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A BRONZE AGE CONCENTRATION AT  
BARGERROOSTERVELD

*With some Notes on the Axe Trade across Northern Europe.*

(Pl. XIV–XIX, figs. 47–56)

*In Part I of this article, we describe three small Late Bronze Age hoards and some stray bronzes, found in the last years of the last century near the hamlet of Bargerroosterveld in southeastern Drenthe<sup>1</sup>. In Part II, we discuss some aspects of the Bronze Age axe trade between the British Isles, the Netherlands, and Northern Europe generally, in relation to the Bargerroosterveld finds and to some recent studies.*

I. THE BRONZE AGE CONCENTRATION AT BARGERROOSTERVELD

The name Bargerroosterveld is already a familiar one in the world of prehistory. Here in the peat in 1953 an Early Bronze Age dagger was found, with its horn hilt still preserved, and bearing patterns made with copper and tin nails (Glasbergen, 1956, 1960). Here too, in 1957, was excavated from the bog a unique wooden ritual building surrounded by a circle of stones, belonging to the end of the Middle or the beginning of the Late Bronze Age (van Zeist and Waterbolk, 1961).

The pollen and C<sub>14</sub> investigations conducted in connection with these discoveries have already made their contribution to the framework of general prehistory.

This article is concerned with some Bronze Age finds made at Bargerroosterveld sixty to sixty-five years ago, and then more or less forgotten in the cellar of the Assen Museum, until lately brought to light again. They consist of thirteen bronzes, mostly of types foreign to this region, stemming from five separate finds, three of which appear to be small hoards of votive or ritual character. All these finds were made in the five-year period 1896–1900. This is a remarkable harvest for one tiny hamlet in a metal-poor region.

Until very recently only one object of the thirteen had been illustrated in the literature, and the hoards were not recognized as such. Two of the hoards have special interest as 'contact finds' useful for cross-dating; the third may contribute

to the problem of the dating of the earliest Urnfield immigration into this region. All the objects from Bargerosterveld have a part to play in the history of trade.

The five finds (detailed descriptions of which are given in an Appendix, pp. 122–4 below), listed in the order in which they were inventoried in the Assen Museum, are as follows:

- (1) Dec. 1896 Two ornamented socketed axes, found together; one of the Nordic ‘Seddin’ type, the other of a local variety (Pl. XV; fig. 52).
- (2) Oct. 1897 A socketed axe, of a form common in southeastern England and northwestern France, and with ribbed imitation wings (fig. 54).
- (3) Feb. 1898 A spearhead with loops at the base of the blade, an Irish or British type (fig. 48).
- (4) Feb. 1899 A razor with openwork handle and a single-edged knife, both of Central European Urnfield types; apparently found together (Pl. XIV: 1; fig. 50).
- (5) Mar. 1900 Seven bronzes, found together in a tumulus: a pair of Northwest German bracelets, two palstaves of a British type, a small Urnfield knife, fragments of a spiral armband, and a pin (the last now lost) (fig. 49).<sup>2</sup>

The detailed justification for the reconstruction of the three closed finds we have given in detail elsewhere (Butler, 1960), so only a summary of the evidence need be given here. We then consider the origins of the objects, and the significance of their concentration at Bargerosterveld. In Part II we examine especially the axe finds (together with some others from the Netherlands) in their European setting.

#### THE THREE HOARDS FROM BARGEROSTERVELD

The hamlet of Bargerosterveld (fig. 47) lies at the southern end of the *Hondsrug*, the sandy moraine ridge which stood out like a low island amid the extensive bogs which formerly surrounded it. At the end of the last century, when the finds described herein were made, the immediate environs of the hamlet were for the most part desolate heath, bordered on the east by even more desolate bog. One account tells us that in the heath area just northeast of the village, locally called ‘Barnar’s Bos’ (where, according to a tradition, an ancient city once stood), tumuli were very numerous. The tumuli have all since disappeared, the heath having been reclaimed and converted into tidy farms. Just southwest of the village, an Urnfield seems also to have fallen victim to reclamation; its last traces were seen, too late for any useful excavation, by Dr. van Zeist in 1956<sup>3</sup>. The precise find-spot of none of these five finds from Bargerosterveld is known; except that two of them

(the hoard of 1896 and the looped spearhead) are stated to have been found at Barnar's Bos. This (see fig.47) is the heath area which lies closest to the point in the bog, a few hundred yards from the edge of the sand, where the wooden ritual building was found. It appears, from local inquiry, that at the period in question many archaeological finds were made by inhabitants of the district in the course of digging in the moraine for stones. The hoard of 1896 is specifically stated in the records to have been found in this manner; for the others no such

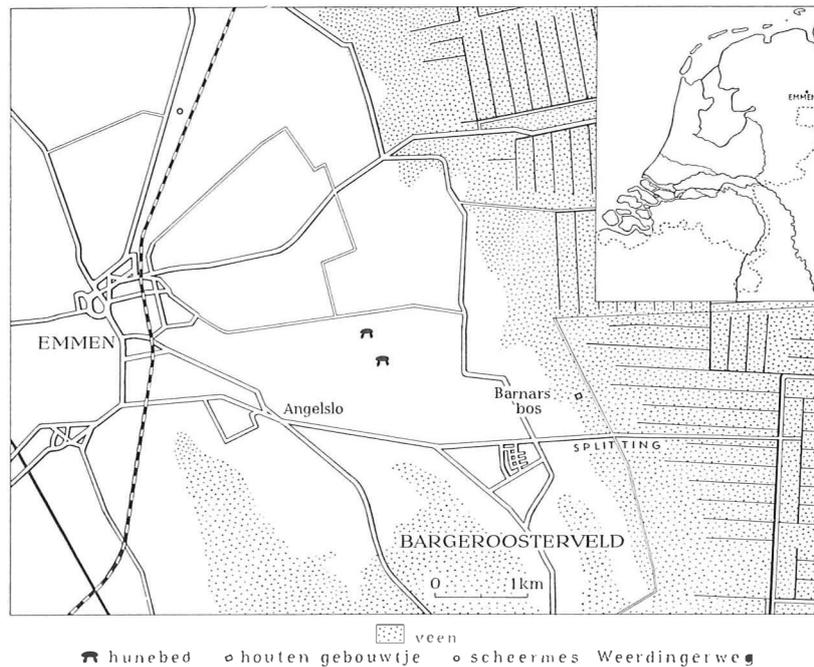


Fig. 47. Map of the Emmen district, showing the hamlet of Bargerooosterveld, the district 'Barnars bos', the site of the wooden ritual structure (small square), and the site of the Weerdinger Weg urnfield and razor (small circle). The stippled area represents bog; the unshaded area, the sandy *Hondsrug*.

information has been preserved. The hoard of 1896 came to the Museum from its finder, a sheep-farmer, Willem Alberts, through the intermediary of the then Mayor of Emmen (in which *Gemeente* or community Bargerooosterveld lies). The others were acquired from the finders by a tax inspector then resident in Emmen named C. G. J. A. van Genderen Stort, who was active in antiquarian circles and who served from 1898 to 1901 (when he left the province) as a member of the executive committee of the Provincial Museum in Assen; and who frequently purchased finds on behalf of the Museum.

We were most pleasantly surprised to find that, 60–65 years after these events their leading participant, Mr. Van Genderen Stort, was alive and in excellent health and living in retirement in the Hague, at the age of 99½. The present writer and Mr. Van der Waals visited him in November 1959; he was, of course, unable to recall the exact circumstances connected with the bronzes which he had acquired for the Museum so long ago, and which we had brought along to show him; but he was very helpful in explaining the general background, which he remembered quite well. We were pleased to be able to offer Mr. Van Genderen Stort an article concerning these finds, contained in a section of the *Nieuwe Drentse Volksalmanak* also dedicated to him, for his 100th birthday on 27 June 1960.

