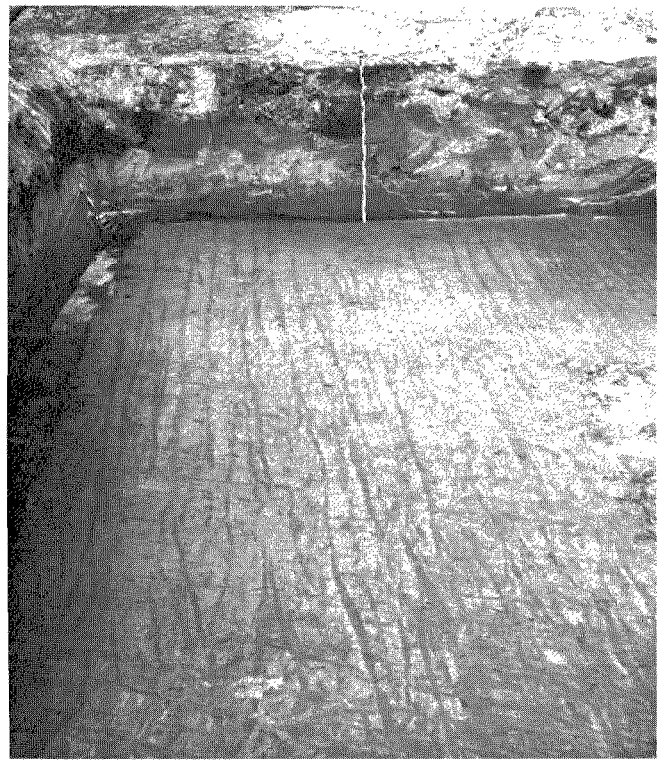


Figure 9 Site Cat. No. 43, trench A: arable layer with ard marks.

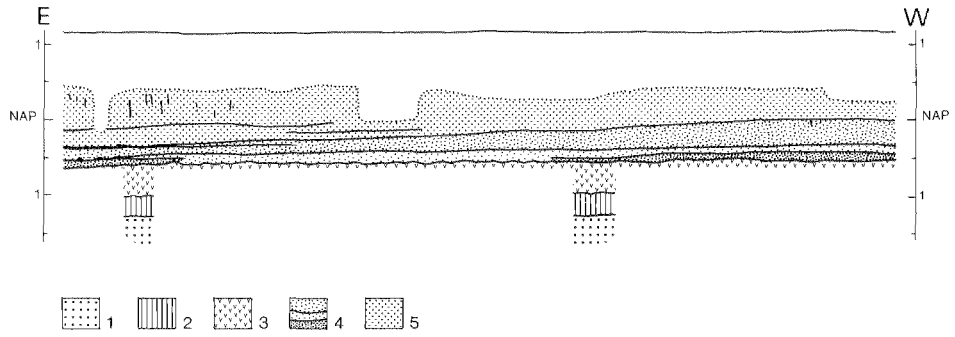
An investigation in 1980 in the construction trench dug for the car park of 't Hooge Huys (Cat. No. 43), only 15 m from the 1964 excavation, brought to light another important addition to the settlement history of this area. Before this it was possible to investigate three adjoining trenches (Cat. No. 43; fig. 8: A–C). During excavation of the first, an arable layer consisting of humic sand *c.* 10 cm thick was uncovered at a depth of 0.40–0.45 m –NAP, directly on top of the peat. Below this arable layer, ard marks were discovered running in two directions at right angles. In the arable layer (fig. 9) pottery sherds were found as well as a number of animal bones (cattle, pig, and sheep or goat).[24] Most of the pottery fragments have few characteristic features, but their general character – tempered with fine sand or stone grit – as well as their stratigraphic position, make an Early Iron Age date most probable. The rim fragments which were found in the arable layer are depicted in figure 6: 3–6.

An analysis of several soil samples from the arable layer[25] shows that the crops included *Hordeum vulgare* (cultivated barley), *Triticum dicoccum* (cultivated emmer), and *Camelina sativa* (gold of pleasure). The latter plant has been cultivated since the Early Iron Age for its oil-producing seeds which taste a bit like mustard. The presence of chaff fragments in the examined samples indicates that the grains had been cultivated either here or in the immediate vicinity.

24 Determination by A. Clason (BAI), see Cordfunke 1982, 15.

25 Made with the friendly cooperation of Ms J. Buurman (ROB).

Figure 10 Site Cat. No. 43: vertical section of trench B. Scale 1:100.
Legend
1 marine sand
2 clay
3 peat
4 arable layer
5 drift sand



The boundary of the field was quite perceptible along the eastern edge because the ard marks became fainter and finally disappeared completely. In the vertical section, the humic layer then changes into a few thin vegetation horizons (fig. 10). The section clearly shows that the ploughed land was gradually raised by drift-sands; a few dark, humic horizons at the left of the section indicate inactive phases in the dune formation. The area remained under cultivation for a long period of time. The field shifted gradually to the west, where it is considerably higher; the highest level of the field lies at 0 m NAP.

An accurate dating of the various stages of sand-drift based on the pottery found in the arable layer is not possible. The few rim fragments of sand and stone grit-tempered pottery can be dated most probably to the Early Iron Age (fig. 6: 3–6). On the other hand, the vegetation horizons visible in the section are a clear indication that the land was ploughed at intervals and that consequently there were more settlement phases of which the oldest may be dated to the Late Bronze Age.

These observations correspond with those carried out earlier at the excavation for the building of the central telephone exchange in 1964 (Cat. No. 6). Here it was found that the top of the sand layer in the western side of the excavation was situated somewhat higher than in the other sides.[26] Remains of human settlement were found only in the western side, among them the reconstructed pottery fragments drawn in figure 6: 1–2.

In 1969, at the site of the former Landbouwhuis in the Gasthuisstraat (Cat. No. 11), a small part of an arable layer was also found at a depth of 0.1 m –NAP in land which had been heavily disturbed by later digging.[27] The ard marks were filled with drift-sand and the arable layer was covered with more than 1 m of dune-sand, the top of which could not be determined because of the later digging. The high proportion of herbs, revealed through a pollen analysis of the arable layer,[28] showed that the area was open land at that time. The dating of a few sherds found in the arable layer was initially 'Iron Age'.[29] Later comparison with the pottery found at the Heul, along with an assessment of the stratigraphic position, led to the probability that these sherds had to be dated to the Early Iron Age as well.

The boundary of the cultivated land is not only, as indicated, apparent along the eastern side, but also roughly to the south and west. The absence of pottery finds and humic layers at the observations made at the Heul, Bagijnenstraat, and Scheteldoekshaven (Cat. No. 15) indicate the possible extent of the field.

The settlement belonging to the cultivated area has not yet been found. No doubt it will lie in the immediate vicinity. The spot most likely, based on the many observations around the cultivated area, is the area between the Grote Kerk and the cultivated field on the Heul. This area, not yet investigated, is not large, but offers enough space for the type of small Iron Age farm that is known to have existed at other sites.[30]

The closest findspot from this period, not including that of the flint sickle from the Helderseweg, lies on the narrow spur of the Older Dunes in the Huiswaard, at a distance of 3 km as the crow flies from the findspot on

26 De Jong & Van Regteren Altena 1972, 39.
27 Cordfunke 1972, 22–3.
28 Letter from J. de Jong (RGD, 21th August 1970).
29 Cordfunke 1972, 23.
30 Woltering 1975, 23; IJzereef 1981, 178–80.

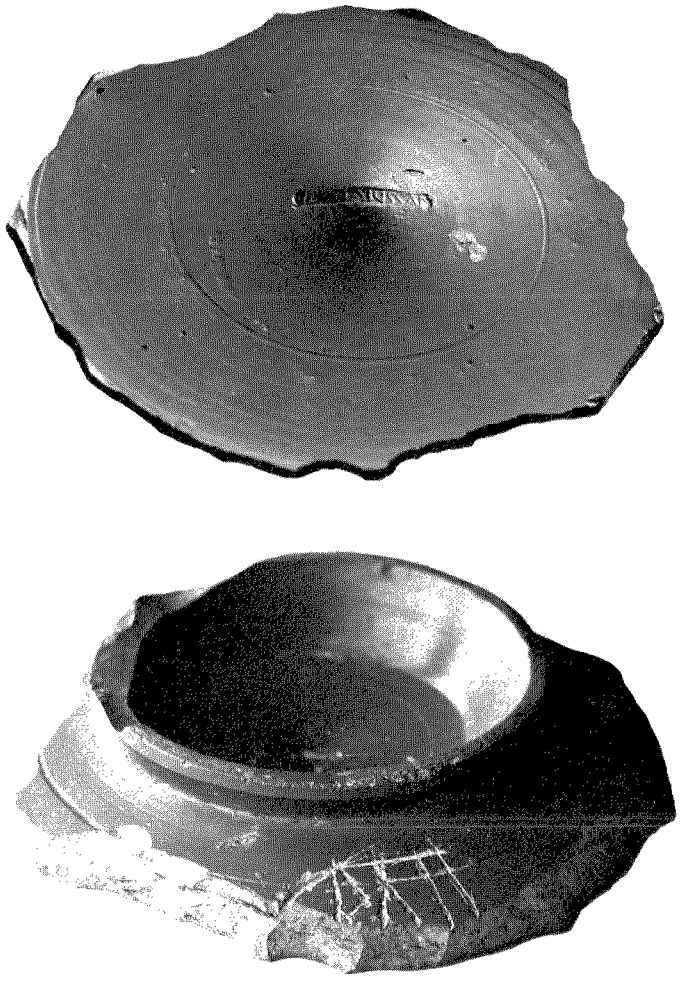


Figure 11 Alkmaar: base of terra sigillata dish with stamp of the potter Julius Talussanus (AD 120–160), stray find.

the Heul. Here observations were made in 1977 during the realization of a development scheme for Alkmaar.[31] The top of the occupation layer lay at almost the same height as that at the Heul, that is *c.* 0.45 m −NAP. Of the pottery found here, both the form and the fabric show similarities with the pottery found at the Heul. The result of radiocarbon dating of the wickerwork from a basket is 2540±50 BP, which corresponds with a dating to the Early Iron Age.[32]

It is clear that the inhabitants finally gave up the struggle against the drifting sand. Being dependent on agriculture and cattle-breeding for their existence, they could no longer live in an area being made uninhabitable by sand drifts. The settlement died, and the vertical section shows that the cultivated fields disappeared under a layer of drift-sand in the course of the Iron Age, analogous to quite a number of other places which have been investigated along the North Sea coast of the Western Netherlands.[33]

LATE IRON AGE AND ROMAN PERIOD

The oldest traces of the next period of human habitation in Alkmaar date to the final phase of the Iron Age. The settlement layer from the Early Iron Age was then covered with a layer of drift-sand of at least 1.2 m thick. The height of the Older Dunes cannot be precisely determined because its top, disturbed by the activities of later inhabitants, no longer exists. However, it is evident that it lay above 1.2 m NAP. Traces of habitation from this period have also been found at several other places on the sandy ridge from Limmen to Alkmaar.[34] The finds from these settlement sites include not only local pottery, but also Roman imports, for example, coins[35] and terra sigillata (fig. 11).[36] The site closest to the centre of Alkmaar is that on the Reguliersslaan, on the boundary between Alkmaar and Heiloo. From the distribution pattern, a picture emerges of settlements of limited size which probably lay closer to each other than those in the Early Iron Age.

Localizing the settlement that existed in the centre of Alkmaar during the Roman period has been a problem until recently. The sherd of terra sigillata referred to earlier was found at the end of the 19th century in 'the highest part of the town',[37] that is, in an undefined environment. Likewise, in 1974 during the investigation which took place in the building trench for the

31 Cordfunke 1978, 33–40.
32 Van Heeringen 1986, GrN 8332, sample Huiswaard 1.
33 Modderman 1960–61, 213, 219; Jelgersma *et al.* 1970, 142; Woltering 1975, 24; 1979, 253.
34 Cordfunke 1971, 25.
35 Cordfunke 1987, 11.
36 Haalebos 1971, 33 ff; Cordfunke 1984, 141, n. 12
37 See n. 10; Cordfunke 1978, 28; Haalebos 1971, 33.

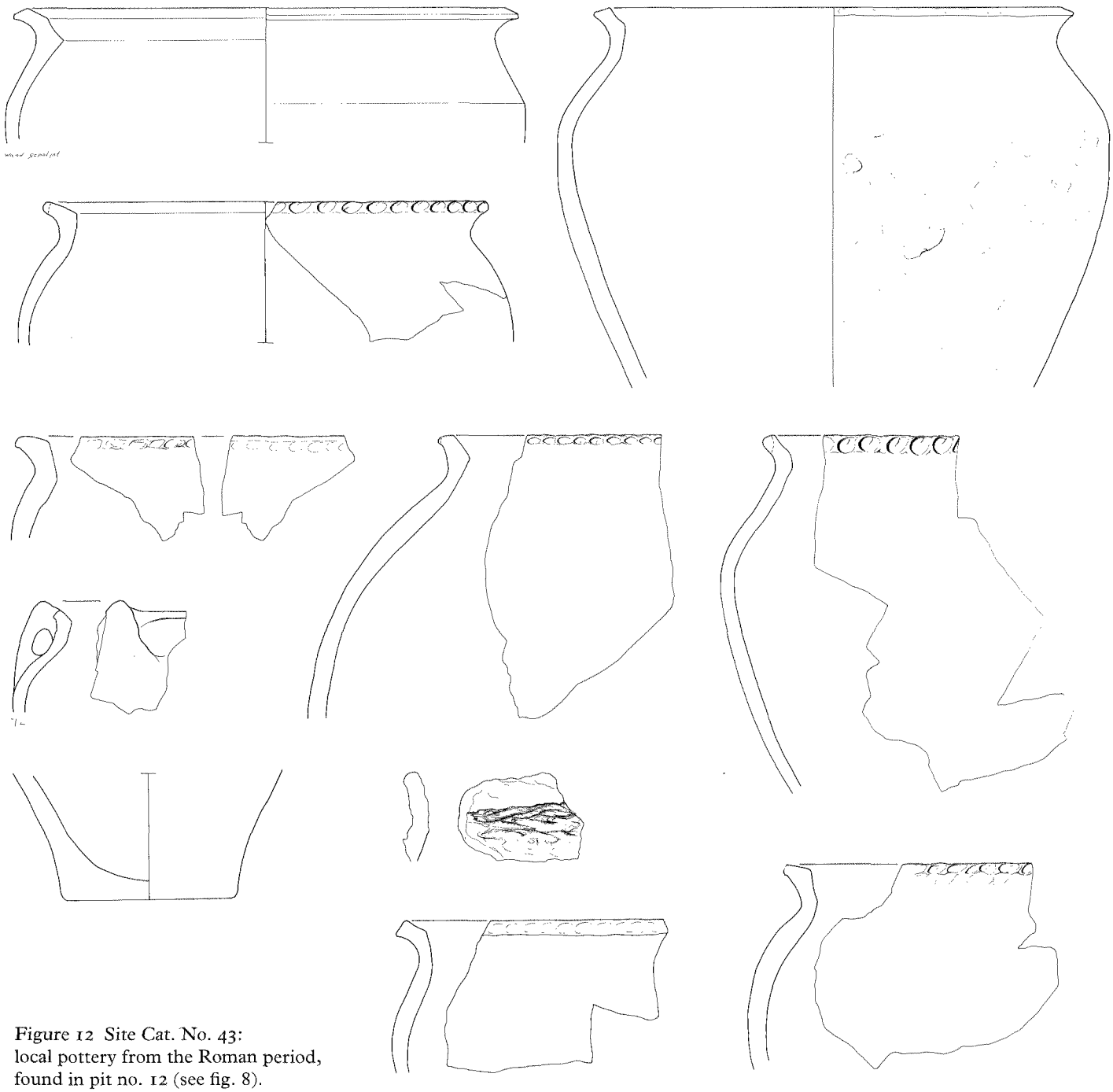


Figure 12 Site Cat. No. 43: local pottery from the Roman period, found in pit no. 12 (see fig. 8).

Figure 13 Site Cat. No. 44: well no. 11, lined with peat sods, Roman period (see fig. 8).

Witteveen building (Cat. No. 21), sherds of local pottery from the beginning of the current era were found in a raised layer. It appears probable that later medieval inhabitants levelled off the sand from 'the highest part of the town' to raise their ground level. In this way, the sherds were displaced and came to be found on top of a 12th-century occupation level.[38]

During the investigation behind the Grote Kerk (Cat. No. 13) some relatively small fragments of local pottery from the Late Iron Age or the Roman period were found on top of the drift-sand.[39] In addition, a few sherds were found during the investigation that was carried out in the excavation dug for the expansion of the town hall in 1968 (Cat. No. 9).

Observations in 1979 during the laying of a sewer pipe through the Kerkplein (Church Square, Cat. No. 38), and in 1980, in the construction trenches for the car park of 't Hooge Huys (Cat. No. 43) and the public library (Cat. No. 44), helped to form a better picture of the distribution of settlement features at the beginning of the current era. In the latter excavations, sherds of local pottery from this period were found in three places. In one case, the pottery came from the fill of a pit (fig. 8: 13); it consisted mostly of wall sherds of the thick, soft-fired pottery that is characteristic of this period.

At a second location (fig. 8: 12) a great variety of pottery was found. Amongst the sherds several flat bases and heavily-faceted rims of mostly large pots were present. Many of the rims were decorated with finger-tip impressions; some of the pots had lug handles (*knobbeloren*). The pottery was roughened, slicked,[40] and burnished. It is interesting to note that a few pots appeared to have undergone the same surface treatment, having been wiped, perhaps with a bunch of straw, indicating that they may have been the product of the same potter. The style features (fig. 12) would suggest a dating to the period between the mid-1st and the mid-2nd century AD. Also among the finds were fragments of baked clay and pieces of charred wood. The result of radiocarbon dating of the charred wood was 2040±30 BP[41] which, after calibration, indicates a dating in the first century BC.

A third find (fig. 8: 11) consisted of a well with a foundation made of tree trunks and wooden planks; the walls of the well were lined with peat sods (fig. 13).[42] The interior diameter of the well at its widest was 60 cm; on the bottom lay sherds of soft-fired, dark pottery,

38 Cordfunke 1978, 65–7.

39 Cordfunke 1972, 19–22 and section there included.

40 The surface treatment 'slicked' is used here to mean 'a thickish slurry of clay applied to the vessel and worked into peaks and nodules'.

41 GrN 12 756, sample Alkmaar car park 't Hooge Huys 1. However, Mr. E. Taayke kindly informed J.F. van Regteren Altena that the samples car park 't Hooge Huys 1 and Koorstraat 1 (see n. 43) have probably been changed in the Groningen laboratory, i.e. the result of measurement GrN 12 756 will refer to sample Koorstraat 1 and that of GrN 12 757 to sample car park 't Hooge Huys 1.

42 A comparable well has been found in Uitgeest; see *Holland* 1984, 229, with illustration.

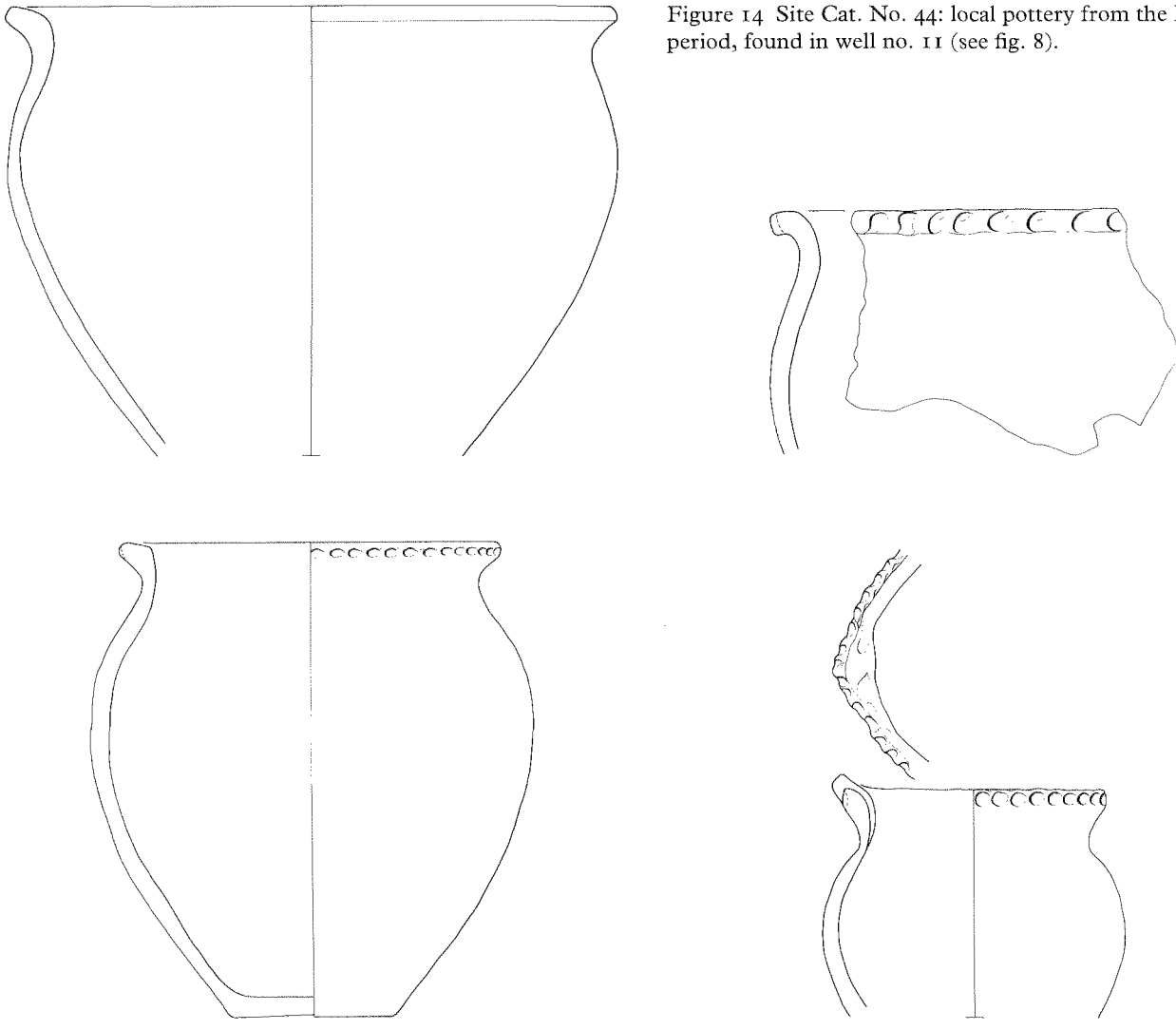


Figure 14 Site Cat. No. 44: local pottery from the Roman period, found in well no. 11 (see fig. 8).

among them a number of rim fragments and bases (fig. 14). The radiocarbon dating of a stake taken from the bottom of the well gave 1910±20 BP as a result,[43] which, after calibration, dates to *c.* AD 100.