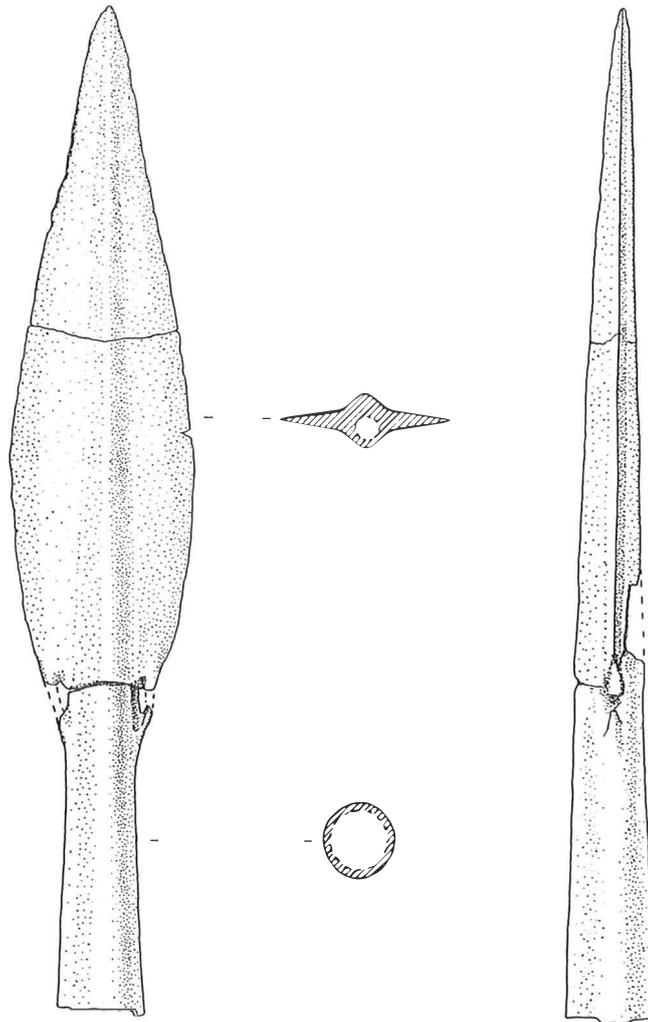


Fig. 48. Bargerooosterveld. The looped spearhead. Scale 1 : 2.

*The hoard of 1896* was found, according to the Mayor, Mr. Tijmes, who forwarded it to the Museum with a covering letter dated 22 January 1897, by the sheepraiser

Alberts 'at Bargerosterveld, lying on the eastern (side of the) *Hondsrug* fronting on the bog,  $\frac{1}{2}$  meter deep in the ground, on the occasion of digging for stones.' The find was also investigated, apparently independently, by Van Genderen Stort, who stated in a letter dated 24 December 1896 that 'the axes were found at the so-called Barnar's Bosch, a couple of thousand meters east of the *Hunebedden* of Angelsloo. They lay at a depth of 60 cm. in yellow sand'. The two accounts, though differently phrased (which argues for their independence), thus tell the same story. The two socketed axes are identical in patina and state of preservation, which are quite distinctive and not to be confused with any other objects in the Museum, providing objective confirmation of their association. It is, therefore, surprising that at some point of their history in the Museum the larger of the two axes was painted, in neat white letters, with a quite erroneous inventory number (1878/VI.9); a number which rightfully belongs to a palstave found in peat at Norg. It would be merely tedious to repeat here all the detailed proof by which this error has been corrected (see Butler, 1960, 214 ff, with the there appended letter by Van der Waals, pp. 228–31).

*The hoard of 1900* is documented in the Museum records only by a list of the seven objects (one of which has since been lost) appended by Van Genderen Stort to his letter of 5 March 1900. At the bottom of this list he adds, 'the above 7 objects of bronze were found together in a small tumulus in the Bargerosterveld (in the neighborhood of Angelsloo) approximately 25 cm under the ground'. The objects are similarly patinated, except that the two bracelets are somewhat duller and darker than the others, which does not necessarily rule out their having been part of the same deposit. Their presence in a tumulus argues more for their having formed a hoard of votive character than a grave group; such a collection of objects would not occur as grave goods in this area, and the anciently broken condition of some of the objects points also in the direction of a votive hoard.

*The hoard of 1897* is the least satisfactorily documented of the three; the knife and razor were acquired together by the Museum from Van Genderen Stort, who had presumably bought them from the original finder. Unfortunately no records concerning the find are preserved in the Museum except the receipt signed by Van Genderen Stort for payment for the 'two bronze knives (sic) found in the Bargerosterveld'. There is thus no explicit statement that they were found together. The two objects have, however, an absolutely identical dark-green-to-blackish patina; and further, on the blade of the knife is a mark in the patina which corresponds in shape to that of the tip of the razor. This mark is superimposed on a stain of the sort commonly left on bronzes by the decay of a wooden hilt. It therefore seems as if the tip of the razor's blade had been lying on the handle of the knife; when the handle decayed, the tip of the razor was pressed into contact with the knife blade, and left its mark there. Given these circumstances, it seems



## THE DATING OF THE BARGEROSTERVELD FINDS

The bronzes from Bargerosterveld all belong to what may broadly be called Urnfield times; using that term in its South German sense, and leaving aside for the time being the question of when exactly our local Urnfields begin. The earliest of the thirteen objects is perhaps the looped spearhead. Dated British parallels are practically all of the Taunton-Barton Bendish phase or 'ornament horizon' (M. A. Smith, 1959, 178 ff.), which corresponds with late Montelius III and the beginning of IV. One exported example was found in a Rhineland Urnfield grave at

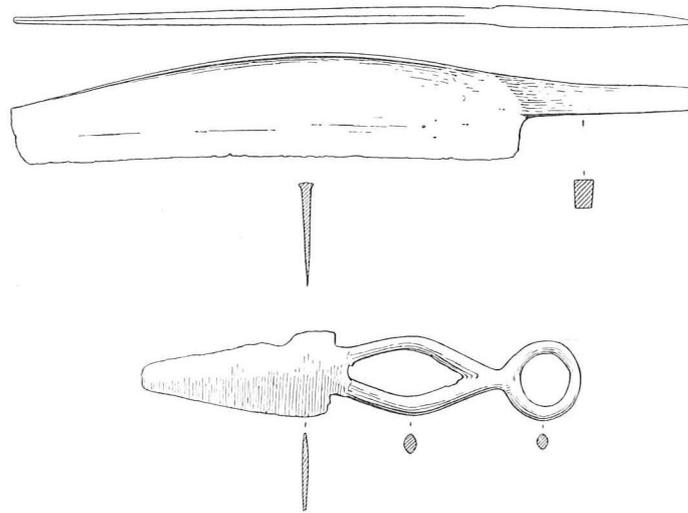


Fig. 50. Bargerosterveld. The hoard of 1899. Scale 1 : 2.