The level from which the well had been dug no longer existed because the topsoil had been removed. It is clear, however, that the well had been dug from the dune-sand through the peat layer into the underlying marine sands. Vertical sections in the immediate vicinity of the well showed that the occupation level from the Roman period no longer exists. Subsequent digging and levelling has removed the entire occupation layer; only the deep pits, such as wells and rubbish pits, show that there were settlements on the sandy ridge during the Roman period as well.

The sewer trench through the Kerkplein (Cat. No. 38) offered a good opportunity to study over a great expanse the already well-known picture of the deposit of drifting sands on top of the peat layer. The absence of deep pits in the sand leads to the conclusion that no settlements had been established here until the (Late)

43 GrN 12 757, sample Alkmaar Koorstraat 1 (however, see n. 41).

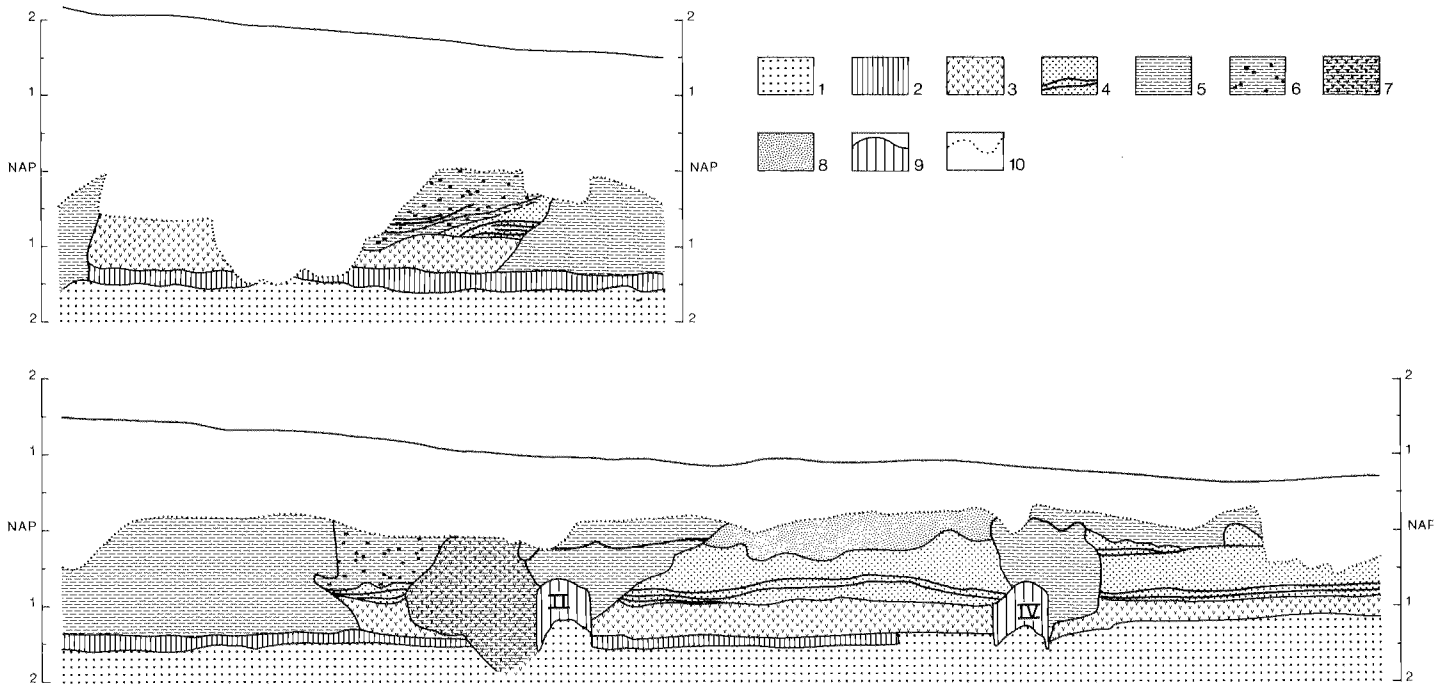


Figure 15 Site Cat. No. 13: vertical NE–SW section behind the Grote Kerk, with wells II and IV. Scale 1:100. Legend: 1 marine sand; 2 clay; 3 peat; 4 drift sand with vegetation layers; 5 humic sand; 6 brick; 7 peat and sand; 8 medieval layers; 9 well; 10 recent.

Middle Ages (cf. fig. 15). The map (fig. 16) gives an impression of the occupied region in the centre of Alkmaar during the Iron Age and Roman period.

The coastal regions were intensely inhabited until far into the 3rd century AD, when the inhabitation seems to have come to an end. There is no satisfactory explanation for this cessation. The coastal regions were not, however, completely depopulated: the appearance of archaic names such as Alkmaar[44] indicates a continuity in the occupation of the area even though the population density was sparse. Moreover, a population deprived of imported Roman material would not be easy to recognize archaeologically.

44 Blok 1970, 40 ff; compare Henderikx 1987, 41–5.
45 Blok 1979, 29–30.
46 *(N)AGN*, I, 195.
47 *(N)AGN*, I, 197.

THE 'VILLA ALKMAAR'

When the mists which lie over the settlement history of the coastal region of the Netherlands in the Late Roman period and the beginning of the Early Middle Ages slowly clear around AD 550, we again encounter a Frisian population. As in the Roman period, this population was under the influence of a powerful neighbour, this time Frankish, but it remained independent. This independent Frisian coastal area had an important share in European trade.[45] Around the year AD 700 the region was in the hands of the Frisian king Radbod (before AD 688 and up to AD 719), who was the great opponent of the Franks on the northern border of the Frankish kingdom. As a consequence of the struggle between King Radbod and the Frankish mayor of the palace Pepin II, the Frisian coastal region has attracted some attention in Frankish historiography. In this way it is known that trade, more than anything else, led to Frisian prosperity.[46] The Frisian merchants also had agrarian interests, but the fields were small and were totally disproportionate to the vast pastures kept for livestock.[47] Beginning in the Carolingian period there was an increase in the scope of agricultural activity made possible by reclamation; new settlements began to appear.

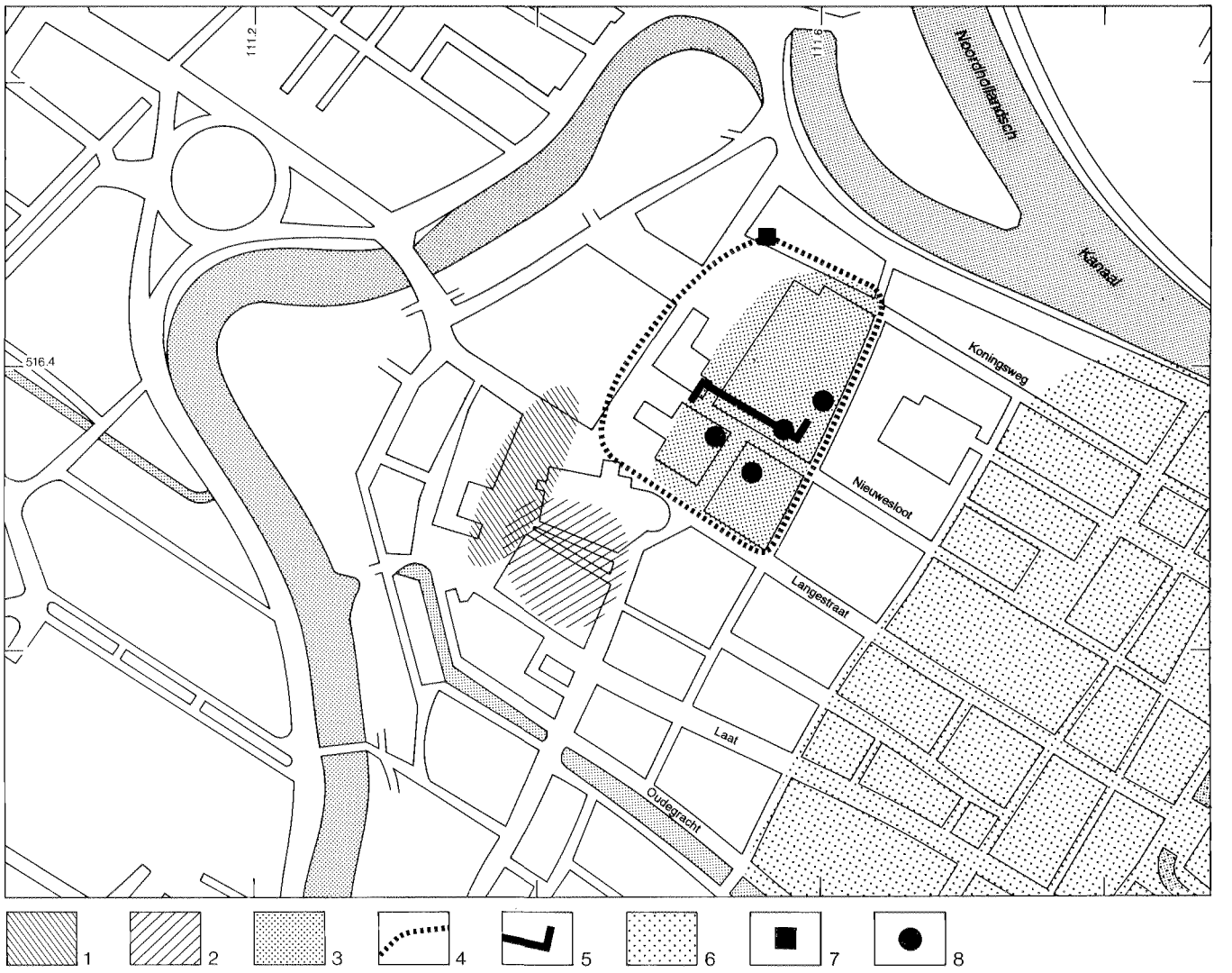


Figure 16 Alkmaar: location of settlements from various periods. Scale 1:5000. Legend: 1 Early Iron Age; 2 Late Iron Age and Roman period; 3 Early Middle Ages; 4 boundary of Early Medieval settlement; 5 Early Medieval ditches; 6 Voormeer; 7 find spot of Madelinus coin; 8 find spot of fragments of *reliëfband* amphorae.

The reclamation history of Heiloo has been discussed by De Cock.[48] He poses the question whether Alkmaar, lying between Heiloo and Schoorl, is older than the former village. By analogy with Heiloo, he distinguished 'Westside Alkmaar' which must have been situated along the Westerweg, and 'Eastside Alkmaar' on the east side of the sand ridge. There are, however, neither historical nor archaeological data for the former hamlet; at the most, the street name 'Scharloo' could be an indication of great age.

Much more can be said about 'Eastside Alkmaar'. Archaeological investigations as well as the geographic structure of the area around the Grote Kerk give clues as to where the oldest medieval centre is to be found. The position of this centre imposed on the current town map is given in figure 16.[49] De Cock believed this ham-

48 De Cock 1982, 37.

49 The oldest medieval nucleus is shifted somewhat to the north-east with respect to the place of the settlement during the Roman period; compare fig. 16.

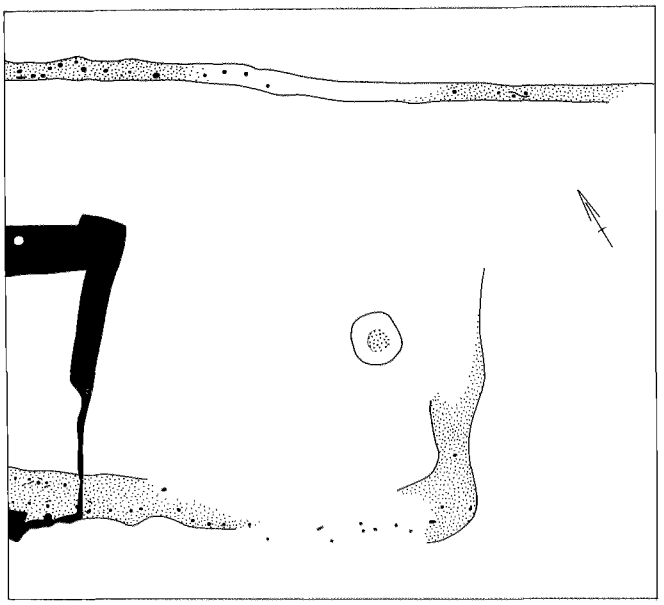


Figure 17 Site Cat. No. 14: plan with Early Medieval features: a sunken hut (black), a house, a well, and part of a yard boundary. Scale 1:100.

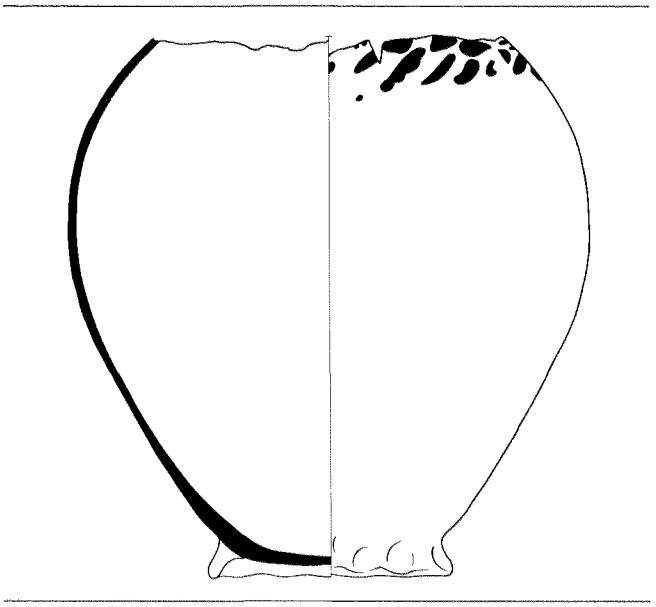


Figure 18 Site Cat. No. 14: jar of South Limburg pottery (Nieuwenhagen type) found in the well (see fig. 17).

let to have been a *brinkdorp*.[50] Waterbolk, who studied the original structure of the *brinkdorpen* in Drenthe,[51] emphasized that a *brink* was originally an open space lying on the edge of a village which was developed only with the passing of time. The nucleus of the village consisted of rectangular and square plots, formed by perpendicular roads. The system of roads continued out to those outlying fields (*essen*) closest to the village. Further from the village the roads fanned out and the plots became longer, running in a direction different from that of the village's axis. This difference makes it possible to reconstruct the original structure of the village.

By looking at the map of the old nucleus of Alkmaar (fig. 16), it is possible to recognize the relics of a village structure which is analogous to that of the old *brinkdorp* of Drenthe. The plot boundaries of the original hamlet can be clearly recognised in the current street plan because the property boundaries have been stubbornly maintained, as evidenced for example in a comparison between the oldest cadastral map of Alkmaar from 1823 and the map of Cornelis Drebbel from 1597. That the centre is very old is also illustrated by the position of the church on the edge of the settlement.[52] As in the old Drentish villages, the Alkmaar church occupies an eccentric position with respect to the original settlement and must therefore be considered a later addition to an already-existing community. There was no place for it in the closed structure of the original centre.

Along the *brink* stood the east-west oriented houses, fragments of which were discovered during archaeological investigations in 1970 (the trench for 't Hooge Huys, Cat. No. 14; fig. 17) among them that of a *hutkom* (sunken hut).[53] Moreover, east-west oriented drainage ditches were found under the raised layers which, as appears from their contents, are no later than 11th century in date. The contents comprise pottery fragments with rouletted decoration, among which are fragments of *reliëfband* amphorae.

To the west of the *brink* lay the *geest* which served as arable land; to the east were the low-lying pastures. A double-axis system of roads divided the land into rectangular blocks directed lengthwise along the *brink*. Further from the centre, on the *geest*, the lots became

50 De Cock 1972, 65 ff.
51 Waterbolk 1973, 433; 1980, 190 ff.
52 De Cock 1972, 65.
53 Cordfunke 1972, 72–3.

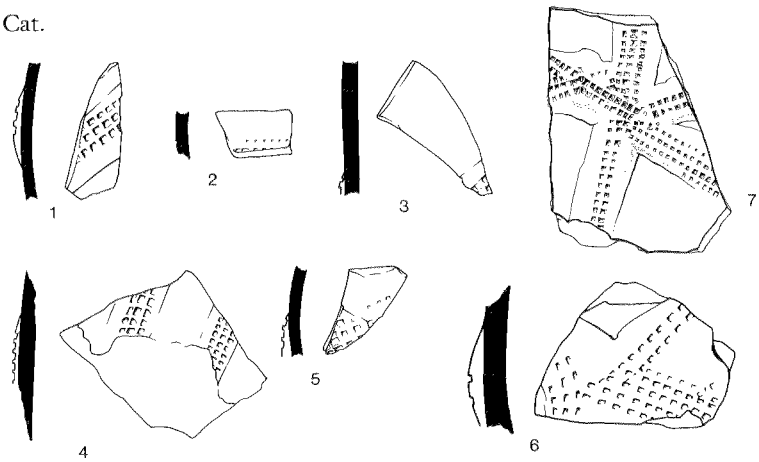


Figure 19 Alkmaar: fragments of *reliëfband* amphorae.
Legend: 1–3 site Cat. No 14; 4–5 site Cat. No 17, 6 site Cat. No. 57; 7 stray find.

longer and narrower. This division into strips is of a more recent date in the *brinkdorpen* in Drenthe. To extend the similarity to Alkmaar in this respect would eliminate the possibility of an older 'westside Alkmaar' having existed. The hamlet, which is visible on the map of Jacob van Deventer from *c.* 1560, in that case must be of a more recent date.

How old is the oldest nucleus of Alkmaar? The earliest mention appears in an annotation from the beginning of the 10th century, in which Count Dirk I (bis) granted two *hoeven* '*in villa Allecmere vocitata*' to the recently founded monastery of Egmond.[54] The grant, which brought in an annual amount of one pound per *hoeve* (*c.* 20 ha), must be dated before AD 939, the year of the Count's death.[55]

This information seems to be supported by the archaeological finds: the result of a ^{14}C dating of a wooden post found in a ditch during the investigation at 't Hooge Huys (Cat. No. 14) was 1090±30 BP,[56] while the isolated find of the already-mentioned Madelinus coin would presuppose even a much older age for the centre. The pottery found during the 1970 investigation, however, does not go back any further than the 10th or 11th century. Also the fact that the first established church in Alkmaar (a daughter establishment of the church of Heiloo) can be dated to the beginning of the 11th century,[57] while the churches of Heiloo and Limmen were founded long before that date,[58] does not indicate such an extreme age for the oldest centre. For lack of more precise data it can be assumed that the first inhabitants of Alkmaar came to settle there at the end of the 9th or the beginning of the 10th century. Their place of origin was most probably Heiloo which lies *c.* 4 km south of Alkmaar. In turn, Heiloo's first inhabitants may have come from Limmen, even further south. Early medieval finds in Limmen can be traced to the Merovingian period.[59]

The oldest medieval nucleus of Alkmaar does not coincide with the location of the Early Iron Age and the Roman period settlements (fig. 16). This phenomenon has been noticed at several other sites along the coast: the mobility of the settlements demonstrates that names such as 'Alkmaar', which are of Old Germanic origin, accompanied the settlements as they moved.[60]

54 *Fontes* 62; the designation 'villa' refers to a settlement of limited size.
55 Van Winter 1983, 190.
56 GrN 6305.
57 The oldest mention is in the sacramentarium of Echternach *c.* 1040. In 1063 the boundaries of the parishes were not yet clearly defined and the chapels had not yet been consecrated (Koch 1970).
58 For Heiloo, see Cordfunke 1979, 39–43; for Limmen, see Cordfunke 1969, 54 ff.
59 Cordfunke 1969c, 291 ff.
60 Besteman & Guiran 1986, 189.

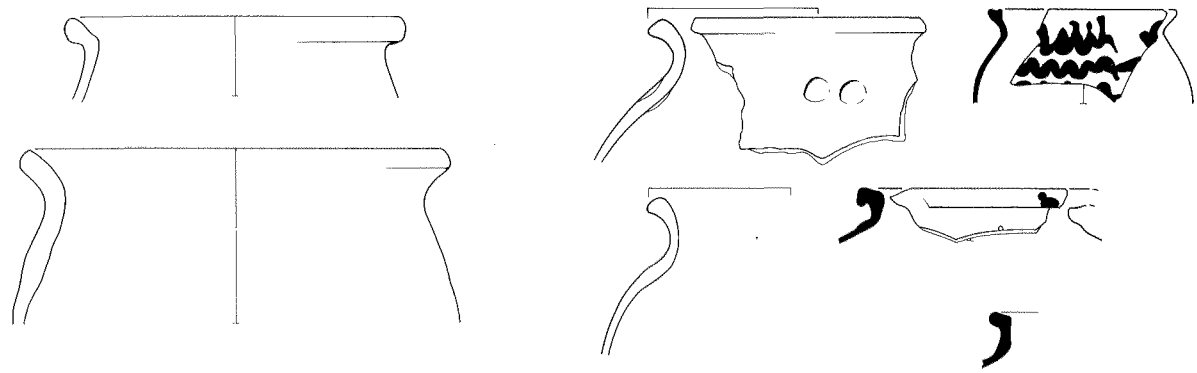


Figure 20 Site Cat. No. 59: pottery.

Much data have been gathered over the years in an attempt to determine the size of the oldest medieval nucleus of Alkmaar. From archaeological observations made in the trench for the Cultural Centre De Vest (1976) on the Canadaplein (Cat. No. 26), in the sewer trench dug through the Kerkplein (Cat. No. 38), and at the site of the Dubbele Buurt (Cat. No. 39), where in 1979 several old houses and the café De Vriendschap were demolished, no evidence was found for inhabitation in these places from before the 11th or 12th century. The vertical sections of the Kerkplein showed that the top of the layer of dune-sand had been disturbed by digging since the end of the 13th century. In a few places at the base of these disturbances there were still remains of deeper and older disturbances, perhaps rubbish pits. The filling of these pits contained only 12th-century pottery sherds and bits of tuff stone. From the results of the investigation at the Kerkplein it must be concluded that the surface of the early medieval nucleus of Alkmaar was smaller than was first supposed;[61] the southern boundary lay approximately along the Kerkplein itself.

The northern boundary of the oldest nucleus is still unclear. Investigations in 1984 which took place at the site of the former Fire Station (Cat. No. 53), have shown the unlikelihood of any houses having stood north of the Gedempte Nieuwesloot in the Middle Ages. That the ground there was long under cultivation can be concluded from the homogeneous, humic layer in which practically no pottery was found.

61 Cordfunke 1978, 46–7.

But there are still other clues to the size of the oldest nucleus. At the Dubbele Buurt (Cat. No. 39) late medieval digging has completely disturbed the original occupation layer, although several deeper disturbances at the base of the disturbed level contain material that is no earlier than 14th or 15th century in date. To the east the dune-ridge was cut through by a ditch of at least 3 m wide which had been dug through the peat. It was not possible to determine the eastern boundary of this ditch. Its fill consists of dark, humic clay in which only 12th century pottery has been found. In this fill a barrel-lined well (*tonput*) had later been dug which, as shown by the pottery found in it, can be dated to the beginning of the 14th century.

Earlier, during the investigation at the site of the former Gewestelijk Arbeidsbureau (regional Department of Employment) in 1972 (Cat. No. 17), a ditch of about 3 m wide was discovered which had been filled with early 12th-century material. This ditch lay perpendicular to the ditch at the Dubbele Buurt (Cat. No. 39) and formed a direct continuation of a ditch section which was found at the site of the former Fire Station (Cat. No. 53).

A limited investigation in the Doelenstraat in 1985 (Cat. No. 59) revealed the boundary between the Older Dunes and the lower-lying ground. Deposits of clay and silt in the drifted sand show that at high tide the Voormeer washed against the dune-ridge. A striking find in this investigation was a ditch of about 5 m in width. This ditch had been dug along the boundary of the Older Dunes and probably served as a border for the oldest medieval nucleus. The pottery found in it reveals

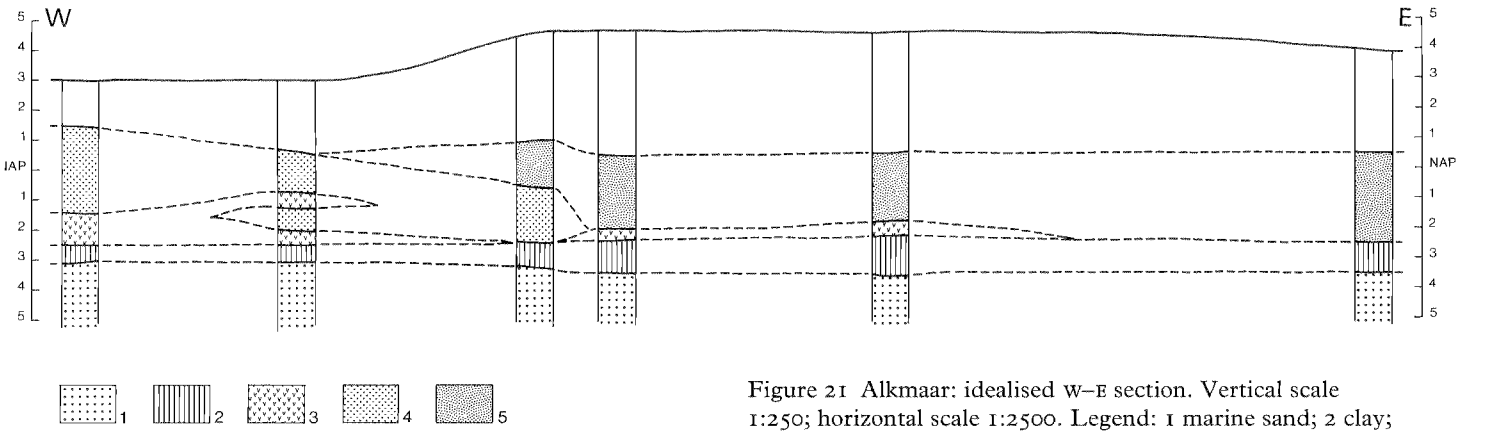


Figure 21 Alkmaar: idealised W–E section. Vertical scale 1:250; horizontal scale 1:2500. Legend: 1 marine sand; 2 clay; 3 peat; 4 drift sand; 5 medieval layers.

that this ditch was also filled in at the beginning of the 12th century (fig. 20). Apparently, the area directly to the west of this ditch has been neither inhabited nor cultivated.

The various ditch sections are mapped in figure 16. They suggest a system of ditches which encompassed the fields of the oldest hamlet. To the east of the *brink* lay the lower-lying pastures which had initially been a swamp where the Voormeer reached the dune-ridge during high water levels.[62] It was this 'muddy' lake which gave Alkmaar its name.[63] Gradually the Voormeer receded, most probably during the dry 10th century,[64] which left the ground in the 11th or the beginning of the 12th century suitable for permanent inhabitation.

THE FIRST EXPANSION

Dating and extent

At the end of the 11th or the beginning of the 12th century the ditches described above (which once surrounded the fields in the old medieval nucleus of Alkmaar) were filled in. Moreover, we see that the finds of imported pottery from this period (Pingsdorf and Andenne ware) greatly increase in number and range of distribution in comparison with finds of imported pottery from the preceding centuries. This observation leads to the assumption that between 1050 and 1100 there was a change in the settlement pattern in Alkmaar with the inhabited area being extended. At first, the expansion was limited to the foot of the dunes south of the oldest nucleus and encircled the chapel which had been founded shortly before 1040.[65] The presence here of wells from the 11th and 12th century underneath the completely disturbed occupation layer confirms this.[66] Soon enough, however, the lower-lying ground east of the dune-ridge in the direction of the Voormeer was put to use as well. The vertical sections show that this area is almost 2 m lower than the top of the Older Dunes (fig. 21) partly because the original layer of peat had been eroded by the Voormeer.[67]

Habitation on the erosion surface, either before or after a clay layer was formed (naturally or artificially), started between 1050 and 1100, as is concluded from the presence of pottery on the erosion surface (fig. 25). For instance, the rim and body of a small Pingsdorf-like pot were found *in situ* directly on top of the Dunkirk-0 sand in the Langestraat Hema trench in 1958 (Cat. No. 3). This fragment can be dated, on the basis of form and paint, to period A of Bruijn's classification, i.e. the end

62 De Jong & Van Regteren Altena 1972, 46–7.
63 Blok 1970, 40.
64 Heidinga 1984, 245.
65 The first mention of the chapel is to be found in the sacramentarium of Echternach; see Blok 1974, 173.
66 Well IV from the site Cat. No. 13 (see fig. 15) and a well discovered in the site Cat. No. 44; see Cordfunke 1972, 123–5; 1982, 12, fig. 4, no. 7.
67 De Jong & Van Regteren Altena 1972, 52 and 54.

Figure 22 Alkmaar: location of 12th-century settlement. Scale 1:5000. Legend: 1 boundary of the settlement area; 2 farms; 3 wells; 4 location of ^{14}C samples; 5 central farm yard boundary, partly presumed; 6 Voormeer.

of the 11th or the beginning of the 12th century.[68] On this occupation level fragments of *Kugeltopf* pottery were also found, as well as a great number of sherds of Pingsdorf-like pottery consisting for the most part of products from South Limburg potteries dating from the first quarter of the 12th century to *c.* 1160.[69] In other excavations on the Langestraat and the Breedstraat comparable observations have since been made: sizeable collections of imported pottery (mostly Pingsdorf-like ware) were found in the occupation layer directly on top of the Dunkirk-0 sand and in seven wells in the excavations dug for the town hall extensions (1968 and 1978, Cat. Nos. 9 and 33) and for the Witteveen building (Cat. No. 21). The low percentage of Paffrath pottery in the find assemblages would confirm a dating of up to *c.* 1160.

68 A. Bruijn, pers. comm., 14th December 1967.

69 The Rhineland Pingsdorf pottery, whose dating is less well-known, was not found in the Alkmaar assemblage.

sample	site	dated material	years BP	GrN
Alkmaar Hema I	Cat. No. 3	branch from wattle-work	1250±65	2299
Alkmaar Town Hall I	Cat. No. 9	outermost tree rings of post	1065±30	6306
Alkmaar Town Hall II	Cat. No. 9	branch from wattle-work	1115±25	6307
Alkmaar 't Hooge Huys I	Cat. No. 14	wood from ditch	1090±30	6305
Alkmaar Town Hall III	Cat. No. 33	post from house wall	1100±20	12758

Table 1 Alkmaar: radiocarbon dates of medieval wood from the town centre.

In five places wood samples were collected from house walls for ^{14}C dating (fig. 22). Due to the absence of oak samples, dendrochronological dating was unfortunately not possible. The results of the ^{14}C dating (table 1) are noteworthy. The most striking feature is that most of the wood samples produce, within the margin of error, the same date: *c.* 1100 BP, from which an absolute date to the 10th century can be derived after calibration. This surprising result is in contradiction with the dating of the pottery. Because a dendrochronological investigation is not possible, the discrepancy between ^{14}C dates and that of the pottery found must remain for the present. The reliability of the pottery dates are preferred, since the reliability of the ^{14}C dating of the wood is most probably influenced by humic acids from the peat sods which had been used since the 12th century, first as house foundations and later to raise the ground level. Since sherds of native pottery from the Roman period that were found in between the peat sods near the house in the Witteveen building trench, it appears that the peat had been obtained from the higher-lying part of the town. As previously mentioned, this peat began to form during the later part of the Bronze Age. Leaching of the humic acids from this peat could have made the wood seem older. In this connection it is interesting that the only deviating ^{14}C date came from a sample from the Hema excavation (Cat. No. 3) which had been treated solely with hydrochloric acid, probably resulting in an even higher humic acid content.[70]

The 12th-century expansion on both sides of the Langestraat was bordered on the east by the line Van den Boschstraat-Krebbesteeg. The area to the *east* of this line was not put into use before the second half of the 13th century, as was made clear by an investigation at the northern side of the Breedstraat (clothing shop Hij) in 1975 (Cat. No. 24).[71] On top of Dunkirk-0 sands there is a layer of clay approximately 0.6 m thick which was deposited in brackish water.[72] From the absence of cornflower in the pollen spectrum and the occurrence of high values of cereal pollen, including rye, it can be concluded that the clay deposit was formed before *c.* 1300. This agrees with the contents of the raised layer on top of this clay layer: sherds of late 13th-century, local pottery (grey and red wares) as well as pottery imported from the Rhineland of the same period. The area to the east of the Van den Boschstraat-Krebbesteeg line therefore was secured from the Voormeer only at the end of the 13th century by raising the ground level. Before this time the shore of the Voormeer here was rich in plant growth, as is evidenced by the many plant remains and seeds. The presence of food scraps, sherds of pottery, and brick rubble in the clay deposit indicates habitation of the immediate surroundings of this sediment. The wattle wall which was found along the entire length of the Hema excavation (Cat. No. 3) most probably served as a fence for the settlement (fig. 23).

The *southern* limit of the 12th-century expansion came to light during an investigation along the southern side of the Breedstraat (Cat. No. 47), where in 1981 a *c.* 20 m long north-south vertical section was open to inspection in an excavation dug for an office building opposite the town hall. In several places in the section the undisturbed build-up of the soil could be observed. Upon marine sand (at *c.* 1.25 m −NAP) lay peat (up to 0.7 m −NAP) containing drifted sand and bands of clay which

70 Report of E. Taayke, ^{14}C databank, Centre for Isotope Research of Groningen University, Groningen, of 9th June 1988.

71 Cordfunke 1978, 104–5.

72 Report 1039 from the RGD, 4th November 1975.

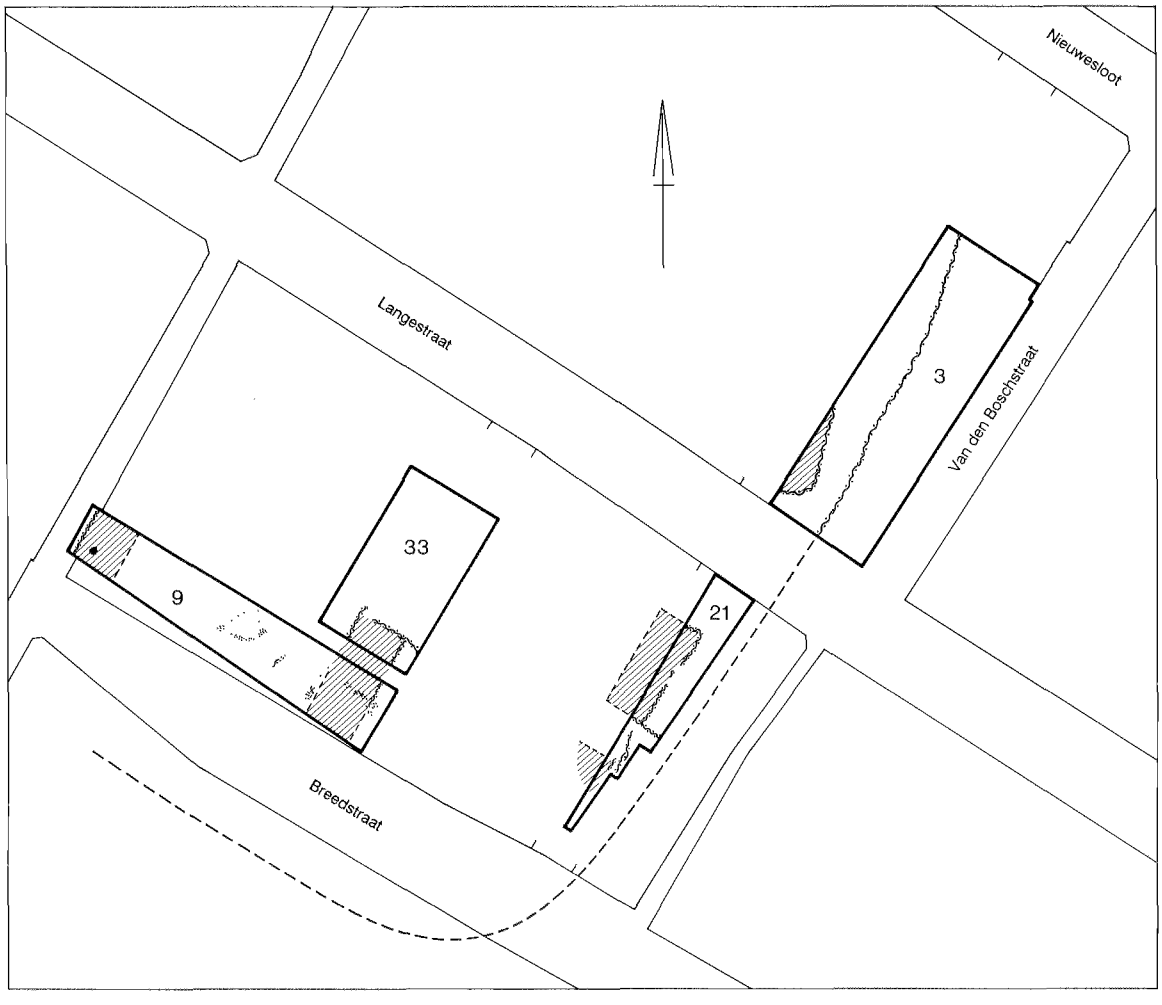


Figure 23 Sites Cat. Nos. 3, 9, 21, and 33: trenches, ground-plans of 12th-century houses, and wattle wall (partly presumed). Scale 1:1000.

show the influence of the nearby Voormeer. A ditch approximately 8 m wide was dug from this level and was diverted to the south a few times prior to the raising of the entire terrain. As is evidenced by the pottery found at this point, the work was done in the second half of the 13th century, perhaps shortly after 1254 when Alkmaar was granted its charter.

We believe that this ditch, which was very probably connected to the Voormeer, was the southern border of Alkmaar's inhabited area during the 12th century. This belief is supported, in addition to the undisturbed build-up of the ground, by the presence of an entrenched partition of wattle work directly to the north of the ditch and analogous to the enclosure found in the Hema excavation (Cat. No. 3). This will be discussed below.

The *northern* limit of the first 12th-century expansion is not known with any certainty due to the lack of opportunities for investigation. It is possible that the border ran as far as the Koningsweg (fig. 22). An investigation in 1982 (Cat. No. 48), which was made possible after the demolition of the rear section of the former Rijks HBS (state secondary school), showed that this area was under cultivation in the 11th and 12th centuries. Moreover, the presence here of trenches, pits, and wells points to habitation activities in the immediate vicinity. The arable was covered by a layer of drift-sand, per-

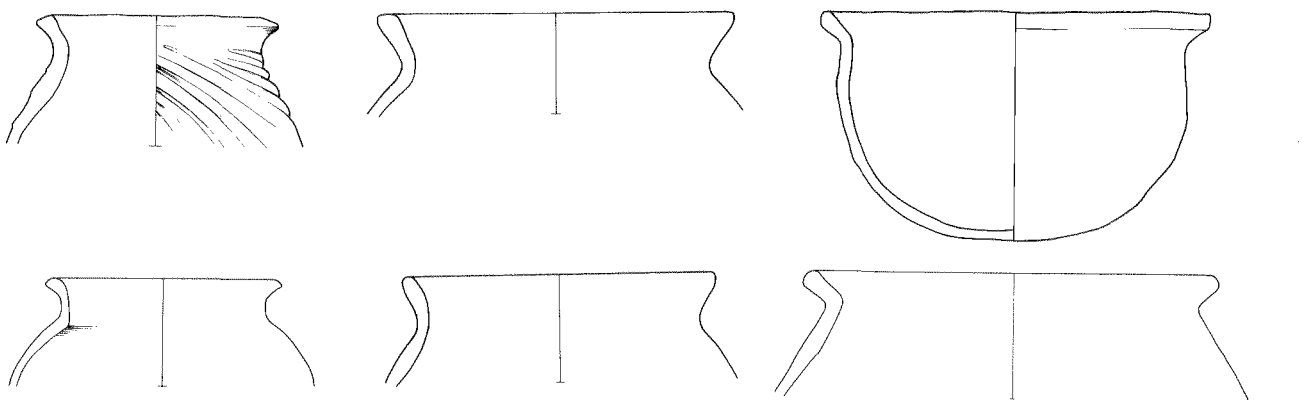


Figure 24 Site Cat. No. 3: *Kugeltopf* pottery.

haps in the 12th century, and, as strong root growth indicates, lay fallow for a time. Afterwards, probably still in the 13th century, the terrain again came under the plough.
At the end of the 14th or the beginning of the 15th century the terrain here was raised in order to facilitate the building of the Jonge Hof, a beguinage (*bagijnhof*) with a chapel. With the building of this residence the form of the original lots, which went back to the Early Middle Ages, was maintained.