Wiesloch near Heidelberg (Kimmig, 1940, 155, Taf. 8 B, Taf. 41 : 8, 15), which would appear now to be HaA<sub>1</sub> in the Müller-Karpe terminology, and thus still Montelius III in the North. To Montelius IV belongs certainly our hoard of 1900, the pair of *Nierenringe* being the *Leitform* of that period in the Northwest German area. The hoard of 1899 consists of two Central European Urnfield-culture objects, and would appear to belong more or less to the transition HaA-HaB; it would thus also fall within Montelius IV. The hoard of 1896 and the stray socketed axe are of Montelius V. In absolute dates, following the system of Müller-Karpe (cf. our chronological table below, Pl. XIX)<sup>4</sup>, whose datings run a century or more ahead of what is most recently advocated in the literature from Britain, one could place the first find somewhere about 1200, the next two somewhere around 1000, and the last two in the 8th century. It is therefore certain that our Bargerosterveld concentration does not represent a single narrow horizon, but must be spread out over something like four or five hundred years. One must not suppose that the

discovery, or recovery, of Montelius IV hoards is an everyday event in this area. The land of Denmark can count about 100 hoards during the two centuries or so that represent Montelius IV. North Germany (with part of Poland) knew for the same period (Sprockhoff, 1937), in the area *east* of a line running roughly from Hamburg to Würzburg, about 135 hoards. Strangely enough, the number of Montelius IV hoards known in Germany *west* of the Hamburg–Würzburg line was exactly . . . two! And in the Netherlands there are, apart from the two Montelius IV hoards described in this paper, none at all! It was evidently not the custom of folk inhabiting Northwest Germany and the Netherlands to deposit hoards in Montelius IV times; and our Bargerooosterveld hoards of 1899 and 1900 represent something very unusual for this region. In Montelius V, of course, things are different; the great majority of Dutch Bronze Age hoards belong to that period.

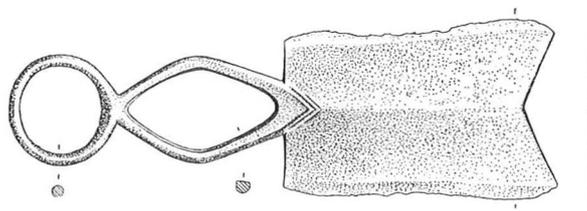


Fig. 51. The razor from Weerdinger Weg. Scale 1 : 2.

#### THE BARGEROOOSTERVELD BRONZES: SOURCES AND LOCAL PARALLELS

The Bargerooosterveld bronzes are, for finds in a place one might have thought a very provincial bog-bound backwater in the Bronze Age, an astonishingly cosmopolitan lot. The looped spearhead (fig. 48) is of a well-known British or Irish type. The Bargerooosterveld specimen is one of a small group of such spearheads found in the northern part of the Netherlands; it and another, from Exloermond, Gem. Odoorn, were illustrated by Van Giffen (1938, *Abb.* 27), one from Onstwedde, Groningen, by Glasbergen (1957, *Pl.* IX: 2). There is also a spearhead with loops on the side of the socket from the North (Gem. Borger, Drenthe; Van Giffen, 1938, *Abb.* 27); another (*Helinium* I, 54–5) was found in the south-central part of the country, at 's-Hertogenbosch (this one had been made into a Continental by filing off the loops and drilling peg-holes in place of them). There is no evident explanation why, of the five looped spearheads found in the Netherlands, four have been found in the North. Other looped spearheads have been found in France, Belgium (three examples), North Germany (three), Poland (one), the Rhineland (two) and Switzerland (one).<sup>5</sup>

*The Urnfield razor* in the Bargerooosterveld hoard of 1899 (fig. 50) has a parallel, with the same form of handle and a much better preserved blade, found only five

km away. The spot is north of the town of Emmen, along the road from there to Weerdinge (fig. 51; for the location see fig. 47). A forester digging a hole to set up a pole unearthed it in 1930; his careful description suggests that he had dug into a low tumulus. Twenty-six years later, sand-quarrying at the same spot led to the discovery of an Urnfield; which was thereupon excavated in part by the Biologisch-Archaeologisch Instituut (we are grateful to Prof. Dr. H. T. Waterbolk for information concerning this as yet unpublished investigation). The razor presumably belonged to an Urnfield burial, even if the forester's lucky hit robbed the razor of its stratigraphical context.

Razors with open-work handles of this or related forms are common currency within the Central European Urnfield culture; the numerous plates of Müller-Karpe (1959) now provide a convenient survey of the range of forms and their dating. Our type of razor handle is exactly matched in finds ranging from Peschiera in North Italy to the Rhineland (*e.g.* Adlerberg near Worms, Behrens, 1916, 181-2, *Abb.* 31-4). Most examples are of Hallstatt A; and Dr. Müller-Karpe writes us that the Bargerosterveld razor is most like HaA2 specimens. We notice that the rectangular blade-form of the Weerdinger Weg specimen has parallels as early as Reinecke D in Bavaria and Southwest Germany (Müller-Karpe, *Ibid.*, *Abb.* 23: 25-6, 25: 4) as well as later. Our Bargerosterveld specimen must have been long in use to be whetted down so much.

The *tanged single-edged knife* of the hoard of 1899 is also one of a widespread and varied Urnfield family. The knife in the Grave 2 at Wollmesheim (Müller-Karpe, *op cit.*, *Taf.* 208 B: 7), a classic HaA2 grave, is a perfect match, even if, as Dr. Müller-Karpe advises us *in litt.*, its features are more often to be found in HaB contexts. Its nearest Dutch parallel is a knife found in the peat at Odoornerveen, only 10 km to the north, in 1905 (Mus. Assen, 1905/VI.3). Thus both the knife and the razor have parallels found independently at quite different times in the neighborhood; confirming, if there were any doubt, that the imports are

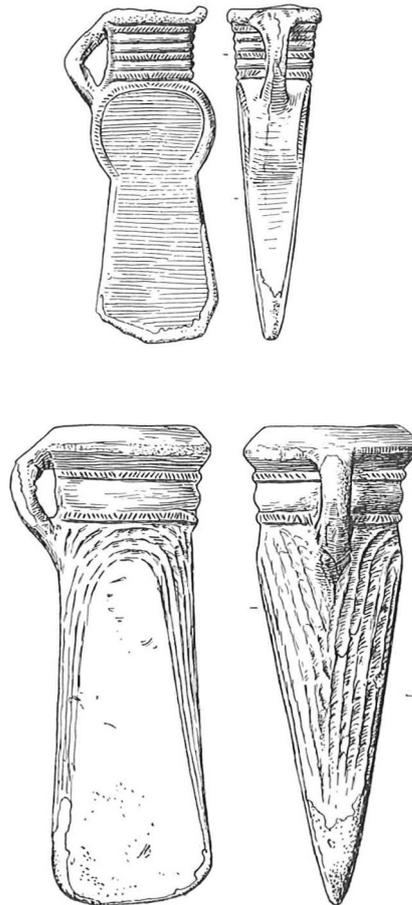


Fig. 52. Bargerosterveld. The hoard of 1896. Scale 1:2.

genuinely ancient and not modern, and hinting, in the case of the Weerdinger Weg find, at a probable link with the local Urnfield immigration. The small knife in the Bargerosterveld hoard of 1900 is a small, atypical version of the same kind of knife. On balance, they are likely to have been deposited not far from the transition between HaA and HaB, and thus (in the scheme of absolute dates proposed by Müller-Karpe, 1959) close to 1000 B.C.

The *bracelets* of the Bargerosterveld hoard of 1900 (fig. 49), of the form termed *Nierenring* in the German literature, are a type discussed and mapped by Sprockhoff; this variant of the form is claimed by him as typical of the Ems-Weser region (cf. Sprockhoff, 1937, 47, *Taf.* 18; 1941, 88, *Taf.* 38; 1952, 119-20, *Abb.* 1; also F. C. Bath, 1953-5, 79 ff, *Abb.* 1: 4ab).

Further, it is a form characteristic of Montelius IV in the region, being represented in the Rethwisch hoard; which also has Central European and Nordic material, all contained in an *Etagenurne* of a type dated in Central Europe to the transition Ha A-HaB. To the east, these 'Ems-Weser' products were traded as far as Denmark; to the west, as far as Bargerosterveld. The few examples of this type cannot be from many workshops, or be spread over a long period.