The finds

Pottery
The greatest part of the finds consists, as usual, of pottery sherds. In pre-urban Alkmaar, locally-produced pottery makes up the main constituent of the finds. The sherds of local pottery mostly originate from *Kugeltopf* ware, which was mass-produced for a long period and lacked important stylistic changes (fig. 24). It was only in the course of the 13th century that the *Kugeltopf* pottery was 'decorated' with brush-strokes and the rim profiles became more pronounced (figs. 36, 43).
Besides locally-produced pottery, imported pottery played an important role. In 12th-century Alkmaar, imported ware came mostly from the potteries of South Limburg (fig. 25). It belongs to the Pingsdorf group, but the structure of the tempering of this material is somewhat coarser than that of the Rhineland Pingsdorf ware, which almost never appears among the Alkmaar finds. Also notable by its absence is Andenne ware, the imported pottery from the Belgian Meuse region which occurs only occasionally in 12th-century Alkmaar. There is, however, one quite special exception, namely the handsome, yellow-green glazed spouted pitcher, fragments of which were found in the excavation for the town hall extension in 1978 (Cat. No. 33) between Dunkirk-0 sand and the 12th-century occupation layer (fig. 26). It is a rare pitcher, practically identical to an almost complete vessel which was found in London. Because the pitcher differs in a number of respects from the Andenne type, for instance, in form, Borremans[73] suspects that the pitcher is a product of a yet-unknown pottery centre in the south of Belgium that was in operation at the same time as the early Andenne potteries.[74] This pitcher can be dated to either the end of the 11th or the beginning of the 12th century. The characteristic sickle-shaped rim on the pitcher has also been identified within the oldest find assemblages in Dommelen, in association with wheelmade Limburg pottery dating to period A.[75] This sickle-shaped rim has also been found in find assemblages in the region around Paris, dating to

73 Communication by R. Borremans in: Dunning *et al.* 1959, 60–2, fig. 33.
74 Mr J.M. Baart (town archaeologist of Amsterdam) was kind enough to draw my attention to a recent publication, Nicourt 1986, in which comparable pitchers are described.
75 Theuws *et al.* 1988, 330.
76 Nicourt 1986, 157: type-Léchelle.

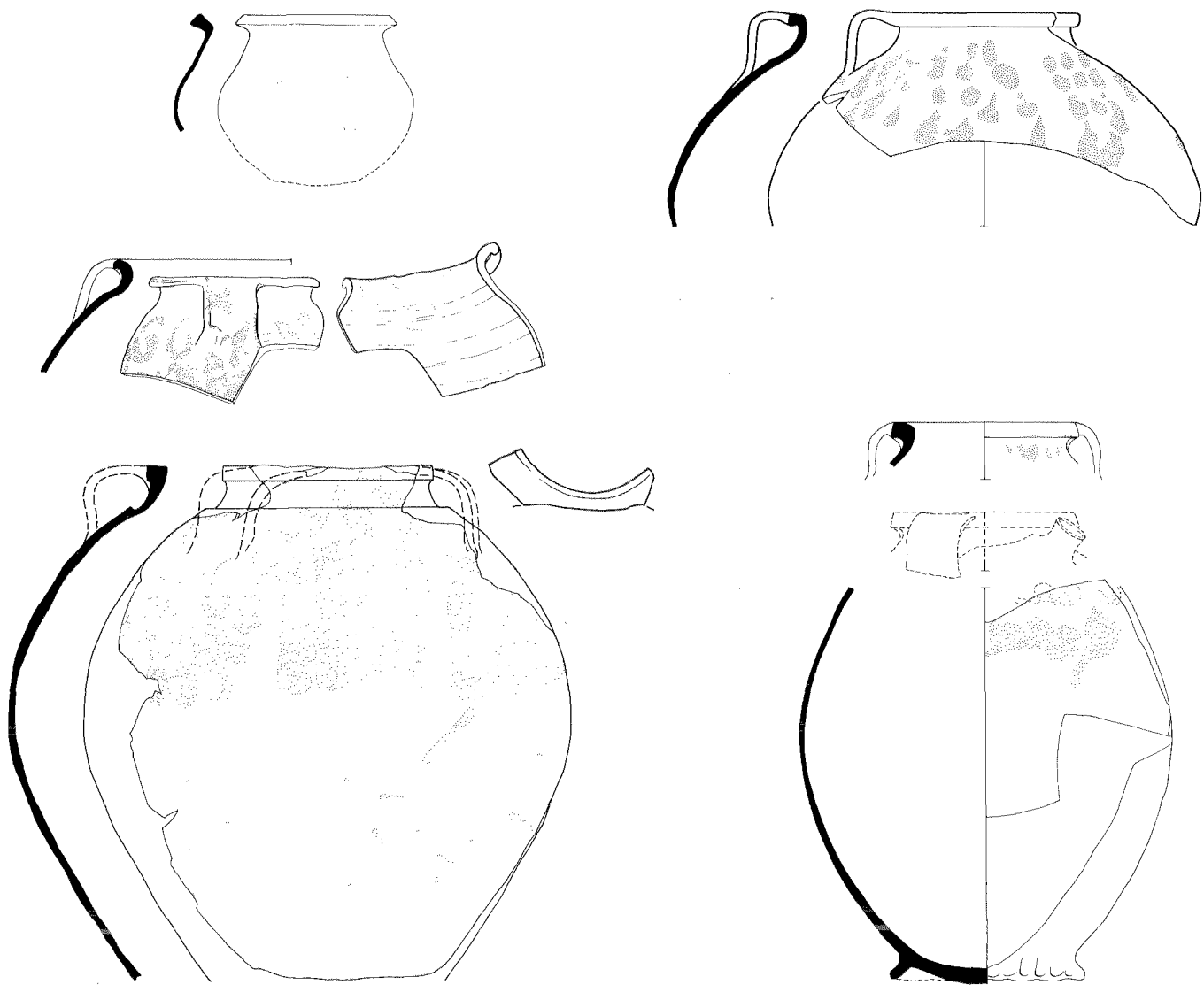


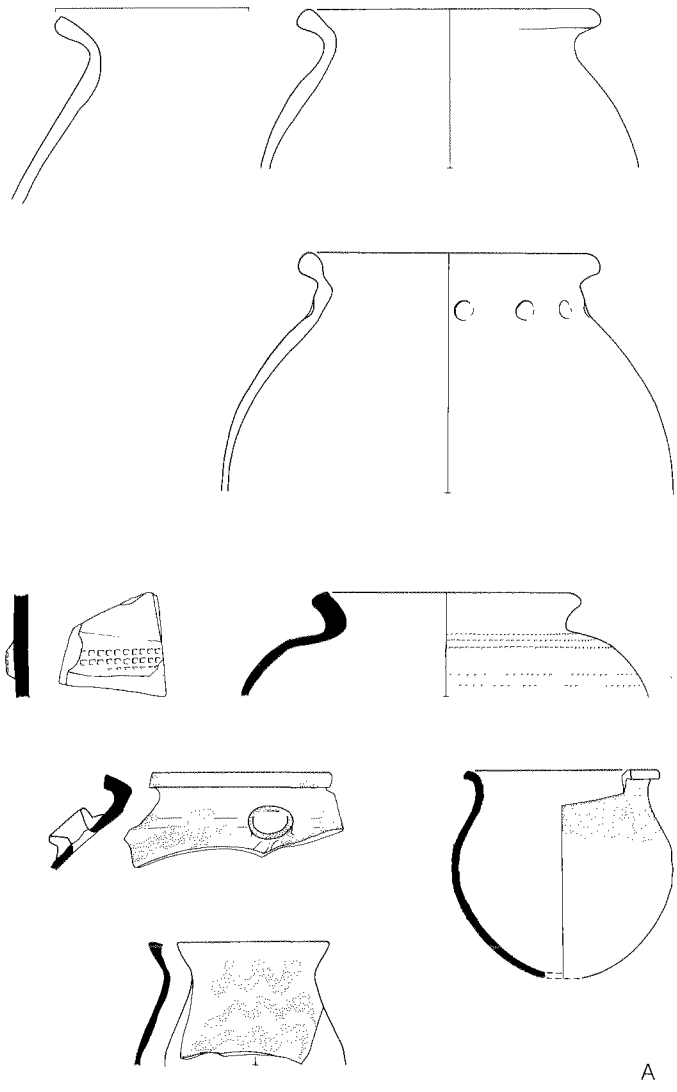
Figure 25 Site Cat. No. 3: Pingsdorf-like pottery.

the same period.[76] The pitcher is therefore evidence for very early trade contacts with the region to the south of the Rhine and the Meuse.[77]

The relationship between locally-produced and imported pottery in the various 12th-century findspots in Alkmaar is quite constant: the imported pottery makes up about 27% of the total (fig. 29). The proportion of imported to locally-produced pottery is much higher in Alkmaar than in a typical 12th-century agrarian settlement in the Province of North Holland, as far as known.[78]

77 Theuws *et al.* 1988, 343–4.

78 In the 11th-century reclamation of Assendelft, imported pottery made up 13% of the total (see Besteman & Guiran 1986, 195).



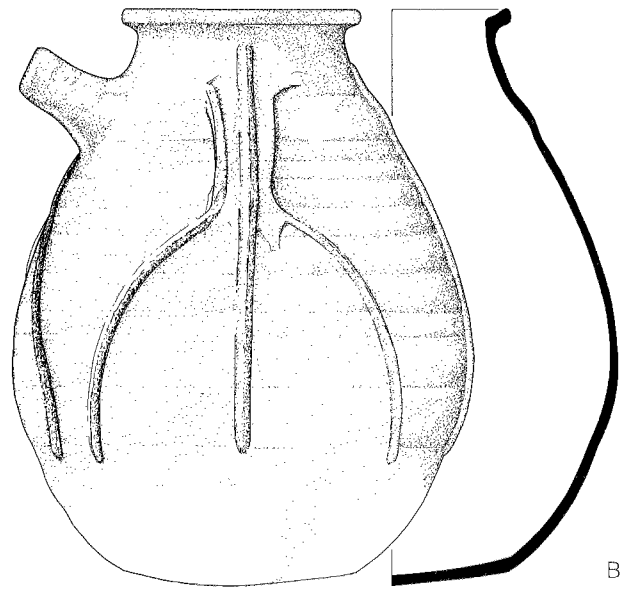


Figure 26 A and B Site Cat. No. 33: pottery, including a green-glazed spouted pitcher (fig. 26 B).

Animal bones

The archaeo-zoological investigation of the animal bones collected in Alkmaar, was undertaken by A.T. Clason.[79] Her investigation resulted in several conclusions which are of importance to the understanding of medieval Alkmaar. For instance, the fact that the 11th- and 12th-century material contains more pig bones than that of the 14th century indicates a continuing deforestation around Alkmaar.[80] However, the pig did not exist in great numbers in Alkmaar, which suggests an open landscape.[81]

Striking in comparison with other settlements is the high percentage of sheep (and possibly goat) bones which were found in both periods, namely 32% and 40%, respectively. Sheep were kept for the wool and to a less extent for milk or slaughter. As an explanation for this high percentage of sheep, Prummel[82] supposes that the Dunkirk III deposits around Alkmaar accounted for a high salt content in the soil, which is favourable for the raising of sheep but not for cattle.

In addition, poultry, bird, and fish bones were also recovered. From the composition of the collection of bones it can be concluded that the medieval inhabitants of Alkmaar preferred the North Sea coast to the freshwater lakes for their bird-catching and fishing.[83]

79 Clason 1972; 1978.
80 Prummel 1979, 103–4.
81 Clason 1978, 119.
82 Prummel 1979, tables 1 and 3.
83 Clason 1978, 128.

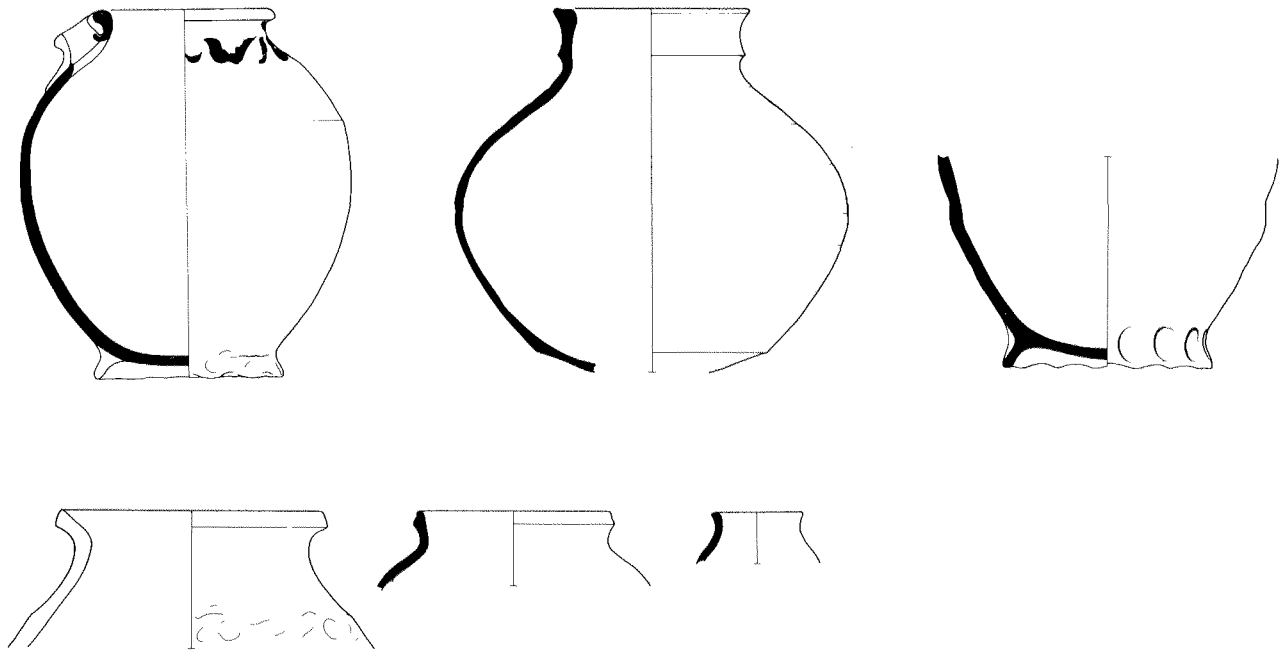


Figure 27 Site Cat. No. 13: pottery from well IV (see also fig. 15).

A find which deserves special mention here is a bone whistle which was used to attract gold plovers (fig. 30). The whistle was kept in the Masdorp collection in the Alkmaar Stedelijk Museum and had been found at the end of the 19th century as a consequence of inner-city sewer installation.[84] The date of the whistle is, in view of the find circumstances, most probably 12th or 13th century.

Footwear

The leather finds from the 12th to the 14th century have been studied by Groenman-van Waateringe.[85] In the collection, the half-high shoe dominated, especially the button-boot. This type existed for a long period and was the most common shoe until well into the 16th century. That it already appeared in the 12th century has been determined with certainty for the first time on the basis of Alkmaar material. Unworked leather scraps with hair and leather scraps remaining after the cutting out of a heel, taken from the 13th century raised layer in the Witteveen excavation (Cat. No. 21), point to leather working: local shoe manufacture or repair.

Miscellaneous

Metal finds are an exception in the 12th-century occupation level. A pair of sheep-shearing scissors (town hall extension, Cat. No. 9) and a fragment of a small knife (Hema, Cat. No. 3) can be mentioned (fig. 30). There are no coins found in any of the 12th-century find assemblages.

The structure of 12th-century Alkmaar; the 'ambacht' Alkmaar

It can be concluded that 12th-century Alkmaar extended no further than the area around the Grote Kerk and the lower-lying grounds at the beginning of

84 Cordfunke 1975, 274–5.

85 Groenman-van Waateringe 1978, 81.

Figure 28 Trench Bervoets, Laat 116 (1959; not in catalogue): handled jar of South Limburg pottery (period 1a).

the Langestraat. The archaeological investigations which have taken place at several building sites in the Langestraat and Breedstraat (Hema, Cat. No. 3; the town hall extensions, Cat. Nos. 9 and 33; Witteveen, Cat. No. 21) have provided good information about its structure during that period. In each of these excavations, traces of houses were found. In contrast to the houses in the oldest nucleus, which were built on dune-sand, the houses here were built on the lower-lying ground and were later covered by thick, raised layers of clay which assured their preservation.

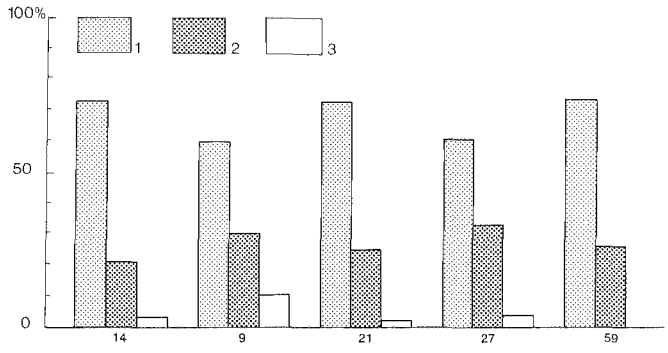


Figure 29 Alkmaar: ratios of different types of pottery from sites Cat. Nos. 14, 9, 21, 27, and 59. Legend: 1 *Kugeltopf*; 2 Pingsdorf; 3 Paffrath.

Figure 23 shows an overview of these house plans, most of which could only be partially examined because of the restricted area available during the investigation. The ground-plans, or fragments of them, are all orientated north-south and the houses thus would have stood perpendicular to the later-constructed Langestraat, which connected the pre-urban nucleus and the Voormeer.

It was possible to investigate the complete ground-plan of the middle-most house in the Breedstraat in two excavations. This had been a farm house without an aisle (figs. 23, 35) divided into two parts by a partition. The northern part was clearly the byre; it contains a slurry drain which runs lengthwise in this part, as well as an entrance in the short side of the house. The living area was thus on the Breedstraat side (the water's edge) and had several floor levels of clay and sods. Although the front of the house could be determined at only one point, the measurements of the house are still certain: it was 6 m wide and 14 m long. The house on the Langestraat side (Witteveen trench, Cat. No. 21) was 14.5 m long (fig. 31). The 'foundations' of both houses were made up of layers of peat sods which had been intentionally laid for this purpose. The Alkmaar house-type is thus quite similar to the 11th- and 12th-century reclamation farms which have been excavated at other North Holland sites, Assendelft among them.[86]

86 Besteman & Guiran 1986, 194.

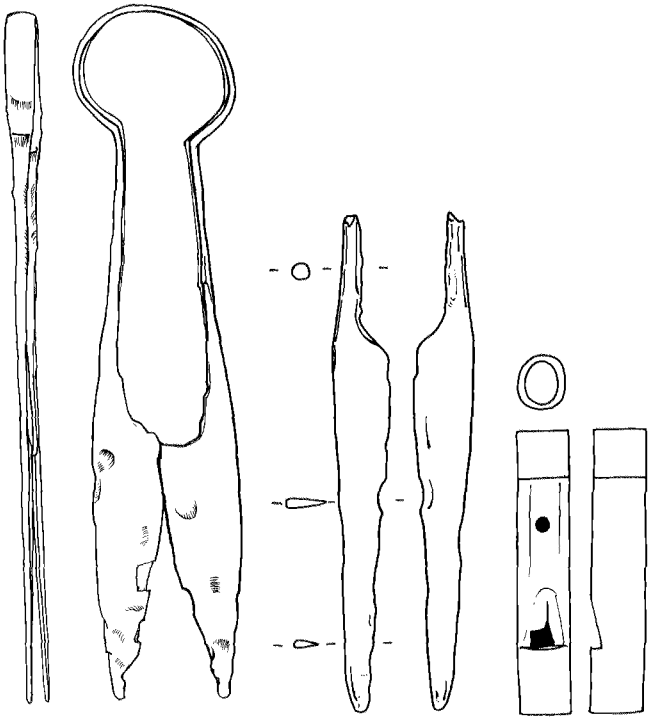


Figure 30 Alkmaar: metal shears or scissors and fragment of a small knife (sites Cat. Nos. 9, left, and 3, right) and bone golden plover flute (stray find). Scale 1:2.

The long wattle work fence which ran round the house along the Van den Boschstraat, as well as the smaller wattle work fences at the rear of the houses, probably had to do with the enclosing of the farmyard in connection with the cattle. Possibly the long fence ran around the entire extension of the settlement; a piece of wattle from the south side of the Breedstraat (Cat. No. 47) may have been a part of it, in view of the pottery associated with it.

All the houses that were excavated had been built on the erosion surface to the east of the Older Dunes which, after the formation of a clay layer, emerged during the 10th century droughts.[87] The houses had wattle walls (fig. 32). The wall stakes were dug in the occupation level and extended down into the sand; they did not stand on floor plates (fig. 33). Around the stable sec-

87 Heidinga 1984, 245.

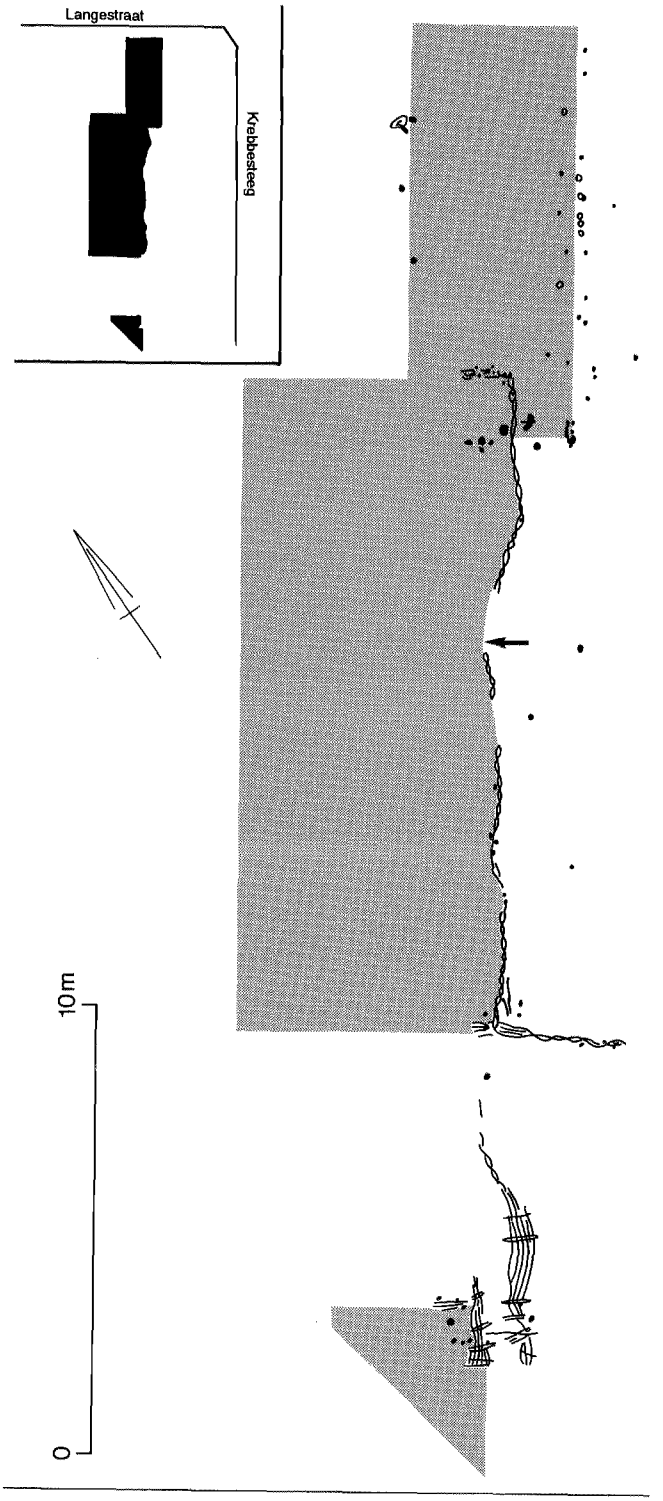


Figure 31 Site Cat. No. 21: house plans.

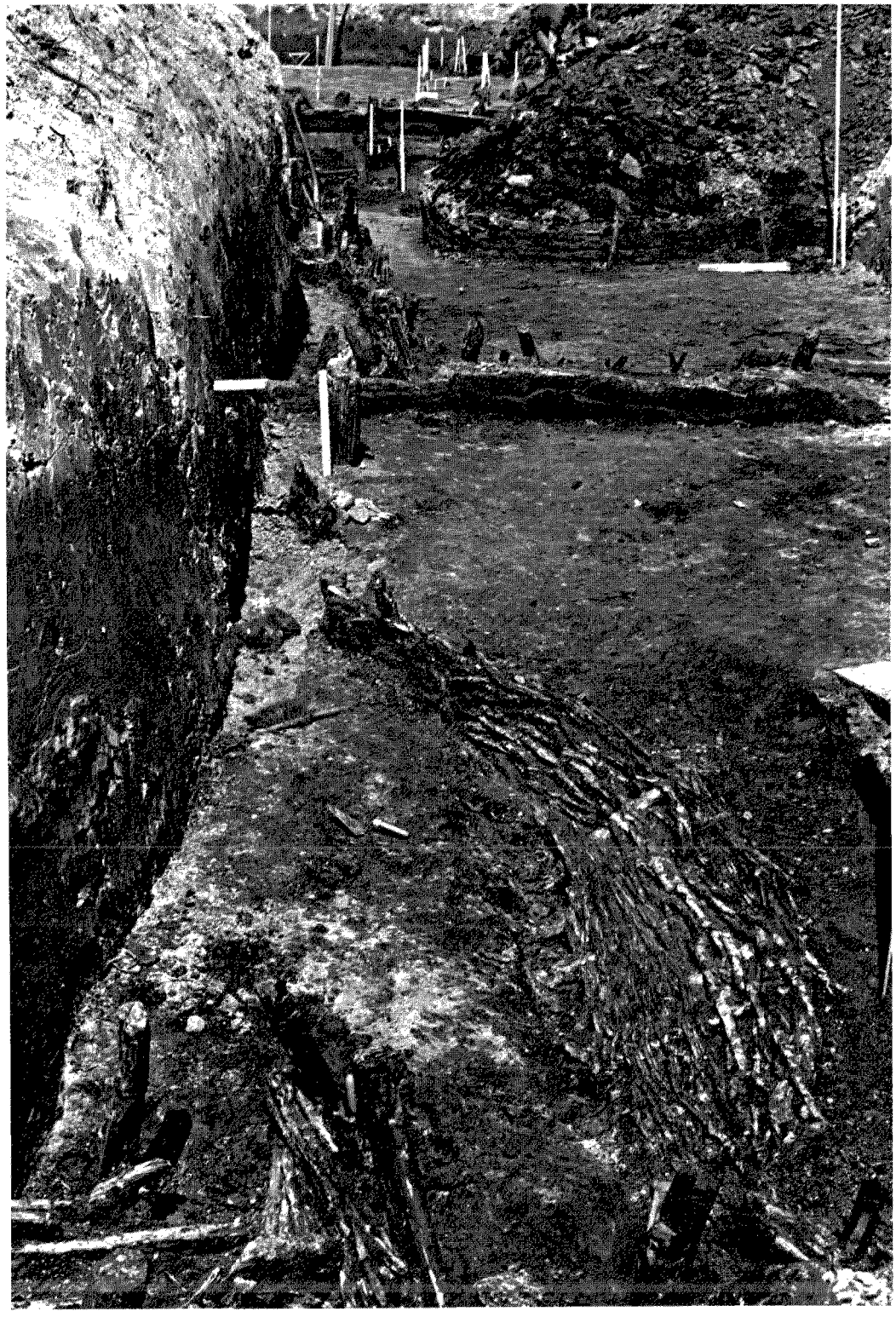


Figure 32 Site Cat. No. 21: wattle walls of the houses, seen from the south.

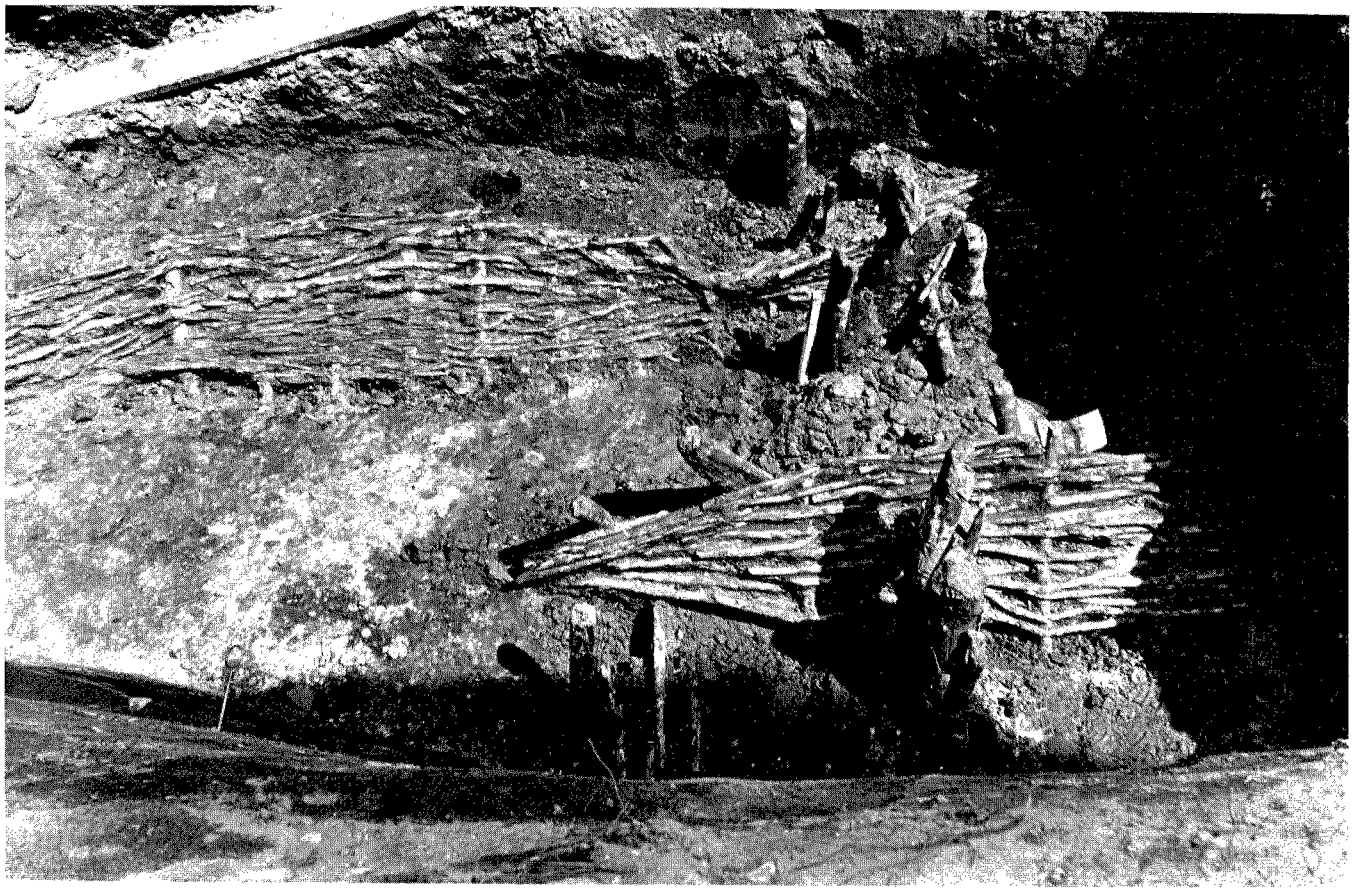


Figure 33 Site Cat. No. 21: detail of wattle walls, at the south side of the trench.

tion of the middle-most house in the Breedstraat chips of wood were found, left over from the sharpening of the wall stakes. The species of wood used were: alder, ash, and birch for the upright stakes; poplar and ivy for the interlaced twigs.[88] The absence of oak is striking.

The general plan illustrated in figure 23 represents the probable situation before the flooding disaster of 1162. The ground-plan of the town hall excavation in 1978 shows that at least two houses preceded the middle-most house on the Breedstraat. From these houses only the incomplete, but undisturbed remains of the walls were found. Taking into account the type of wood used and the soil conditions, the average life-span of a house in this area would have been fifteen to twenty years.[89] Therefore the beginning of occupation can be set at *c.* 1120. As we shall see later in the article, this is in complete accordance with the historical evidence. This date is also verified by the presence of the oldest pottery in Alkmaar being found in or near these house walls. This pottery includes the green-glazed pitcher and the sherds illustrated in figure 26.[90]

The expansion of Alkmaar along the Langestraat was clearly a planned development. The ^{14}C dating of the houses shows, aside from the absolute dating discussed above, that these houses were built at practically the same time, pointing to the existence of a plan. More-

88 Determination made by J.M. Fundter, Landbouw Hogeschool Wageningen, Department of Forestry Techniques; letter of 1st February 1972 (No. 80–72).

89 IJzereef & van Regteren Altena 1991, 73–6.

90 The house wall to the far left in fig. 35.

over, it appears that the small houses were placed at regular distances from each other with narrow roads between them. The parcels of land around the houses were small, while the byres could have held only a few cattle, at the most ten to twelve cows per house. Since the Breedstraat and the Nieuwesloot (both former ditches) were connected with the Voormeer, the expansion must have chiefly served a trade function. It seems reasonable to look here for the *forum*, the market and trade centre, which went up in flames in 1132 during a West Frisian raid.[91]

The first historical notes about Alkmaar, which come from the *Annales Egmundenses*, the annals of the nearby monastery of Egmond,[92] clearly indicate economic activity in 12th-century, pre-urban Alkmaar. As mentioned above, in 1132 there is mention of a *forum* (i.e. a market) and a (market) toll, which fetched the abbot of Egmond the substantial sum of six pounds per year.[93] The market handled products from a wide area, among which was grain which was measured *per Alcmerensem modium*, that is with an Alkmaar measure.[94] It was probably in the middle of the 12th century that the abbot of Egmond had coins minted in Alkmaar.[95] Coins, market, and toll are closely connected in this period.

Regarding the significance of these economic activities in pre-urban Alkmaar the archaeological investigations still give little to go on. An indication of the importance of these activities can be sought in the ratio of imported to locally-produced pottery. As mentioned above, in the excavations around the Langestraat imported pottery constitutes approximately 27% of the total pottery finds (fig. 29).[96] But in spite of these economic activities, the pre-urban settlement continued to keep its agrarian character, with the inhabitants raising cattle and cultivating various crops, such as flax, wheat, barley, rye, and oats.[97]

In 1116 the inhabitants of Alkmaar, at the request of the abbot of Egmond, were exempted from burial fees in exchange for one-tenth of their harvest and cattle. The wording of the charter indicates that this tax had been paid with much resistance. Not less than 77 inhabitants of Alkmaar, probably all the adult men, appear as witnesses in the charter.[98] The role of the abbot in this agreement is interesting: he intercedes between the Count of Holland and the inhabitants of Alkmaar in his capacity as lord of the *ambacht*. The jurisdiction at Alkmaar, the '*ambacht*', was probably granted to him in 1083 by the Count of Holland.[99] In the Egmond *Evangelie-aantekeningen* (notes in the Egmond Evangeliarium) which were formulated at the end of the 11th century and have been handed down almost unchanged since 1100,[100] the granting of the *ambacht* had already been reported. Shortly thereafter, between 1101 and 1116,[101] the church of Alkmaar was also granted to the monastery of Egmond.

Whether the expansion of Alkmaar between 1085 and 1125 took place on the domain of the monastery of Egmond is not known, but it seems plausible. The monastery was already in possession of the two *hoeven* granted by Count Dirk I. Moreover, we see that the monastery's attempt to expand its landholdings in Alkmaar through sales, grants, and trade with property elsewhere[102] was successful. The surviving historical data do not permit a careful scrutiny of this process, but from a 1248 charter it is known that if the abbot of Egmond did not possess the entire territory of Alkmaar, he did own a very large part of it.[103] Alkmaar's growth during the 12th century occurred therefore under the protection and on the initiative of the abbot of Egmond, who had there both the jurisdiction and large economic interests. The favourable position of Alkmaar on the Voormeer, which was in turn connected with waterways

91 *Fontes*, 146 (see n. 92).
92 Published by O. Oppermann in 1933, here shortened to *Fontes*.
93 Documents from the years 1083, 1175, and 1215 show that the Alkmaar toll belonged to the abbot, and was given in 1175 by the abbot to the monks until his debt to them was paid through annual discharges; *Fontes*, 238.
94 The monastery received income from a wide area which was expressed in the Alkmaar measure *hoed*, for example, from Oterleek and Oudorp *13 hode per Alcmerensem modium* and from Ursem and Mijsen each *3 hod*; *Fontes*, 75–6.
95 Cordfunke 1978, 55.
96 See note 78.
97 Cordfunke 1978, 67–9.
98 Koch 1970, No. 99.
99 Cordfunke 1982, 29–30.
100 Meilink 1939, 22–5; the text is printed in the *Fontes*, 63–5.
101 Cordfunke 1982, 29; n. 46.
102 In 1110, Abbot Adelard traded more distant property for eight cow pastures in Alkmaar (see Meilink 1951, R 7), while in 1151 the abbot used an important grant of money to buy land in Alkmaar.
103 Kruisheer 1986, No. 786.

◁ Figure 34 Site Cat. No. 33: the excavation.

Figure 35 Site Cat. No. 33: detail of house, back view with entrance.

leading to the hinterland, made this development possible.[104]

FLOODS

The newly-expanded Alkmaar quickly came under a double threat. First came the West Frisians who, attracted by the increasing prosperity of the market place, conducted raids. They entered Alkmaar by a fordable place in the Rekere, the *occenvorth*[105]: the Egmond annals mention 1132, 1166, and 1169. The inhabitants of Alkmaar were praised for their courage to defend their '*patria*'.[106] But although Alkmaar had been strengthened (in the Egmond annals it was called an *oppidulum*),[107] nothing could be done to prevent the village from going up in flames several times.

A much more serious threat came in the form of floods which ravaged the coast of Holland from the middle of the 12th century onwards. The Egmond annals report the regular occurrence of wet summers (through which, for example, the entire harvest of 1163 was lost) and

104 In 1143 and 1147, the Egmond monastery received certain privileges from the Bishop of Utrecht and the Archbishop of Cologne whereby the dependents of the monastery were exempted from paying customs in Utrecht, Cologne, Neuss, and Andernach. This was of particular interest to Alkmaar, which was built on Egmond territory (see Koch 1970, Nos. 121 and 123).

105 *Fontes*, 173.

106 *Fontes*, 173–4.

107 *Fontes*, 173.

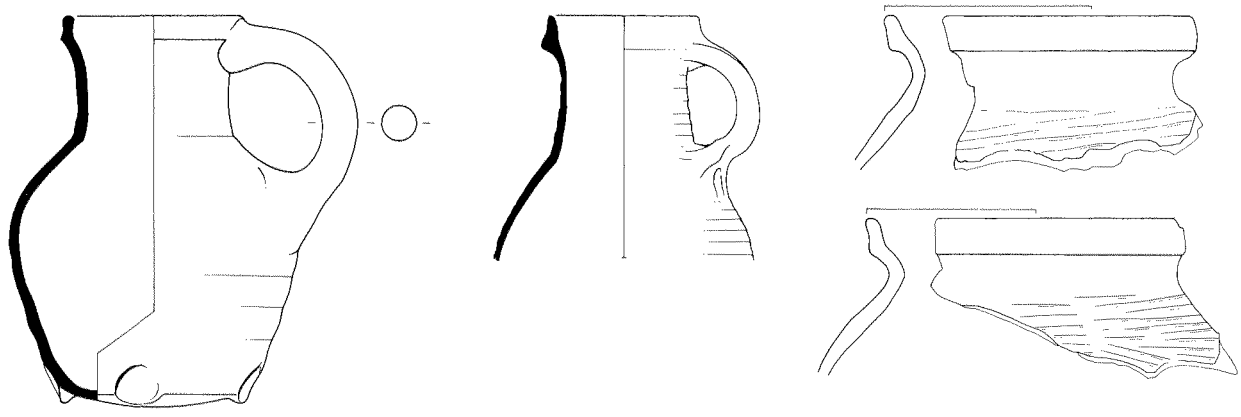


Figure 36 Site Cat. No. 33: pottery from the raised layers.

flood disasters. On 21st December 1163, on the feast of St Thomas, drifting ice floes destroyed those villages lying close to the coast and not one house in the coastal region was secure.[108] During one of these floods, the 12th-century area of expansion in Alkmaar was lost. The erosion gully in the 1968 excavation for the extension of the town hall (Cat. No. 9) is a witness to this.[109] But much more eloquent are the destroyed houses, whose walls, smashed and pushed away, were found in the various excavations. The house walls in the Witteveen trench (Cat. No. 21) in particular could be examined in detail (fig. 33).[110]

After this disaster, according to the archaeological findings, the lower-lying area along the Langestraat lay fallow for a long time. The houses, upset and destroyed, became covered by a layer of clay. The inhabitants took refuge elsewhere, as is explicitly reported in the Egmond annals after a new flood disaster in 1183.[111] Only the higher-lying grounds on the sand-ridge remained inhabited, which is evident from the presence of imported pottery.[112]

About the middle of the 13th century, Alkmaar appears to have recovered and to have embarked on a period of new growth. The transfer of land to the count (1248–1254),[113] the granting of the town charter (1254), and the subjection of the West Frisians (1289) were all contributing conditions. In the following centuries, the gradual process of change from a still preponderantly agrarian to an urban society could begin. The results from this process are to be found in the expansion of the inhabited area which, as appears from the results of the archaeological investigation (see below), began in the second half of the 13th century.[114]

108 *Fontes*, 169.
109 De Jong & Van Regteren Altena 1972, 48.
110 Cordfunke 1978, 60–3.
111 *Fontes*, 184.
112 Well II, in the investigation behind the Grote Kerk (Cat. No. 13), dating to the first quarter of the 13th century (see Cordfunke 1972, 125–6, fig. 79 on pages 136–7). Further: well I in the Lange Augustijn investigation (Cat. No. 27), dating to the middle of the 13th century (see Cordfunke 1978, 70).
113 Kruisheer 1986, OHZ, II, no. 786.
114 The raising of the ground level is, like the construction of a dike, a task which requires cooperation. Such a project could only be effected by the count, the highest authority. We therefore suppose that Count Floris V was the driving force behind the Alkmaar ground-raising (see Cordfunke 1979d, 36). His memory lived on in the town for a long time as can be seen not only by the 'tomb' still to be found in the Grote Kerk but also in the existence of an endowment established at the parish church for the welfare of the Count's soul.