The *ring fragments* from the Bargerosterveld hoard of 1900 are very probably from a narrow ribbon-like spiral armband with a midrib; a type otherwise unrepresented in this country, but widespread and long-lived in Northern Europe (cf. Sprockhoff, 1937, 50, *Taf.* 14: 7, 11). They are thus an import here.

The *palstaves* in the same hoard point in the opposite direction. Palstaves of this form were neither made here nor otherwise imported here (an example from Sleen, Mus. Assen 1923/VIII.3, being the only exception); on the other hand, they are very common in South England. It was this form which Curwen (1954, 160, fig. 46) identified as characteristic of hoards of the *Late Bronze Age* in Sussex, and which we (Butler, 1959, 139) and M. A. Smith (1959, 176-7) generalized as such for Southern England; identical palstaves are to be found in hoards like Wilburton and Nettleham which initiate the *Late Bronze Age* there.

The Bargerosterveld hoard of 1900 is thus one of only two hoards in the northern part of Europe which provide a direct *terminus ante quem* for the beginning of the British *Late Bronze Age* within Montelius IV. (The other, a hoard in Denmark, we shall refer to below, p. 113).

*Socketed axes* of three different types are among our Bargerosterveld bronzes; they come from three different centres of manufacture.

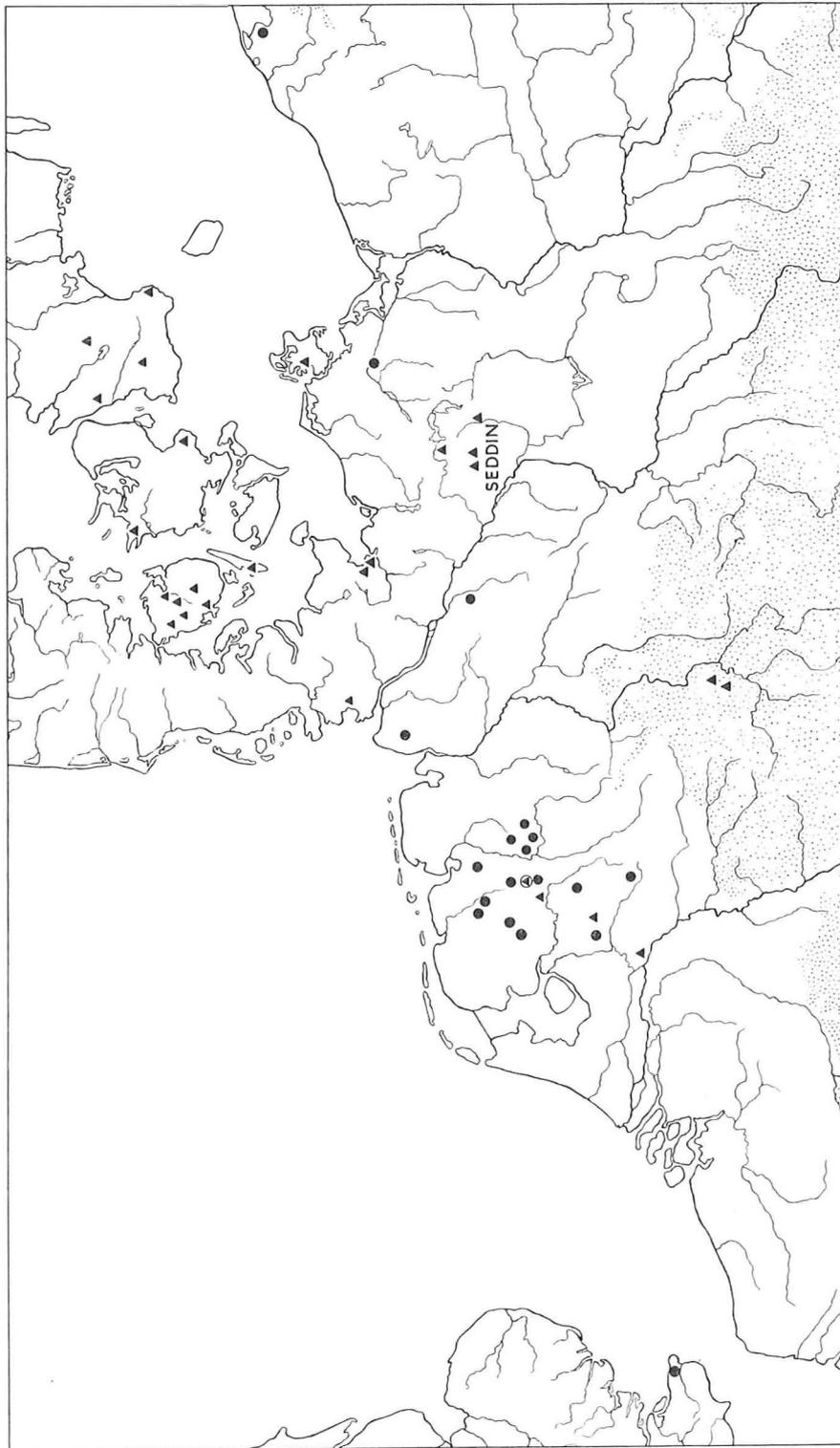
First, there is the *Seddin axe* in the hoard of 1896 (fig. 52), with its characteristic drum-shaped swelling. Its distribution was plotted by Sprockhoff (1956, I, 92 ff; II, 22, *Karte* 9) (cf. our fig. 53). The largest number is in Scandinavia; but *all* the examples there are without sideloops, which with other features suggests that our Bargerosterveld example (or its prototype, since ours is very likely a local

copy) was imported from Northeast Germany – from the realm of the King of Seddin, as Sprockhoff terms the area (in *Festschrift Abramic*, 16 ff). Another Dutch example is in the Montelius V hoard from Elzener Veen (Pleyte, 1885, Pl. XI: 2); a few others occur nearby in Western Germany.

The second axe from the Bargerosterveld hoard of 1896 is also of a type described and mapped by Sprockhoff, (1941, 84–6, Abb. 67; 1956, I, 95, 278; II, 20–1, Karte 7), and termed by him the *Tüllenbeil mit profiliertem Tüllenmund*. These socketed axes ‘with elaborate socket-mouth mouldings’ (which we shall call ‘*m.p.T.*’ for short) are mostly rather thick and heavy axes; the upper part of the body is oval in cross-section; characteristic is the ribbing of the neck (thin rib-broad rib-thin rib); or the thin ribs may be doubled, with a broad rib between. Generally the face of the axe is formed by a large arch-shaped facet. The side-loop is often rather large when compared with those found elsewhere, and not infrequently it has a peculiar angular, elbow-shaped form. These features are also common on axes in this region which do not have the typical rib-pattern of the type *mit profiliertem Tüllenmund*. Fluted decoration, as on our present specimen, is also not uncommon.

Sprockhoff, when discussing the socketed axes *m.p.T.*, noted that they were not extremely common, and that their distribution was strikingly concentrated in the region of the lower Ems, spilling over into the Netherlands; so that, looking at them in comparison with most German types, he could describe them as forming ‘*eine echte nordwest-deutsche Gruppe*’. The list which some one had supplied to Sprockhoff of Dutch examples of this type was, alas, somewhat defective both quantitatively and qualitatively. The Northwest German character of the group is in fact rather less *echt* than Sprockhoff supposed; for the majority of the specimens come from Dutch soil, and there are twice as many specimens on the Hunze as there are on the Ems. The type seems, in fact, to be characteristic of a local Late Bronze Age industry centred in the Hunze–Ems area.<sup>6</sup> The pattern of exported examples from this region is not uninteresting: a few examples went as far as East Germany and Poland, presumably in exchange for the Seddin axes; and in the other direction one went west to be deposited in the Birchington, Kent hoard (Worsfold, 1943, Pl. XI: 3), and was presumably in exchange for the final Bargerosterveld axe to be described below.