THE RAISED GROUNDS

The rebuilding began with what may have been a few houses which were constructed on terp-like elevations on the terrain along the Langestraat which had lain fallow. In the Witteveen trench (Cat. No. 21) one of these houses, of modest size (4 m × at least 9 m), was excavated. It was a simple house, without an aisle, founded on stacked-up scrap wood, the posts of which were dug into a layer of alternating peat, dirty sand, and clay. In the neighbourhood of this house, fragments of crucibles and slag were found, as well as pottery sherds of predominantly 12th-century date.

The house is smaller than the farm lying partially beneath it (fig. 31) and was clearly intended only as a workplace and domicile. The building can be dated to the middle of the 13th century, in spite of the presence of the nearby assemblage of finds. Supporting this date is the fact that the house was pulled down, and even a number of posts were pulled from the ground, before the entire terrain was raised with more than 1 m of clay.

The archaeological investigation in the excavations for the Hema (Cat. No. 3), Witteveen (Cat. No. 21), and the town hall extension (Cat. Nos. 9 and 33), have shown that the whole area on both sides of the Langestraat to the west of the Van den Boschstraat-Krebbesteeg line was raised in such a way that the level of the sand-ridge was reached. The clay was dumped in compartments constructed of stems and wooden partitions. These compartments were found in several places during the investigations, the finest being in the 1978 town hall extension excavation (Cat. No. 33). The clay used for this raising was very humic and contained many pottery fragments and bones. The pottery mainly consisted of *Kugeltopf* ware with so-called 'brush-strokes' and of red, sparsely-glazed ware (fig. 36). The hard-fired Siegburg stoneware (*Jacobakannen*) was completely absent; only the Rhineland 'proto-stoneware' from the mid-13th century was among the finds.

During an investigation at the Doelenveld in 1985 (Cat. No. 58), on a plot opposite the town hall on the north side of the Langestraat, a 13th-century barrel-lined well (*tonput*) was discovered which had been dug through the raised layer and which held a Rhineland flagon from the mid-13th century (fig. 37). A dendrochronological

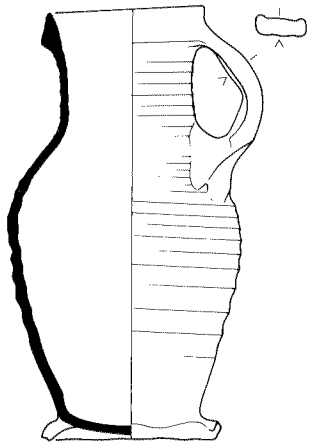


Figure 37 Site Cat. No. 58: flagon from a well in the raised layers. The construction of the well is dendrochronologically dated to the year AD 1252±7.

dating of the oak staves from the well gave AD 1252±7 as the year in which the tree was felled.[115] On the basis of this it can be concluded that the raising had already started in the second half of the 13th century, probably shortly after the granting of the town charter.

The gradual expansion of the raised area continued. Through the many observations which took place in the various trenches it was possible to follow this process closely. The sewer trench in particular which was laid along the entire length of the Langestraat in 1979 (Cat. No. 38) offered many possibilities for archaeological observations. It thus appeared that the area was extended eastward by filling in the Voormeer. From the sections which were measured during the sewer installations, it is clear that the ground-raising was carried out parcel by parcel: the difference in working methods used in the construction of the compartments is evident. An exact dating of the phases of this operation, based exclusively on pottery, is not possible because the period of time involved was too short. However, analysis of a pollen spectrum from the Hij trench (Cat. No. 24) leads to the conclusion that land reclamation to the east of the Van den Boschstraat–Krebbesteeg line had already begun before *c.* 1300.[116]

115 Dating by Ms E. Jansma (IPP; letter of 22nd March 1988).

116 Cordfunke 1978, 105–6; the pollen analysis was carried out by Mr J. de Jong (RGD), letter of 13th November 1975 (report 1039).

Figure 38 Site Cat. No. 65: misfired Siegburg pottery.

The terrain on which the Waag (Weighing House) now stands was ready for building on around 1341. In that year, permission was received to found a hospice with a chapel there.[117] An investigation which took place in 1977 to determine the shape of the choir of the hospice chapel,[118] offered the opportunity to study the ground-raising at that site (Cat. No. 31). A clay layer appears to have raised the terrain 2 m from *c.* 1.4 m −NAP. In the raised layer imported sherds from the Rhineland were found which date no later than the last quarter of the 13th century.[119] The Langestraat, which in 1312 was still designated Oostelijke Kerkweg (eastern church road),[120] apparently reached its present length between *c.* 1310 and 1340.

Raising of the ground to the south and north of the parcels along the Langestraat had already begun at the beginning of the 14th century. An investigation in 1988 of an area on the north side, at the end of the Gedempte Nieuwesloot and the beginning of the Magdalenenstraat (Cat. No. 65), showed moreover that the raising took place in two phases. Initially the terrain was raised to a level of *c.* 0.4 m −NAP. A barrel-lined well (*tonput*) was dug from this level, the staves of which could be dated by means of a dendrochronological investigation.[121] From six staves it was possible to join the tree ring curves to form a middle curve, from which the date the trees were cut down can be determined to be AD 1350±7. The pottery found in this well agrees with this date. It is interesting to note that two misfired Rhineland flagons were found among the pottery (fig. 38).

The second ground-raising, by which the level of the Langestraat at that time was reached (0.4 m NAP), took place at the end of the 14th and the beginning of the 15th century and obviously was connected with the building of the Witte Hof (Mary Magdalene convent). The northern border of the town was formed at that time by the Koningsweg.[122]

The southern extension of the inhabited territory beginning at the Breedstraat also took place in phases. A ditch, which was obviously connected to the Voormeer, was rechanneled in a southern direction.[123] An investigation at the Laat (Cat. No. 60), which took place after the late 19th-century Dominicus Church was demolished in 1985, showed that the terrain here was raised in one operation using humic clay. The pottery sherds found at the bottom of the raised layer, among which was found much mid-14th-century Siegburg stoneware (fig. 39), date this part of the Laat. Until the middle of the 15th century it formed the southern border of medieval Alkmaar.[124]

117 Meilink 1951, II, R 272, 274, and 290.
118 Cordfunke 1978, 145–57.
119 Cordfunke 1978, 154.
120 Cordfunke 1978, 160. The oldest known mention of the Langestraat dates from 1380.
121 Dating by Ms E. Jansma (IPP; letter of 27th January 1989).
122 Cordfunke 1978, 106–7.
123 Trench Cat. No. 47.

124 After the middle of the 15th century, the southern extensions of the town succeeded each other rapidly. By 1492, 69 houses were standing along the south side of the Laat. A narrow canal which ran to the south of the Laat is depicted on the map of Jacob van Deventer (*c.* 1560). In 1536 circumvallation began along the south side, whereby the 'Vijverweijdt' was dug through in order to construct the Oudegracht.

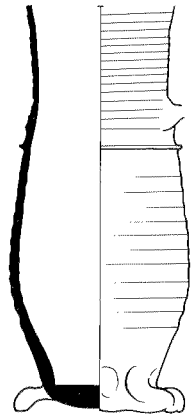


Figure 39 Site Cat. No. 60: Siegburg flagon.

THE TOWN ALKMAAR

On 11th June 1254, Alkmaar received its charter.[125] The significance of this can be looked at from different angles. Kruisheer,[126] who studied the significance of the charter's contents, has shown the active role of the inhabitants in the drafting of their charter. It was drawn up on the spot, probably without the mediation of the count's personnel. Considering the strategic location of Alkmaar on the border of Kennemerland and West-Friesland, the granting of the charter should be seen as a payment from the count to the inhabitants of Alkmaar for military assistance rendered and yet to be rendered in his struggle against the West-Frisians. It was thus an action 'from below' of a community which stood in need of administrative, social, and economic organization, and which had had an urban structure for a considerable time.

Based on this analysis, it is not unreasonable to draw a direct line from the 12th-century pre-urban settlement to the 13th-century town, with the market as the regional centre for the sale and purchase of food. It is interesting in this connection to mention a well (dated *c.* 1225) which was excavated behind the Grote Kerk (Cat. No. 13) and contained a rich diversity of imported pottery.[127] Besides Rhineland and South Limburg ware, products from Andenne and Dutch Flanders were also represented (fig. 40).

Even so, Alkmaar maintained its unmistakable agrarian character long after 1254, and the same crops continued to be cultivated as in the pre-urban settlement. The stipulation in the charter of municipal privileges of 1254, in which townsmen were permitted to remain outside the town for forty days during seed- and harvest-time, is revealing in this regard.

On the other hand, in the same charter there are already indications to be found of professional specialization: stipulations are inserted to exclude women from the production process (specifically baking and brewing) and from the professions (specifically from the sale and purchase of linen and wool).[128]

Moreover, the county records of the House of Henegouw show that during the first half of the 14th century all sorts of people lived in Alkmaar who were either employed by the count or were expected to render him service: for instance, glaziers, slaters, carpenters, and masons.[129] A county steward managed the collection of rent, tolls, and other income. A steward's house was made available to him for the execution of his duties: the Koning Willemshuis (house of King William) as it was later called. This house was demolished in 1857.[130]

Apparently, in the period from 1250 to 1350 Alkmaar took the step from a largely agrarian to an urban and economic society. By the middle of the 14th century, Alkmaar had grown to a regional market and trade centre the rights of which were protected by the count. One of the means of protection was a 1347 proscription prohibiting people from Kennemerland and West-Friesland from holding their weekly market anywhere else but in Alkmaar.[131]

The change in the settlement pattern, which is connected with this social change, is now better understood because of archaeological investigation: in the period

125 Kruisheer 1986, No. 1009.
126 Kruisheer 1985, 56 ff.
127 Well 11 (Cordfunke 1972, 125–6) was originally dated c. 1275; thanks to Mr J. Baart (town archaeologist of Amsterdam) a not unimportant shift in this dating is given.
128 Archaeological investigation also points to specialization in the area of leatherwork (see Groenman-van Waateringe 1978, 81) as well as metal-work (see Cordfunke 1978, 140 and fig. 74: 3).
129 Hamaker 1875, records from the House of Henegouw.
130 Wortel 1974, 58–9.
131 ARA, LRK 220, f. 57.

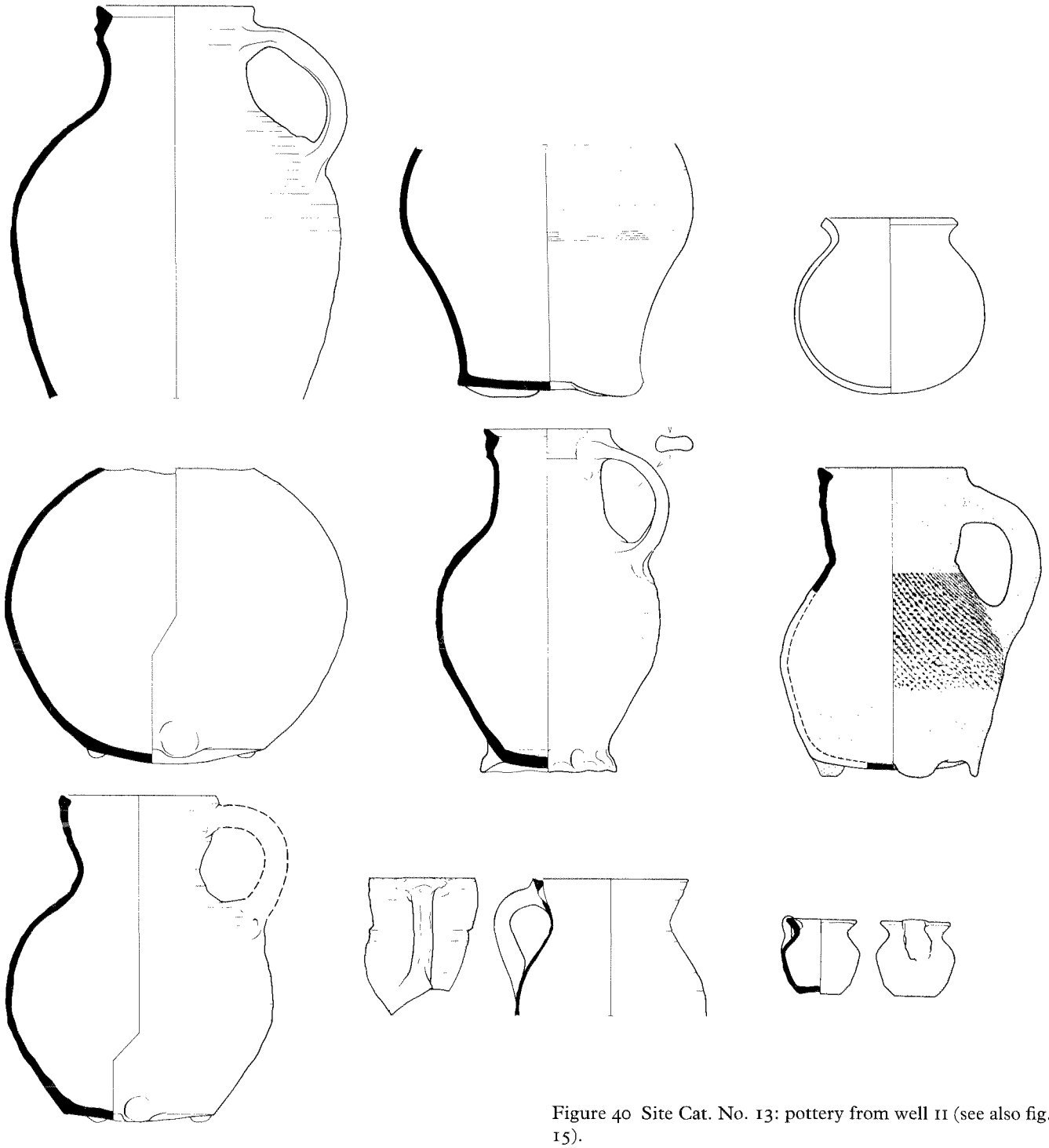


Figure 40 Site Cat. No. 13: pottery from well II (see also fig. 15).

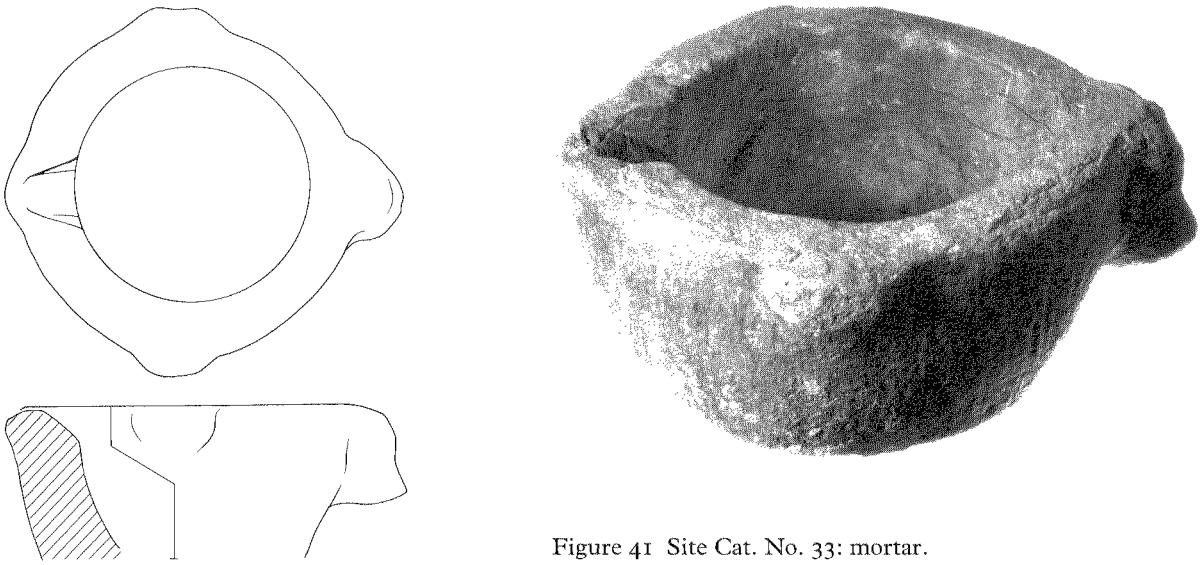


Figure 41 Site Cat. No. 33: mortar.

from 1250 to 1350 the inhabited territory was significantly expanded in a southerly direction, and particularly in an easterly direction, by reclamation of land from the Voormeer. The observations clearly show that during this period the inhabitants were constantly occupied with the expansion of their territory, a process which, as will be shown, did not approach its completion before the 16th century.

The prosperity and growth of Alkmaar was also reflected in the increased number of religious foundations: the parish church, which was renovated after the 1328 town fire, had to be enlarged to a double church in 1382. In the first half of the 14th century a hospice for vagrants was built, while in the 'harbour quarter' in the middle of the 15th century a chapel was built for merchants and seamen, later known as the Kapelkerk. In addition, a number of beguinages arose in the northern part of the town from the end of the 14th century. This will be discussed in more detail below.

The Torenburg

When Count Willem II of Holland granted Alkmaar its charter in 1254, his purpose was one of military strategy: the subjection of the rebellious West-Frisians on the other side of the river Rekere. The castle Torenburg was built as part of this policy.

According to tradition, the Torenburg was built around 1250, but the castle probably originated as a round castle from the time of Count Willem I or earlier[132] and, this being the case, was altered by Count Willem II around 1250. From a note of 1660 it is known that tuff was used for the foundation, which would indeed indicate a great age for the Torenburg. When the town canals were deepened in 1660 many heavy, thick tuff foundations were discovered to the east of the Friese Poort (Frisian Gate) and the nearby bulwark. These foundations were then dug up and sold. More remnants of the foundations came to light in 1835 during the shifting of the Noordhollands Kanaal. They were recorded in drawings by the supervisor. The drawings, projected onto the present situation, are reproduced in figure 42. The result is an incomplete ground-plan showing walls of *c.* 1 m thick, dominated by two heavy towers. The exterior cross-section of the towers was 7.5 m. The southern tower was partially broken away, probably during the construction of the town ramparts in 1528, considering the small step-tower which was built in its place and which very probably constituted a part of the town walls.

132 Cordfunke 1972, 144. The Torenburg was first mentioned on 12 September 1254 (see Kruisheer 1986, No. 1019).

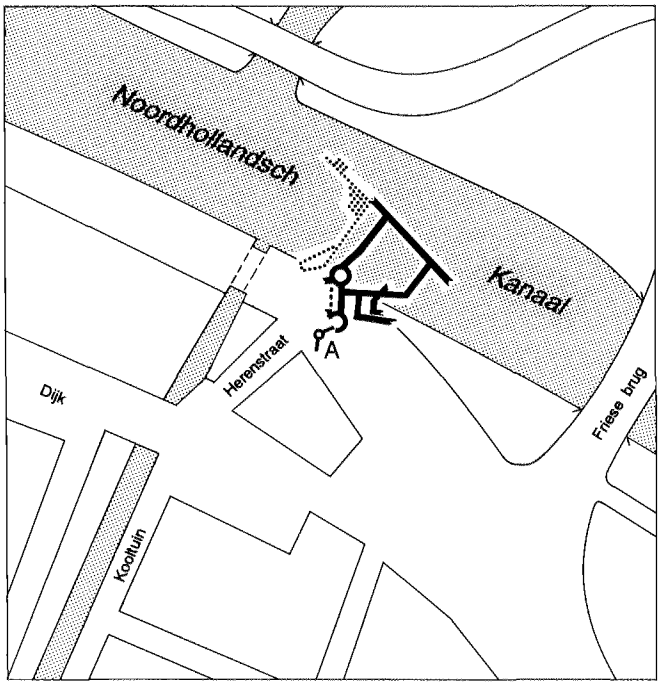


Figure 42 Torenburg: location and plan. Scale 1:2500. The narrow foundations (letter A) are possibly remnants of the town wall.

The ground-plan of the castle, which is only partly known, exhibits an irregular form in which a number of building phases appear to be present, particularly in the southern part. But at the same time the measurements indicate that the castle Torenburg was strategically situated at a point where the Rekere emptied out into the Voormeer. The castle terrain, which because of its position was later known as Hoog-Torenburg (High Torenburg), was taken on loan from the count by Hendrik van Torenburg in 1410. The terrain, at that time still within the jurisdiction of Oudorp,[133] took up barely two *morgen* (one *morgen* = 8516 m²). From the same document it appeared that a piece of land within the Rekerdijk, thus to the west, lay within the jurisdiction of Alkmaar. Consequently, Rekere and Rekerdijk, formed the border of Alkmaar in the Late Middle Ages after the Voormeer was pushed back at the beginning of the 14th century (fig. 44).