Sprockhoff had noticed that a socketed axe from Ireland (Dungiven, Co. Kerry; his 1941, Abb. 68, after *British Museum Bronze Age Guide*, 1920, fig. 107) had mouldings exactly like the type *m.p.T.*; this is a point worth following up. When in Dublin and Edinburgh we had occasion to notice that axes of the Dungiven type are not entirely uncommon in both national collections. This is of some importance, for it seems very probable that the Irish ‘bag-shaped’ axe is derived not from the rounding off of a polygonal form, as has been suggested, but from axes of the



▲ Kokerbijl „met rijk geprofileerde mond” ● Kokerbijl „met rijk geprofileerde mond” ○ Bargeroosterveld

Fig. 53. Distribution of socketed axes of Seddin type (triangles) and of socketed axes 'with elaborate socket-mouth mouldings' (circles). After Sprockhoff, with additions.

general form of those common in the Hunze–Ems group. The Irish smiths retained the oval cross-section, but dropped the arch-shaped facial facet, and made the axe shorter.

The last Bargerooosterveld axe (fig. 54) belongs to a type very common in southern and eastern England and northwestern France; its distribution reaches into Belgium and the southern part of the Netherlands. In conventional practice it is classified as a socketed axe with imitation wings; sub-class, with its ‘wings’ formed of ribbing (cf. Sprockhoff, 1941, *Abb.* 95, which contrasts the distribution of these *Rippenmuster* wings with the plastic *Lappennuster* ones). Yet it is not the *Rippen* wings, really, which make this axe Atlantic, but its form – in England it could readily be termed the ‘Southeastern’ form to contrast it with the ‘Yorkshire’ and ‘Welsh’ types – and the fact that its sideloop is not joined on to the socket-mouth moulding, but is lower down – a feature found commonly in the Atlantic area from Scotland to Spain, but very rarely in Northern Europe, where any specimen found with it is practically certain to be an import from the West. The ribbed imitation wings are but an ornamental detail, which also occurs on some axes of local manufacture here. The ‘Southeastern’ form is known already at the time of the Wilburton hoard; even if the identical form with the addition of ribbed wings seems to be characteristic of the carps-tongue complex.

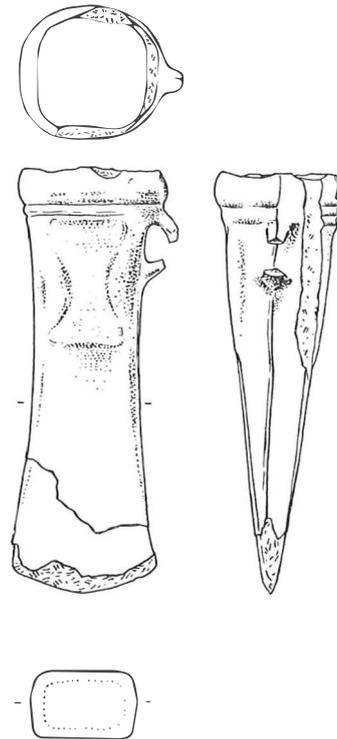


Fig. 54. ‘Southeastern’ socketed axe from Bargerooosterveld.  
Scale 1 : 2.

‘Southeastern’ socketed axes are otherwise unknown in the northern provinces of the Netherlands; the next nearest specimen is at Elsen, Overijssel (Mus. Zwolle, inventory no. 121; not connected with the Elsen hoard); other specimens are concentrated in the central and southern part of the country (examples: Pl. XVIII: 1–5). Sprockhoff (1941, *Taf.* 38: 9, 39: 4, 42: 10, 44: 2, 3) has illustrated some further examples in North Germany; there are also a few in Scandinavia, the most important of which are two examples (one unornamented, one with a single vertical rib on the face) in a hoard from Løvskaal in Jutland described but not illustrated by Broholm (*Danmarks Bronzealder* III, M 84), which is assigned to Montelius IV. (This is the other hoard which establishes the beginning of the British Wilburton industry within Montelius IV).

It is noteworthy that the extraordinary hoard from Plestlin, Kr. Demmin in Mecklenburg contains both our 'Southeastern' type and our type *m.p.T.*, along with HaB and Montelius V bronzes; related types also occur in the Vietkow, Kr. Stolp hoard; both hoards were illustrated by Sprockhoff (1941, *Taf.* 42–51). These hoards would, by virtue of their connection with HaB<sub>3</sub>, have been deposited, in the Müller–Karpe chronology, during the 8th Century; whereas the axe *m.p.T.* in the Birchington hoard was not consigned to earth, according to the cauldron-chronology of Hawkes and Smith (1957, 42–51) until little before 600.

Thus the Bargerosterveld concentration consists, apart from one axe characteristic of local industry and a pair of bracelets from neighbouring Northwest German territory, of imports from a distance – from the kingdom of Seddin, from the Atlantic provinces, from the Central European Urnfield area. The imported types are all represented by occasional other finds in the district, but they are essentially rare types here.

#### SIGNIFICANCE OF THE BARGEROSTERVELD FINDS

We have already noticed that the three small hoards from Bargerosterveld are very probably of ritual character. This is clearest in the case of the hoard of 1900, where some of the pieces have been deliberately broken up in antiquity. Here we should notice that the spearhead of 1898 was also evidently deliberately broken into a number of pieces in antiquity; so that it very probably represents a ritual deposit too. The hoard of 1899 also consists of broken pieces; those of the hoard of 1896 were presumably deposited intact, but their character as ornamented axes may point in the same general direction, if by a different route.

We have also pointed out how rare Montelius IV hoards are in this region; that we have two here itself might point to some special sanctity for the district of Barnar's Bos, even if we did not already know that in the peat a few hundred yards off a wooden ritual building of hitherto unknown type had been standing.

The exact dating of the wooden building in relation to those of the bronzes is therefore of some interest. No datable objects were found with the building; the only archaeological clues to its age are that its corners were apparently ornamented with wooden horns, and that the construction techniques are to be paralleled among Urnfield-period structures in Switzerland. Its C 14 date is  $1045 \pm 65$  B.C.; this is subject to the standard Groningen correction of 200 years. 1250 seems a bit high for all but perhaps the earliest of our Bargerosterveld bronzes; even if one feels that the wooden building with horns and the ritually deposited bronzes ought somehow to go with the Early Urnfield settlement of the Bargerosterveld district. One must therefore ask whether the C 14 dating of the building and/or the archaeological dating of the objects are not elastic enough to cover the differen-

ce; or whether there may not have been other sanctuaries or temples in the district, of somewhat younger date, the remains of which are yet to be found? Or did a holy place of the local pre-Urnfield period continue to preserve a certain sanctity well into Urnfield times?

## II. SOME NOTES ON THE AXE TRADE ACROSS NORTHERN EUROPE

The Bargerosterveld finds, with their British palstaves and socketed axes, their Seddin axe, and their 'Hunze-Ems' axes, call attention to the fact that in Bronze Age trade across Northern Europe axes play a most important part.

This was true in the Early Bronze Age, when, as Megaw and Hardy demonstrated in detail (1938), Irish-type decorated axes were traded to (or, as they and others suggested, locally made by migrant smiths in) South Scandinavia and Central Germany. It has lately been possible to identify a small group of four or five Irish axes (decorated and undecorated) in the Netherlands also (Modderman and Butler, 1960). These can be linked with some examples published by Sprockhoff (1941, Abb. 48-9) to show the use of a trade route from the British Isles to Central Germany by way of the Netherlands and Westphalia in the Early Bronze Age (fig. 55). This route was first identified by O Riordain (1937) on the basis of Irish-type halberds, the distribution of which in Northern Europe agrees exactly with that of the Irish axes shown in fig. 55. We have elsewhere (1959, 126 ff) called special attention to the Wageningen hoard (N.L. 11), an Early Bronze Age founder's hoard containing an Irish axe and an Irish halberd, a dagger, punch and pair of bracelets, unfinished halberd rivets of Irish type, ingot bars and scrap metal . . . in short, exactly the sort of equipment one would expect to find in the kit of one of those itinerant Irish smiths. It seems certain that such smiths introduced bronze-working into the Netherlands.

It is even possible to point to a group of low-flanged axes in the Netherlands and beyond which appear to be a local derivative of the Irish type (Pl. XVI). Whilst the small import group is concentrated in the central part of the country (where late Bell Beakers of Veluwe type are specially concentrated; cf. Van der Waals and Glasbergen, 1955, fig. 12, and Glasbergen and Butler, 1956) the derivative group is more widespread.

How does one explain the extraordinary influence of the Irish Early Bronze Age industry on the Continent? The traditional view, that the Irish Early Bronze Age is earlier in origin than the Central German, and contributed to the formation of the latter, has little to recommend it except the primitive look of a few Irish halberds, and is falling out of favour. On the other hand, metallurgical analysis has surprisingly demonstrated that the Saxo-Thuringian industry, powerful and ver-



Fig. 55. Distribution of Irish-type flat and low-flanged axes in Northern Europe. (Triangles: flat axes; dots: low-flanged axes; encircled: in hoard).

satile as it was, did not command a regular and reliable supply of tin (the point is emphasised by von Brunn, 1954, 36 ff, esp. 40); and that when it did get tin, it did not know how to use it in a consistent and rational manner. 'Saxon' axes are hardly ever of true bronze; yet whenever a typical Irish decorated axe found on the Continent has been tested it has been found, even if apparently made with Continental copper, to be of true bronze. Thus:

Sassenberger Heide (OW 474) <sup>7</sup> . . . . .	12% tin
Dieskau (OW 397) . . . . .	14% tin
Wessmar (OW 206): . . . . .	12% tin

Some axes also found in Saxo-Thuringia which appear not to be Irish exports, but local imitations of the Irish 'decorated axes', have also high tin percentages:

Schweta (OW 705) . . . . .	8% tin
Griefstedt (OW 703 and 704) . . . . .	9% tin

Finally, the second axe in the Sassenberger Heide hoard, which closely resembles the axes of our Dutch 'derivative' group, and was found with an Irish bronze de-

corated one, contains 10% tin. As for examples found in Ireland itself, cf. Bushmills, Co. Antrim (CC 85), with 9.10% tin, or Co. Tyrone (OW 116), with 13% tin. It is therefore certain that the Irish smiths, with a far smaller productive capacity, a much more limited repertory of types, and a much weaker distributive mechanism than the Saxo-Thuringians, were nonetheless regularly producing axes of true bronze, even when working on the Continent and using Continental copper. It is difficult to imagine what more conclusive proof one could expect to find for the beginning (in the 17th century B.C., according to the date now advocated for the Central German hoard-horizon by some writers, *e.g.* von Brunn, 1959) of a Western tin trade to Central Germany.

This suggests, at the same time, a possible explanation for the Irish trade to Scandinavia, and for the fact that the Pile axes, made, it seems, of copper from Central Europe, nevertheless imitate the forms and decoration of the Irish axes. We presume that the true bronze axes were superior in practical use to the arsenical copper or other products of the Saxo-Thuringian axe-smiths. Otherwise, true bronze would hardly have ousted other alloys and become standard, as it was by Montelius II. The fact that Irish axes were generally cast much thinner than their Continental rivals also points to the superior use-quality of their metal. One can thus readily imagine how the word spread across the Continent: those Irish axes are really better! And how certain Continental smiths could find it worth their while to imitate the external appearance of the superior product.

One can even imagine that it was the survival of the reputation for superiority enjoyed by the Western products which led, in the following Middle Bronze Age, to the otherwise unexplained popularity enjoyed by Western palstave types in Northern Europe.

Continental writers such as Forssander (1936) and Sprockhoff (1941) have emphasised that in the Middle Bronze Age (in the Western European sense) the axe types used in the Scandinavian area were for a great part, and in the Northwest German and Dutch areas overwhelmingly, of Western European inspiration. Sprockhoff was able to point to an astonishing series of hoards and stray finds of palstaves of purely Atlantic type, or close imitations of such imports, stretching across the North European plain into Poland.

The extent of this trade is best illustrated by the map (fig. 56) of a single variety of palstave, the shield-pattern type as represented in the hoards of the Ilsmoor horizon, from Voorhout on the North Sea coast of Holland to Pyritz east of the Oder. We have omitted from the map certain later varieties of the shield palstave (such as the ones represented by our Pl. XVII: 3-5) in order better to use it to point up the discrepancy in the dating evidence for this type on the Continent (as it is interpreted by Continental authorities) and the British evidence (as it is inter-



Fig. 56. Distribution of 'shield' palstaves in the Ilsmoor horizon in Northern Europe. (Encircled: in hoard).

preted by Miss M. A. Smith, 1959). For Forssander suggested, and Sprockhoff developed the argument, and Hachmann has lately (1957, 118, 130) re-stated it in his own way, that the palstaves in question were introduced into North Germany from the West at a time which is late in the lifetime of the Sögel industry, but early in Montelius II; that is to say, before the time of the classic Nordic industry of the *Stortid*. If this be true (and there is no reason to doubt the view of all leading Northern authorities that the palstaves in question could not have evolved locally; the indigenous types of flanged axes do not lead toward such palstaves) then there must have been in existence, somewhere in Western Europe, at a time corresponding to the *very beginning* of Montelius II (for what is earlier within Montelius II than Ilsmoor or the equivalent Valsomagle phase, Montelius IIa or Broholm I, in Denmark?) an industry producing palstaves of the same type. This industry will not yet have looped palstaves in its range of types; nor those with multiple ribs on the septum or below the stopridge, nor 'tridents'; nor will there be palstaves of narrow, nearly parallel-sided form. These types, which are absent in the early hoards of the Ilsmoor horizon (equated by Hachmann with

Central European Tumulus B 2) are all represented in the later horizon (Broholm II, or Montelius IIb and IIc, or Kersten's II A and II B for Schleswig-Holstein, or the *ältere Bronzezeit* as Hachmann uses the term – these are all different names for the same period; its subdivision having for all practical purposes been abandoned by Northern writers. This Northern period II is now equated by most writers with Central European Reinecke C and even part of D; Sprockhoff, Hachmann, Milojevic, Müller-Karpe are, among others, on record for this correlation) in which the classical *Stortid* industries developed. It is not only the Frøjk hoard which contains them, but also the well-known but never fully illustrated hoard from Ostenfeld, Kr. Rendsburg (Kersten, 1936, Taf. VI and VII, gives a selection; among the unillustrated pieces is a fine broad-bladed Atlantic trident palstave).

A map of the North European distribution of the types of palstaves represented in these two hoards of full Northern Period II (Butler, 1958, Map VI) shows a somewhat different pattern than the Ilsmoor horizon: the East German distribution falls out, and we get something of a local concentration along the western coast of the Jutland peninsula. This may have something to do with the amber trade; or, perhaps more likely, the axes in question were left behind (along with the Liesbüttel and Aasbüttel spearheads in the same period and area) by those involved in transporting gold, copper and tin from the metal-producing areas of the West to the metal-hungry Northerners. The standard Nordic work-palstaves of this period are directly derived from the 'narrow-bladed' Northwest French types; a few actually imported specimens from the West have been found in the West Jutland-Elbe Mouth area (the Ostenfeld hoard contains one with a miscast sideloop), and a variety of transitional forms also occur, leading directly to the standard Nordic form as represented in hoards like Hohenfelde, Frenderup, Ostenfeld, Kappeln, Frøjk. In most of Northwest Germany and the Netherlands, the French 'narrow-bladed' type seems to have had little influence; the *Oldenburger Absatzbeil* and other 'plain palstave' types of those areas are derived from the broad-bladed Atlantic forms.