133 ARA, LRK 220, f. 70v.
134 Cordfunke 1978, 99–101.

The present-day Herenstraat formed the entrance road to the castle (fig. 42), and a dike was built to connect the castle with the urban settlement: the Dijk. Archaeological investigations have been carried out in two places on the Dijk. In 1975 (Cat. No. 23) it was possible to make a cross-section of the entire street (still called Dijk).[134] In 1984 (Cat. No. 56) a vertical section of the foot of the dike structure could be studied after the cheese factory De Karperton, which had stood on the site, was demolished.

The core of the Dijk consists of a 13th-century raised layer which probably was put down during the building or rebuilding of the Torenburg, *c.* 1250. A more accurate dating is not possible because of the scanty number of pottery fragments found in the oldest dike structure, but it is supported by the many brick fragments of the size 30?×14/15×7/7.5 cm and even a few of ?×15×9 cm.[135] These fragments were collected from the soil thrown up during the demolition of the cheese factory foundations. They probably came from the castle.

On a 12-cm thick layer of clay deposited by the Voormeer, the Dijk was raised from 0.9 m −NAP to a level which initially reached about NAP. The dike had to be raised twice during the 14th century and was thereby widened at the same time; the top of the dike then lay at about 0.25 m NAP.[136] At the end of the 15th century still another raising took place which, as shall be shown, formed part of a general raising of the eastern part of the town.

The lands within the Rekerdijk; the Dam and the Fnidsen

While the Voormeer was being pushed back from the west during the second half of the 13th and the beginning of the 14th century, a dam was being constructed in the Voormeer at about the same time directly south of the dike. An archaeological investigation in the Amro Bank trench at the Voordam in April 1970 (Cat. No. 12) revealed that the date for the raising of this territory was most probably still in the second half of the 13th century. Mainly humic and peaty clay were used for this. This was packed into compartments made of vertical wooden partitions which had been placed against rows of birchwood posts. In these compartments the clay layers were alternated a few times with layers of reed and wattle work.

135 The length is missing in most cases; for the dating see Alders 1985, 269.
136 Cordfunke 1978, 99–101.

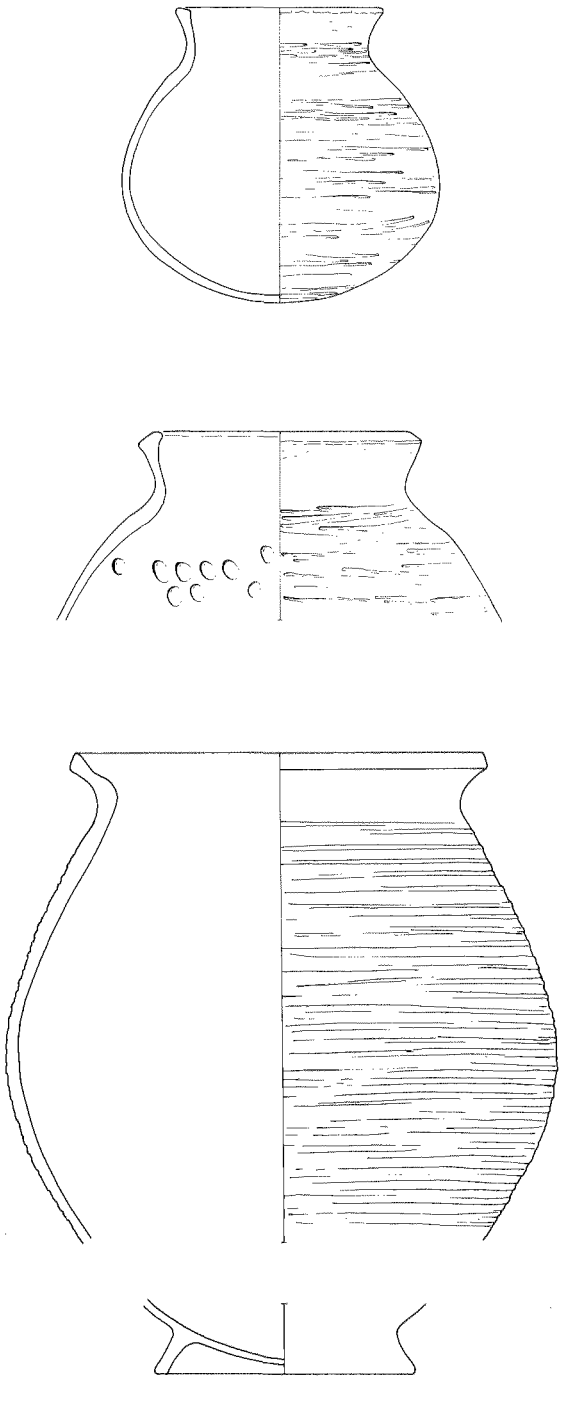


Figure 43 Site Cat. No. 12: pottery from the raised layers.

As on the Dijk, this raising was realized in several stages. The first stage amounted to *c.* 1 m and was deposited on top of *c.* 20 cm of Voormeer clay, thereby reaching a height of about 1.05 m −NAP. The pottery sherds found in this layer, mainly of *Kugeltopf* ware with 'brush-strokes' (fig. 43) and fragments of bricks (?×14.5×8 cm) placed this raising in the 13th century, probably in the last quarter.[137] In the first half of the 14th century the 'dam' was raised again, probably at the same time as the construction of the Fnidsen's north side, also a reclamation won by filling in the Voormeer and raising the ground level, where a farm house (*huis met hofstede*) stood in 1381.[138]

In figure 44, the situation in the *oostelijk stadsdeel* (eastern part of the town) around 1400 is shown. The Rekerdijk then formed the border of the town, which was greatly expanded in territory to the east after the filling in of the Voormeer. The course of this border is still clearly recognizable in the town plan along the present-day Hekelstraat. The Rekere emptied into the Voormeer at the Kooltuin; the Egmonder- and Bergermeer drained along the Langesloot and the Kortesloot in the Voormeer. The 'dam' therefore lay wedged in between the Voormeer and the Kortesloot after *c.* 1350.

A lock at the end of the Dijk served not only to regulate the water level but also aided in the catching of fish. In 1272 Count Floris V gave the fishing rights at this lock to Wouter de Fries, the steward of Kennemerland.[139] Opposite this lock stood a county office: '*srentmeesters huus biden sluyse*', as it is listed in the county records.[140] Houses were randomly spread across this newly-won territory, leading to the gradual emergence of certain names in the archives: Langestraat (1380), Fnidsen (1381), Houttil (1386). The archives also show that a farm stood on the Achterdam in the first half of the 14th century.[141] The data appear to be quite scarce until the

137 Originally it was thought that this raising took place at the end of the 13th or the beginning of the 14th century (Cordfunke 1978; 1988), but a closer study of the pottery, revealing the absence of, among others, Siegburg stoneware, shows that the raising must have taken place before 1300.

138 '*...apud vicum qui dicitur Venitzen stege...*', Gemeentearchief Alkmaar (Municipal Archive, here cited as GAA), town archive Inv. No. 2005, R 28.

139 Van den Bergh 1866–73, II, No. 226.

140 Wortel 1974, 42–3.

141 Cordfunke 1972, 90.

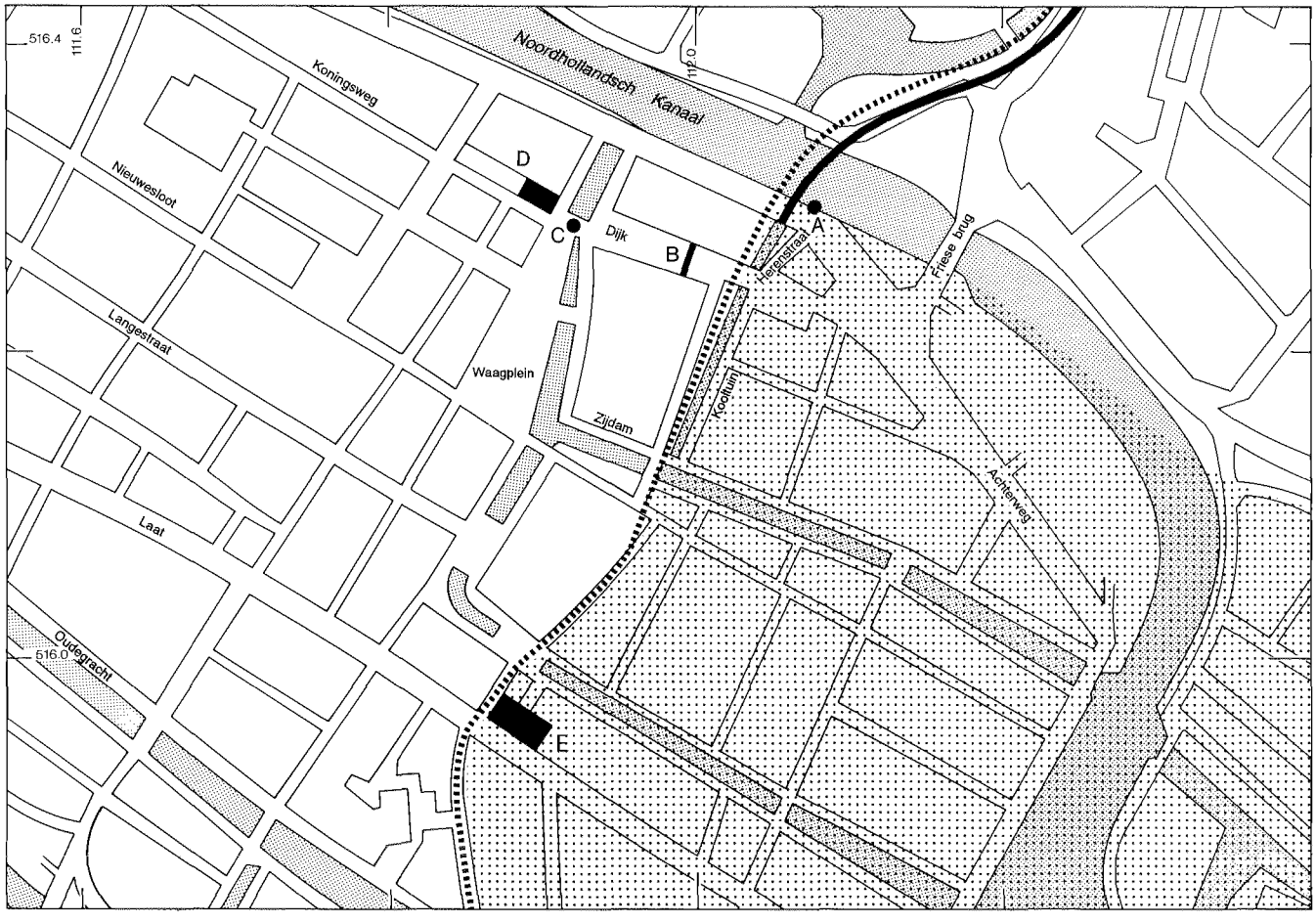


Figure 44 Alkmaar: eastern part with Rekerdijk and raised grounds. Scale 1:5000. Legend: 1 Rekere; 2 Rekerdijk; 3 Voormeer; A Torenburg; B vertical section through the Dijk (site Cat. No. 23); C lock; D '*srentmeesters huus biden sluyse*; E Kapelkerk.

end of the 15th century, when a process of accelerated land reclamation and the granting of land for development began. At that time, the town authorities prescribed the construction of the streets, which will be discussed later.

Town walls

When Alkmaar received its charter in 1254, it also received the right to fortify. A document from 1297 indicates that this task was soon taken up. In that year, Count Jan I of Holland concentrated an army within Alkmaar to fight against the rebellious West Frisians: '*in de vesten, tot Alcmaere*' (for meaning of *vest* see below), according to the chronicler and contemporary Melis Stoke.[142] In 1346 the Empress Margaretha requested her steward in Kennemerland to pay three pounds for the benefit of the '*vesten*' to those in Alkmaar to whom she stood in debt.[143]

142 Stoke 1885, II, book V, verse 977.

143 ARA, LRK 219, f. 14.

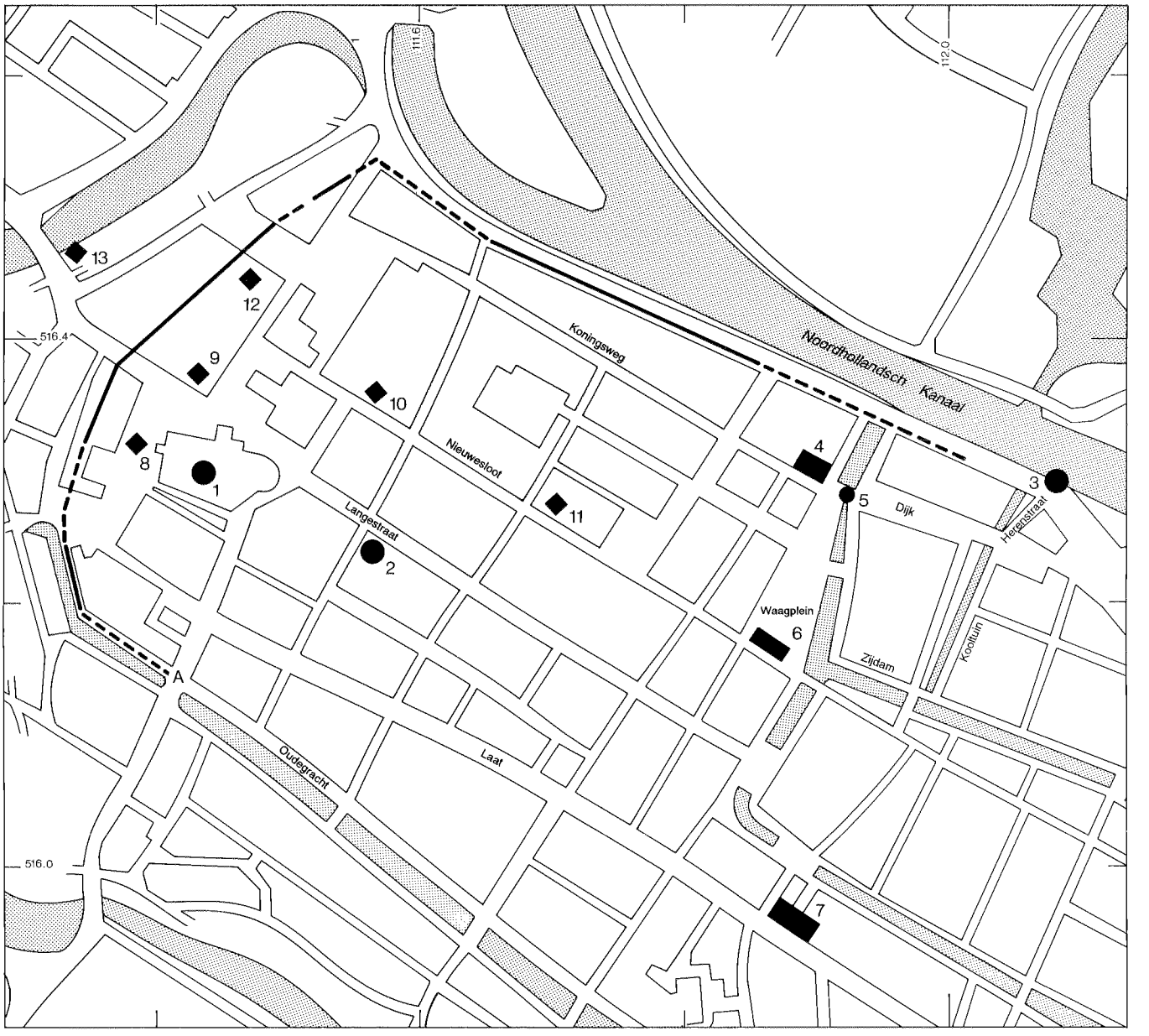


Figure 45 Alkmaar: town walls. Scale 1:5000. Legend: 1 Grote Kerk; 2 Town Hall; 3 Torenburg; 4 *'srentmeesters huus biden sluyse*; 5 lock; 6 Waag; 7 St Mary's chapel (Kapelkerk); 8 Oude Hof; 9 Middelhof; 10 Jonge Hof; 11 Witte Hof; 12 Monastery of the Friars Minor; 13 Convent of Poor Clares; A gate; B town wall.

A *vest* is a moat: a defensive canal dug around a town to protect its territory.[144] The removed earth could be used for the building of town walls or for ground-raising. Gatehouses were built where bridges crossed the moat. This was also the case in Alkmaar, for during the time of the *Hoekse en Kabeljauwse twisten* there is repeated mention of town gates: in 1426 Alkmaar lost its charter and was forced to exist as an open village, but in 1445 and 1452 Filips van Bourgondië decreed that the doors in the gates could be re-hung.[145] In 1492, after the *Kaas- en Broodvolk* uprising, Alkmaar lost its charter again and all the fortifications and gates had to be demolished. Alkmaar was an easy prey to plundering bands from Friesland and Gelderland in 1517, which proves that this sentence was fully executed. The town authorities then decided, with the permission of the sovereign, to build new fortifications. The construction began in 1528 with the Friese Poort (Frisian Gate), but the work continued with difficulty as a consequence of a shortage of funds. It was finally completed in the years 1536–1538.[146]

Archaeological investigation in Alkmaar has yielded little certain evidence of fortifications before 1500. There were probably no *stone* fortifications before that year, for when the town authorities in 1537 decided once more to build an earth wall behind the Oude Hof, this beguinage successfully opposed it.[147] The Nieuwesloot, and after 1400 the Koningsweg to the north,[148] and the Laat to the south formed the *vest*. Expansions to the north and south during the Middle Ages made it necessary to move the fortifications several times, as the aforementioned investigations revealed.

Fragments of the town walls of 1528 and 1537–38, as well as the foundation of the Gevangenpoort (prison gatehouse),[149] have been excavated. From the financial records it is known that the town bought the foundations of the former county castles Nieuwburg and Middelburg in November 1537 to use the stones for the construction of the town walls. It is therefore not surprising that many re-used bricks were found in the excavated wall foundations, including bricks of a size that was in general use at the end of the 13th century.[150] In the Paternosterstraat (Cat. No. 63), in the excavation of the Cultural Centre De Vest (Cat. No. 29), at the Heul (Cat. No. 15), and in the excavation of the post office (Cat. No. 7), large fragments of these foundations were excavated and recorded in drawings. Moreover, as early as 1946 the foundation of the old town walls along a large section of the Kanaalkade was exposed and measured by the Department of Public Works; this wall, dating to 1528, was only 72 cm thick. The walls dating to 1537–38 and located behind the Grote Kerk and the monasteries were considerably heavier: the walls here, built on sparing arches, were as thick as 1.25 m in some places.

An important part of the oldest stone town walls has now been recorded in drawings. The course of these walls is shown in figure 45.

BUILDINGS IN MEDIEVAL ALKMAAR

Most of the houses in Alkmaar were still wooden into the 15th century. So a distinguished man such as Jan Lambrechtszoon received full ownership of a wooden house with surrounding estate in the Langestraat in 1395.[151] The sparse data[152] indicate that many of these houses stood on land which included orchards as well. This emphasizes the rural character which the town had until the end of the Middle Ages.[153] The number of houses in the years 1493, 1498, and 1516 amounted to 1031, 784, and 889, respectively.

Only the most important buildings were of stone (fig. 44). Before 1300 this was probably only the parish church, a forerunner of the present Grote Kerk which was built between 1470 and 1509.[154] Because no archaeological investigation has taken place in the church, nothing is known of the preceding buildings.

144 Hoek 1981, 122.
145 GAA, town archive Inv. Nos. 143, 144, 156.
146 Cordfunke 1978, 178.
147 GAA, town archive Inv. Nos. 1743, R 162.
148 Cordfunke 1978, 106.
149 Cordfunke 1972, 96.
150 Cordfunke 1972, 94.
151 ARA, LRK 228, f. 193 v.
152 Cordfunke 1978, 160.
153 The previously-mentioned Koning Willemshuis (the steward's house near the lock) was described in 1506 as '*een huys mitten erve mit eenen boomgaert achter tvoirsz. huys*' ('a house with grounds, with an orchard behind the aforementioned house'). The map of Jacob van Deventer (*c.* 1560) still shows a great deal of green within the town borders.
154 Van Wigcheren 1966, 46 ff.