Montelius III was not, it seems, a time in which palstaves were much exported from Western to Northern Europe. Nowhere in the North is there a hoard or a grave in which typical Montelius III products are associated with a typical Western palstave. If we assign the small personal hoard from Epe (Pl. XIV: 2; Butler, 1959, 136 ff., fig. 5; NL. 15) to this period, it is because the palstave in it has close parallels at Blackrock and Barton Bendish, which we (1958) and Miss Smith (1959) assign to that time; and because the two-knobbed sickle also has its analogies in the Somerset industry of the time; purely from the Continental side, we should have thought both the sickle (probably an import from the Rhineland) and the flanged stopridge axe (probably of local manufacture) rather earlier.

A more important question for the Bronze Age of the Netherlands is whether the

only good-sized merchant's hoard found in this country, the deposit from Voorhout (NL. 14) is not to be dated to that period. Working backward from what we have termed above the Ilsmoor horizon, the present writer (1959, 131-4, fig. 3) supposed the Voorhout hoard to be datable to Hachmann's Horizon IV, and thus to 1400 or so; and therefore considered the Acton Park hoard in North Wales, to which the Voorhout hoard has certain close affinities, to be equally early. Now, we read in Savory (1958) that the Acton Park hoard belongs to a late Middle Bronze Age, c. 1100, in Wales; and in M. A. Smith (1959) that the Acton Park hoard is an outlier of her 'Southwestern' bronze industry, specialized in high-flanged palstaves, which will be mainly of Montelius III date, and in her system not much before 1000. We would therefore seem obliged to bring the Voorhout hoard, apparently the product of a North Welsh smith of the Acton Park school, down some 300 to 400 years.

But is the Acton Park hoard really an outlier (admittedly an atypical and eccentric one) of the Southwestern industry? Our own belief is that the Acton Park hoard represents a precursor and not an offshoot of the Somerset school.

We have already argued above that unless some one is able to refute on Continental grounds the high relative dating of the Ilsmoor-type hoards, we are compelled to assume the existence somewhere in Atlantic Europe of a parent industry which gave rise to the types of palstaves they contain. Miss Smith makes it clear that southern England could not have been the birthplace of such an industry, because the types concerned have no prototypes there. Where can such prototypes actually be found? They are in fact known in substantial numbers in only one region: in Ireland. The actual prototypes of the 'shield' palstaves can only be found (as has long been recognized) among the group of axes which Miss Smith herself (1959, 171 ff., fig. 6) discusses, maps the southern British distribution of, and gives a new name ('haft-flanged axe'). This type of axe was itself traded, as Miss Smith shows, to Britain; it did not cross the North Sea in any significant quantity (we illustrate two examples in the Leiden collection, one, Pl. XVII: 2, from Aijen, Limburg, the other, Pl. XVII: 3, from Rijsbergen, N.B.). The large and broad variety of shield palstave found especially in North Wales, as represented at Acton Park and at Voorhout, is typologically earlier than the smaller, slenderer, more refined varieties found more generally in southern England, Northwest France and in most Ilsmoor-horizon hoards; and, as Savory notes, the very concentration of these palstaves in North Wales itself argues for Irish derivation. Miss Smith's haft-flanged axes cannot, therefore, *all* be contemporary with the British palstave industries; some at least must precede and be ancestral to them. North Wales will have developed its type of shield palstave on Irish foundations; and Somerset will have got some of its ideas from North Wales. Further evidence for a spreading round of the high-flanged palstave idea before the time of the Somerset hoards is to be found

in the Tréboul hoard in Brittany (Briard, 1956, Pl. V). The Voorhout hoard may therefore continue to represent an early event in the Dutch Middle Bronze Age.

The classic Nordic narrow work-palstaves of full Montelius II – the type represented in hoards up and down the Jutland peninsula, such as Hohenfelde, Frenderup, Ostenfeld, Kappeln, Frøjk – are evidently imitations of, or improvements on, the narrow-bladed type of ‘Atlantic’ palstave so common in North-western France. A few specimens actually imported from the West have been found in Jutland (one, with a miscast side-loop, is in the Ostenfeld hoard); a variety of transitional forms also occur, and one also finds specimens with purely Nordic lines, yet with Western trident ornament. It is also this French narrow-bladed form which, at a later stage, develops into the Wilburton-Bargerooosterveld ‘late type’ discussed above, which was only very rarely traded to Northern Europe.

The socketed axe trade partly overlaps that in palstaves. It is becoming widely accepted that the earliest type in Britain is the Taunton type (Hodges, 1956, 33, 50, with distribution map fig. 2; Butler, 1958, 163–9, Map IX; Savory, 1958, 17–8; M. A. Smith, 1959, 150, 171), represented by a dozen or more specimens in southern England and a few in Scotland and Ireland<sup>8</sup>. These can be derived from Sprockhoff’s Hademarschen type (an easier name to use than *schlichtes Vierecktiillenbeil*), which occurs in the lower Oder-lower Elbe area in North Germany in Montelius III and IV (Sprockhoff, 1941, 112 ff, *Abb.* 86 (distribution map), *Taf.* 39: 3, 6; 47: 13; 59: 4; 60: 9, 11; 61: 3; also K. Kersten, 1948, *Taf.* 10: 116, 18; 229, 36: 379, 41: 416, 44: 461, 64: 624, 75: 711, 76: 726).

Characteristic of the Hademarschen-Taunton type are the narrow form, rectangular cross-section, and single, flattish socket-mouth moulding with a small side-loop. It reached Britain, in company with other types of North European origin, somewhere close to the transition Montelius III–IV. Whether it is also represented in France is not known; we think it likely that examples will come to light there. Axes of this type, or very similar ones, must have been known to the bronzesmiths of the French *Larnaudien*, who improved it by indenting the waist (cf. de Mortillet, 1881, No. 797; here with the loop on its face). A very similar ‘indented waist’ axe, with the characteristic flat moulding derived from the Taunton-Hademarschen type, and here with the normal side-loop, reached England to be deposited in the well-known hoard from Nettleham (British Museum, 67/3.29/5). The only Dutch find of an ‘indented waist’ larnaud axe is one (not yet published) from ‘s-Hertogenbosch.

In Müller–Karpe’s chronological system (see Pl. XVII) the Larnaud hoard and its horizon are equated with his HaB1, which is assigned to the tenth century. If this be so, then Miss Smith’s ninth-century date for Wilburton (1959, 182–3) could be raised by a century. This will, as Müller–Karpe suggests and the Wil-

burton-Lovskal-Bargerosterveld cross-datings confirm, still be Montelius IV.<sup>9</sup>

The Hademarschen–Taunton type of socketed axe is not only the prototype of the above-cited variety of the Larnaud axe; it is also (as Sprockhoff acutely perceived, 1941, 112) the ancestor of what we have above termed the ‘Southeastern’ type; but this development took place in the Atlantic West and not, as Sprockhoff then supposed, in North Germany. The Southeastern type retains the narrow outline and rectangular section of the Taunton type, but adopts the double mouldings and low loop placement so characteristic of a variety of Atlantic axe types. This development also took place in the Wilburton phase; examples were subsequently exported not only to the North, as noted above, but to Central Europe, where dated examples are of HaB3 (*e.g.* Hochstadt, Kr. Hanau, Müller–Karpe, 1948, Taf. 34: 4; Eibingen, Rheingau, Behrens, 1916, 42, Abb. 11: 5).