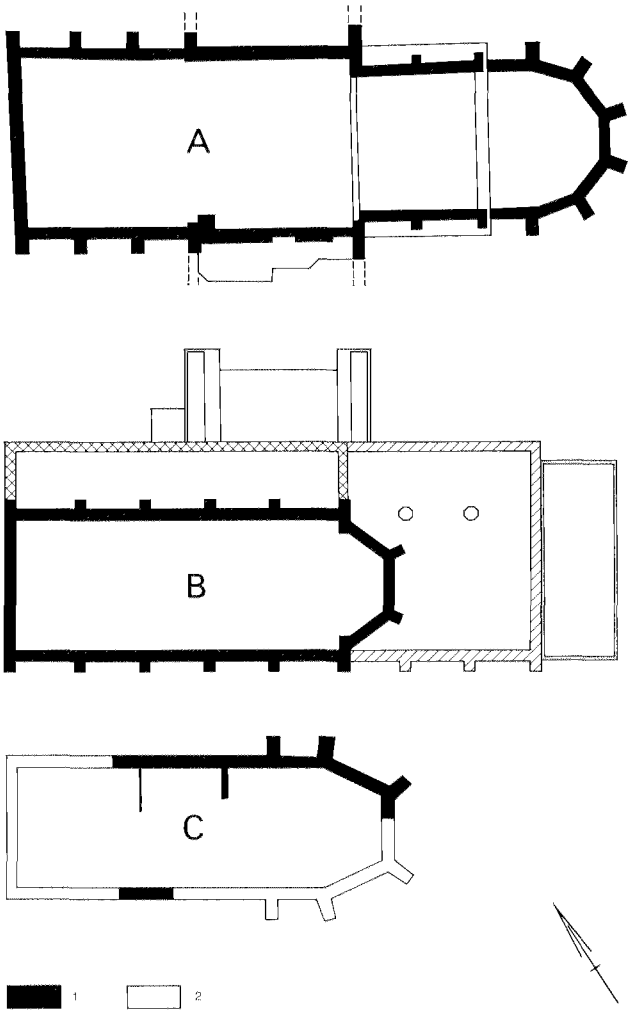


Figure 46 Alkmaar: plans of chapels. Scale 1:500. Legend: A Holy Ghost chapel (the outline of the present Waag building is indicated); B St Mary's chapel, with the plan of the present Kapelkerk; C Chapel of the Jonge Hof: 1 oldest phase, 2 reconstructed.

155 Cordfunke 1978, 169–70.
156 GAA, *archief Oude Hof*, Inv. No. 2; also *archief Jonge Hof*, Inv. No. 2.
157 Cordfunke 1972, 77–8; also the investigation at the site of the former Fire Station (Cat. No. 53).
158 Wortel 1966, 64.

At the end of the 14th century, a number of beguinages were constructed north-west of the town. The building of the Oude Hof behind the Grote Kerk, but within the town moat, began in 1394.[155] This residence is only known from illustrations (among them Drebbel's handsome map from 1597); archaeological investigations around the Grote Kerk have shown that its foundations were completely demolished in the 19th century. The Jonge Hof was constructed in the years 1415–1433, a large complex of buildings along the Nieuwesloot which extended at that time to the town moat (Koningsweg).[156] This building is also best known from representations on maps (among these the oldest cadastral map of 1823) and drawings. Archaeological investigation[157] has revealed that the foundations of this building have been almost completely removed. A single wall fragment along the Nieuwesloot, as well as a part of the foundations of the chapel (consecrated 1st May 1433) have been spared (brick format 22/21×10/9.5×4.5 cm). The foundations were laid in an area which had earlier been raised with clay. Because a part of the choir and the entire western section of the chapel was broken up, only a partial reconstruction of the ground-plan of the chapel is possible (fig. 46: C). The length of the chapel is taken from the cadastral measurements of 1823.
Between the Oude Hof and the Jonge Hof, another beguinage, the Middelhof, was built between 1430 and 1452. As with the others, only illustrations remain to recall the original building, which was taken down in 1867. The Witte Hof along the Nieuwesloot (built before 1430), the monastery of the Friars Minor on the Paternosterstraat (founded 1447), and the convent of the Poor Clares (founded 1492) outside the town moat complete this overview of the spiritual foundations, which for much of the 15th century gave rise to a great deal of building activity to the north of the medieval town centre. Only the Witte Hof still exists in part as the Hof van Sonoy.
In addition to the aforementioned hospice with a chapel on the present-day Waagplein (Weighing House Square; fig. 46: A), two other buildings dominated the townscape of medieval Alkmaar: 't Hooge Huys (High House) and the Kapelkerk (a chapel built on the Laat; fig. 46: B). 't Hooge Huys, opposite the Grote Kerk, was taken down in 1753. It was probably built to be the steward's house: the notorious Claes Corf resided there in 1492 at the time of the *Kaas- en Broodvolk* uprising.[158] During the investigation at the Dubbele Buurt (Cat. No. 50) a small part of a heavy brick wall (brick

format 25×11.5/12×5.5/6 cm) was excavated, which possibly constituted a part of 't Hooge Huys.
The Kapelkerk was founded most probably *c.* 1440.[159] It was originally a small chapel with a three-sided chevet which W.J. Reder excavated during the restoration of the Kapelkerk in 1953–1954 (Cat. No. 1).[160] The brick size, the form of the choir, and the length of the chapel are almost identical to those of the Jonge Hof (consecrated 1433; fig. 46: c), leading to the assumption that the buildings were constructed simultaneously. This is supported by the age of one of the bells of the Kapelkerk, cast in 1443.[161] The Kapelkerk was first widened at the beginning of the 16th century. Afterward it was lengthened by three bays, giving the Kapelkerk its current measurements.

THE COMPLETION OF THE *OOSTELIJK STADSDEEL*

At the end of the 14th or the beginning of the 15th century, the shore of the Voormeer was again moved eastward so that the bend at the Laat disappeared. An archaeological investigation of limited range on the square behind the Kapelkerk (1978, Cat. No. 34) showed that the terrain there was raised at the end of the 14th or the beginning of the 15th century. The pottery from the deepest level of the raised layer consists mainly of fragments of sparsely-glazed red pottery and of unglazed Rhineland imports as well as a few sherds of pottery from Langerwehe with brown iron slip. This dating is in agreement with the probable age of the earliest Kapelkerk, which must have been built around 1440 for the seamen and merchants in this expanding harbour quarter.
The situation changed again in the 15th century: from that century's last quarter onwards, the rest of the Voormeer was pushed back to the present-day Bierkade. Archaeological observations at various points in this area (Cat. Nos. 19, 20, 40, and 49) showed a late 15th-century raising which had been laid directly on top of a *c.* 20-cm thick layer of clay deposited by the Voormeer.
This picture agrees with the written data, from which it appears that at this point the building had still not begun. In 1470 the churchwardens were obliged to sell the swampy lands of the filled-in Voormeer to pay for the building of the Grote Kerk. The town authorities then stipulated that streets had to be measured out forthwith; the *burgemeesters* were required to supervise the various aspects of this task, the width of the streets, for instance. The progress after 1479 can thus be followed closely: in 1482 the St. Jansstraat (now the Hekelstraat) was measured out, with the Huigbrouwerstraat following in 1486. Going further north, the Fnidsen was extended eastward around 1500. Mention of the Nieuwstraat first appears in 1531. Thus the Voormeer continued to be pushed eastward[162] and the rectilinear street plan in the eastern part of the town came into existence. On Cornelis Drebbel's map from 1597 we see that the process has been completed. Alkmaar's characteristic ground-plan, which it retains today, was in place.

ACKNOWLEDGEMENTS

The investigations presented here took place under the auspices of the Alkmaar municipal authority, which has funded the work since 1968. The author would therefore first like to thank the successive colleges of *Burgemeester en Wethouders* (mayor and aldermen) and their chairmen, the late H.J. Wytema, R.J. de Wit, and C.M.L. Roozemond, who have made this work possible.
The field work could not have been carried out in this way without the continued assistance of A. den Dulk and F. van Marle of the Alkmaar Department of Public Works, as well as the co-workers of the geodesial section of this department. A special word of recognition goes to W.J. Reder who began the archaeological research of Alkmaar in 1958.
The cooperation of co-workers of various institutes has been of enormous value to this study. First, from the ROB: the late A. Bruijn, Dr H. Halbertsma, the late A. van Pernis, J.F. van Regteren Altena, and P.J. Woltering. The drawing department of the ROB contributed a great number of illustrations, whilst the restoration department expertly cared for the Alkmaar material (pottery, leather, and metal).

159 Cordfunke 1979b, 81–2; compare with Fasel 1979, 272–6.
160 Reder 1967, 64 ff.
161 Cordfunke 1979b, 82; the inscription on the bell reads: '*Sinte Jan is mijn naam, mijn geluyt sij God bequaem, Pieter van Dormen,* MCCCC XLIII'.
162 Fasel 1980, 361 ff.

The leatherwork collected in Alkmaar was investigated by Professor W. Groenman-van Waateringe of the IPP. Soil samples for pollen analysis were examined by J. de Jong of the RGD, and Professor W.A. van Zeist of the BAI. Dr A. Clason of the BAI directed the archaeo-zoological investigation of the animal bones collected in Alkmaar.

The wood samples for ^{14}C dating were treated and measured in the Centre for Isotope Research of Groningen University under the supervision of Professor W.G. Mook. Ms E. Jansma of the IPP undertook the dendrochronological investigation of several wood samples. Over the years, many have been helpful in the interpretation of the results of the Alkmaar investigation. Without attempting to assemble a complete list, I would like to acknowledge the following: the late H.J. Calkoen, the late Dr J.K. de Cock, J.W. Groesbeek (Haarlem), Dr H. Halbertsma (ROB), Professor H.H. van Regteren Altena (IPP). A special mention must be made of P.J. Woltering and J.F. van Regteren Altena (ROB) for their help in the preparation of this report. Ms Nancy Forest-Flier translated the text into English. Ms Karen Waugh edited the English. Finally, I wish to express my thanks to the former director of the ROB, Professor W.A. van Es, who since 1968 has assured me of his trust in the Alkmaar investigation and has generously made available the facilities of the ROB.

CATALOGUE

The following catalogue gives a summary of all findspots in the centre of Alkmaar since 1956. The catalogue has a chronological order, i.e. according to the date of the successive investigations. The numbers correspond with those on the survey map of the town centre (fig. 3) and with those on the detailed survey of the various findspots or investigations in this publication. For each findspot or investigation the following data have been recorded:

a place of investigation or findspot
b date
c information about the location and circumstances of the investigation
d literature
e repository of the find(s)

1 KAPELKERK (1953–1954)
a Laat
b 1953–1954
c during the restoration, including an investigation of the foundations
d Reder 1967a
e –

2 HELDERSEWEG (1956)
a Helderseweg 10
b March 1956
c find of flint sickle in the building trench of 50-kV provincial electric station
d Haalebos 1959; Cordfunke 1972, 13–4
e unknown (see note 23)

3 HEMA (1958)
a Langestraat, corner Van den Boschstraat
b January 1958
c by W.J. Reder during the digging of the building trench
d Reder 1965; Haalebos 1966; De Jong & Van Regteren Altena 1972
e OWA

4 'T HOOGE HUYS (1959)
a St Laurensstraat, corner Gedempte Nieuwesloot
b April 1959
c by W.J. Reder during the digging of the building trench
d –
e OWA

5 HEUL (1961)
a Heul
b July 1961
c by the RMO (Dr W.C. Braat)
d –
e RMO

6 CENTRAL TELEPHONE EXCHANGE (1964)
a Heul, corner Gasthuisstraat
b 1964
c by W.J. Reder during the digging of the building trench, in cooperation with J. de Jong (RGD) and J.F. van Regteren Altena (ROB)
d De Jong & Van Regteren Altena 1972, esp. 33–40
e OWA

7 POST OFFICE (1963–1965)
a Gasthuisstraat
b December 1964, January 1965
c by W.J. Reder during the digging of the building trench, in cooperation with J. de Jong (RGD) and J.F. van Regteren Altena (ROB)

d De Jong & Van Regteren Altena 1972, esp. 40–42
e OWA

8 HOFPLEIN (1967)
a Hofplein, corner Ramen
b July 1967
c by W.J. Reder during the digging of the building trench
d Reder 1967b
e OWA

9 TOWN HALL (1968)
a Breedstraat
b September 1968
c during and after the digging of the building trench
d Cordfunke 1968; De Jong & Van Regteren Altena 1972, esp. 47–51; Cordfunke 1978, esp. 70–9
e OWA

10 TORENBURG (1969)
a Torenburg, corner Kooltuin
b August 1969
c test trench
d Cordfuke 1972, esp. 138–50
e OWA

11 FORMER LANDBOUWHUIS (1969)
a Gasthuisstraat
b October, November 1969
c test trench
d Cordfunke 1972, esp. 22–4
e OWA

12 VOORDAM (1970)
a Voordam, corner Zijdam
b April, May 1970
c during and after the digging of the building trench for the Amro Bank
d Cordfunke 1972, esp. 87–90; 1978, esp. 102–3
e OWA

13 FORMER ROG BUILDING (1970)
a Waaigat (between the Grote Kerk and the post office)
b June, July 1970
c after the demolition of the ROG building in cooperation with Dr H. Halbertsma (ROB)
d Cordfunke 1972, esp. 20–2
e OWA

14 'T HOOGE HUYS (1970)
a Gedempte Nieuwesloot
b October 1970 and December, January 1971
c preceding the building of an archive vault and after the digging of the building trench
d Cordfunke 1972, esp. 69–77
e OWA

15 HEUL (1972)
a Heul and Scheteldoekshaven
b March and April 1972
c during the laying of the sewer pipe and reconstruction of the road scheme
d Cordfunke 1972, esp. 15–20
e OWA

16 GASTHUISSTRAAT (1972)
a Gasthuisstraat
b August 1972
c during the laying of a new sewer pipe
d Cordfunke 1972, esp. 97
e –

17 FORMER GEWESTELIJK ARBEIDSBUREAU (1972)
a Gedempte Nieuwesloot
b August 1972
c on a lot made vacant after the demolition of a part of the Gewestelijk Arbeidsbureau
d Cordfunke 1972, esp. 77–81
e OWA

18 BREEDSTRAAT (1972)
a Breedstraat, southern side
b October 1972
c after the digging out of a cellar
d Cordfunke 1972, esp. 81–4
e OWA

19 VERDRONKENOORD (1973)
a Verdronkenoord 56
b July 1973
c. during the narrowing of the Verdronkenoord (a canal)
d –
e OWA

20 VERDRONKENOORD (1973)
a Verdronkenoord 38
b November 1973
c during activities connected with the narrowing of the Verdronkenoord
d Cordfunke 1978.
e OWA

21 WITTEVEEN (1974)
a Langestraat up to the Breedstraat
b June 1974
c preceding the building of the shop
d Cordfunke 1978, esp. 59–67
e OWA

22 KONINGSWEG (1975)
a Koningsweg 14–30
b April 1975
c during the digging of a building trench
d Cordfunke 1978, esp. 106–7
e OWA

23 DIJK (1975)
a Dijk
b June 1975
c trench running transversely across the Dijk
d Cordfunke 1978, esp. 99–100
e OWA

24 BREEDSTRAAT (1975), HIJ
a Breedstraat, northern side, 26–28
b September 1975
c preceding digging for shop building
d Cordfunke 1978, esp. 103–6
e OWA

25 PATERNOSTERSTRAAT (1975)
a Paternosterstraat
b December 1975
c in a test trench and during the laying of a sewer pipe
d –
e OWA

26 CANADAPLEIN (1976)
a Canadaplein
b January 1976
c test trench preceding the digging of the building trench for Cultural Centre De Vest
d –
e OWA

27 LANGE AUGUSTIJN (1976)
a Langestraat
b April 1976
c preceding the building of a shopping centre
d Cordfunke 1978, esp. 67–70
e OWA

28 CANADAPLEIN (1976)
a Canadaplein
b June 1976
c building trench for Cultural Centre De Vest
d Cordfunke 1978, esp. 30–3
e OWA

29 CANADAPLEIN (1976)
a Canadaplein
b November 1976
c building trench for car park
d –
e –

30 HOFPLEIN (1977)
a Magdalenenstraat, corner Hofplein
b May 1977
c trench for commercial building
d –
e OWA

31 WAAG (1977)
a Waagplein
b October 1977
c investigation of the chevet of the Gasthuiskapel, in cooperation with Dr H. Halbertsma (ROB)
d Cordfunke 1978, esp. 151–7
e OWA

32 HERENSTRAAT (1978)
a Herenstaat, corner Dirk Duivelsweg
b March 1978
c during the laying of a sewer pipe
d –
e OWA

33 TOWN HALL (1978)
a Breedstraat
b April 1978
c preceding the building of the fourth wing of the town hall
d Cordfunke 1978, esp. 70–6
e OWA

34 KAPELKERK (1978)
a Verdronkenoord
b April 1978
c on the square behind the Kapelkerk
d Cordfunke 1979c, esp. 85
e OWA

35 KANAALKADE (1978)
a Kanaalkade
b December 1978
c building trench for commercial building
d –
e OWA

36 DUBBELE BUURT (1979)
a Dubbele Buurt
b April 1979
c test trench

d Cordfunke 1982, 25
e –

37 MOSTERDSTEEG (1979)
a Mosterdsteeg
b August 1979
c investigation and measurement of kiln
d Cordfunke 1987, esp. 13–5.
e OWA

38 KERKPLEIN, LANGESTRAAT (1979)
a Kerkplein and Langestraat
b August–September 1979
c during the laying of a new sewer pipe
d –
e OWA

39 DUBBELE BUURT (1979)
a Dubbele Buurt
b September 1979
c test trench
d –
e OWA

40 TORENBURG (1979)
a Torenburg
b November 1979
c test trench
d –
e OWA

41 HEUL (1980)
a Heul, Kerkstraat
b February 1980
c test trench
d Cordfunke 1982, esp. 10–4.
e OWA

42 INTERKRUIS (1980)
a Gasthuisstraat
b May 1980
c building trench
d –
e OWA

43 BAGIJNENSTRAAT (1980), 'T HOOGE HUYS
a Bagijnenstraat, corner Kerkstraat
b May 1980
c preceding building of a car park
d Cordfunke 1982, esp. 10–22
e OWA

44 KOORSTRAAT (1980)
a Koorstraat, west side
b August 1980
c building trench for public library
d Cordfunke 1982, esp. 21–2.
e OWA

45 KONINGSWEG (1980)
a Koningsweg
b December 1980
c after demolition of a building, measurements of foundations
d –
e OWA

46 SNAARMANSLAAN (1981)
a Snaarmanslaan
b September 1981
c test trench
d –
e –

47 BREEDSTRAAT (1981)
a Breedstraat, south side, 37–41
b December 1981
c preceding construction of a commercial building
d Cordfunke, in: Woltering 1982, 214
e OWA

48 KONINGSWEG (1982)
a Koningsweg
b September 1982
c test trench
d Cordfunke, in: Woltering 1983, 223–5
e OWA

49 TORENBURG (1982)
a Torenburg 4
b November 1982
c test trench
d Cordfunke, in: Woltering 1983, 225
e OWA

50 DUBBELE BUURT (1983)
a Dubbele Buurt
b January 1983
c on a lot made vacant after demolition
d Cordfunke, in: Woltering 1984, 220
e OWA

51 BAGIJNENSTRAAT (1983)
a Bagijnenstraat
b February 1983
c test trench
d –
e –

52 GEDEMPTE NIEUWESLOOT (1983)
a Gedempte Nieuwesloot, corner Paardenmarkt
b November 1983
c preceding the building of a shopping centre
d Cordfunke, in: Woltering 1984, 220
e OWA

53 DUBBELE BUURT–NIEUWESLOOT (1984) SITE FORMER FIRE STATION
a Dubbele Buurt
b February 1984
c preceding the building of a shopping centre
d Cordfunke, in: Woltering 1985, 336
e OWA

54 DOELENSTRAAT (1984)
a Doelenstraat, corner Nieuwesloot
b February 1984
c on the site of the chapel of the hospice Jonge Hof
d Cordfunke, in: Woltering 1985, 336
e OWA

55 GEDEMPTE NIEUWESLOOT (1984)
a Paardenmarkt
b April 1984
c on a vacant lot
d Cordfunke, in: Woltering 1985, 336
e OWA

56 KARPERTON (1984)
a Dijk
b July 1984
c test trench preceding building of car park
d Cordfunke in: Woltering 1985, 336
e OWA

57 ST. LAURENSSTRAAT (1984)
a St. Laurensstraat, corner Gedempte Nieuwesloot
b September 1984
c on a vacant lot
d Cordfunke, in: Woltering 1985, 336
e OWA

58 DOELENVELD (1985)
a Doelenveld
b July 1985
c test trench
d Cordfunke, in: Woltering 1986, 291
e OWA

59 DOELENSTRAAT (1985)
a Doelenstraat 11
b October 1985
c after demolition of buildings, preceding construction work
d Cordfunke, in: Woltering 1986, 291
e OWA

60 DOMINICUSKERK (1985)
a Laat
b November 1985
c test trench preceding building of shopping centre
d Cordfunke, in: Woltering 1986, 291
e OWA

61 HOUTTIL (1986)
a Houttil, corner Waagplein
b April 1986
c test trench
d Cordfunke, in: Woltering 1987, 300
e. OWA

62 LUTTIK OUDORP (1986)
a Luttik Oudorp 84–86
b July 1986
c test trench
d Cordfunke, in: Woltering 1987, 300
e OWA

63 PATERNOSTERSTRAAT (1986)
a Paternosterstraat
b October 1986
c preceding construction of a commercial building
d Cordfunke, in: Woltering 1987, 300
e OWA

64 ACHTERSTRAAT (1987)
a Achterstraat 34–36
b April 1987
c test trench
d Cordfunke, in: Woltering 1988, 296
e OWA

65 MAGDALENENSTRAAT (1988)
a Magdalenenstraat 17
b November 1988
c preceding construction of a block of flats
d Cordfunke, in: Woltering 1989, 296
e OWA

66 SCHOUTENSTRAAT (1989)
a Schoutenstraat
b January 1989
c preceding construction of commercial building
d Cordfunke, in: Jager & Woltering 1990, 316
e OWA

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