Some other types of socketed axes concerned in the trade between the British Isles, the Netherlands, and *Niedersachsen* have been discussed by Sprockhoff (1941, 88 ff.; 1956, I, 96), by Hodges (1956, 29 ff) and by the present writer (1958, I, 220 ff).

## APPENDIX

### Inventory of the Bargerosterveld bronzes.

#### 1. *The hoard of 1896* (Pl. XV; fig. 52).

*Bibliography:* Verslag Museum Assen 1896, p. 9, no. 22–3; J. J. Butler, ‘Drie Bronsdepots van Bargerosterveld’, NDV 1960, 205 ff, fig. 12, Pl. XIII, Bijlage I: I, Bijlage II.

Found in or before Dec. 1896 by a sheepraiser, Willem Alberts, 50 or 60 cm below the surface in yellow sand at Barnars Bos, while digging for stones.

a. *Socketed axe* with heavy biconical socket-mouth moulding, from which springs a heavy, somewhat angular side-loop; neck ornamented with two narrow ribs separated by a single broad rib, the narrow ribs decorated by groups of diagonal nicks alternately slanted from left to right and from right to left; the faces formed by arch-shaped facets, which are outlined by concentric shallow grooves extending onto the rounded sides. The socket-mouth moulding, loop and cutting edge are corroded and abraded; the remainder of the surface preserves a very fine glossy patina on one side, the other being somewhat duller and partly encrusted with a light-coloured loam. Length 12.7 cm. Inventory no. 1896/XII.4; for a time erroneously marked with the inventory number 1878/VI.9, which was corrected following an investigation by the curator for prehistory, Mr. J. D. van der Waals, and the present writer in 1960 (see reference above).

b. *Socketed axe* of rectangular cross-section, with single prominent socket-mouth moulding, six narrow ribs on neck (three of which are nicked in the same manner as the narrow ribs on the other axe, but with less careful execution); drum-shaped enlargement of part of the body below the neck, the edges of which are emphasised by an incised line and groups of incised diagonal nicks alternating in direction as on the ribs. Patina and state of preservation exactly as axe (a). Length 8.8 cm. Inventory no. 1896/XII.5.

2. *The looped spearhead* (fig. 48).

*Bibliography:* Verslag Museum Assen 1898, p. 10, no. 10; A. E. van Giffen, *Mammus* XXX, 1938, *Abb.* 27: 2.

Found in 1898 by Barnar's Bos at Bargerooosterveld, in a heath field, 30 cm beneath the surface.

*Spearhead*, with elongated leaf-shaped blade; the socket between the wings is of lozenge cross-section, the lower part of the socket is of round section. At the base of the blade were loops, which have been broken away; the width of their stumps suggests that the loops were of the flattened (oval or lozenge) type. Length 26.7 cm. The spearhead was anciently broken up; three fragments survive, a small central section and the loops being missing. Patina originally very dark glossy green; but much of the surface is now pitted and lighter green, with numerous scratches from a crude cleaning attempt. Inventory No. 1898/II.3.

3. *The socketed axe of 1897* (fig. 54).

*Bibliography:* Verslag Museum Assen 1897, p. 10, no. 28.

*Socketed axe* of rectangular cross-section; broad rounded socket-mouth moulding, below which is a single rib (on the opposite face, however, two ribs), from which a side-loop (part of which is broken away) springs. Face ornamented by ribbed imitation wings, the bases of which are joined by a horizontal rib. Surface in part corroded and abraded; the remainder is well preserved, and has a tinny coating. Length 11.2 cm. Inventory no. 1897/X.10.

4. *The hoard of 1899* (Pl. XII: 1; fig. 50).

*Bibliography:* Verslag Museum Assen 1899, p. 129, no. 1559-60; J. J. Butler, NDV 1960, 205 ff, fig. 10, Bijlage I: 11.

Found at Bargerooosterveld, evidently together (patina).

a. *Knife*, single-edged, with curved, ridged and slightly thickened back, and with tang of rectangular cross-section with chisel-like end. Tip missing; in the patina is a hilt-mark and an outline corresponding in shape with the tip of the razor (b). Patina matte, very dark green, almost black. Length 18 cm. Inventory no. 1899/II.23.

b. *Razor*, with narrow trapeze-shaped blade (much whetted down), and with openwork handle in the form of a pointed oval with a terminal ring. Handle broken just below blade. Patina as (a). Length 11.6 cm. Inventory no. 1899/II.24.

5. *The hoard of 1900* (fig. 49).

*Bibliography:* Verslag Museum Assen 1900, p. 16 no. 112-4, p. 22 no. 207-10; J. J. Butler, 'Vergeten schatvondsten uit de Bronstijd', *Honderd Eeuwen Nederland* (Antiquity and Survival II, no. 5-6, 1959), 139-40, fig. 6; J. J. Butler, NDV 1960, 205 ff, fig. 9. Bijlage I: 1; *Inventaria Archaeologica* NL. 16 (in press).

Found together in a small tumulus, at a depth of 25 cm.

a. *Palstave*, looped, with narrow blade of rectangular section, sharpened asymmetrically; prominent stopridge, slightly undercut internally; butt end slightly damaged. Length 14.4 cm. Inventory no. 1900/III.30.

b. *Palstave*, looped, of same type as (a), but fragmentary (breaks ancient). Length of frag. 6.1 cm. Inventory no. 1900/III.31.

- c. *Knife*, single-edged, with two ribs backing the blade; roughly finished tang. Broken; cutting edge entirely abraded; tip of blade and portion of centre missing. Length as restored, 9.4 cm. Inventory no. 1900/III.32.
- d., e. Pair of *bracelets*, oval with ribbed ornamental swelling on the display side. The edges of the ribs are nicked; incised transverse grooves ornament the remainder of the display side. The insides are slightly flattened. Diameter 7.7 by 7.1 cm. Both are partly corroded; their patina is slightly darker and more matte than the other objects. Inventory no. 1900/III.34-5.
- f. Three fragments of armlet (spiral?) with midrib. The abraded fragments, broken in antiquity, do not join. Original diameter approx. 6.5 cm. The fragments are not preserved to their original width. Inventory no. 1900/III.32a.
- g. (missing) 'rod or pin'; neither the object nor any further description nor its dimensions can be found.

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## NOTES

<sup>1</sup> In the preparation of Part I of this paper we enjoyed the friendly collaboration of Mr. J. D. van der Waals, *inter alia* curator for prehistory at the Provincial Museum of Drenthe in Assen. Mr. Van der Waals gave the writer all possible assistance in such matters as unravelling the old correspondence and catalogues in the Museum; conducted the writer on reconnaissances at Bargerooosterveld and at the Weerdinger Weg site, and in the interview with Mr. Van Genderen Stort in the Hague; and translated an earlier version of this article into Dutch for the *Nieuwe Drentsche Volksalmanak* 1960. To him in his capacity as editor of the prehistory section of that publication we are indebted for the loan of blocks. We are

also grateful for assistance to Mr. W. van Es, the former curator, and to Mr. E. Smit of the administrative staff of the Museum. The drawings are by B. Kuitert, staff draughtsman of the Biologisch-Archaeologisch Instituut, Groningen, except for fig. 45 which is by B. Kracht.

<sup>2</sup> This hoard was prepared for publication in the *Inventaria Archaeologica* as NL. 16; the printing of which has been unfortunately delayed. Miss M. A. Smith (now Mrs. Brown), who was shown the text at the Hamburg Congress in 1958, was thus able to cite this find (1959, 185, n. 1); but by some slip she cites the find-spot as „Steenodde”. The genuine Steenodde hoard (from Amrum, one of the North Frisian islands, belonging to Germany) she cites on p. 158, with n. 2; it was listed by Sprockhoff, 1937, 20, as a hoard of Montelius IV.

<sup>3</sup> We are grateful to Dr. W. van Zeist for information concerning this investigation.

<sup>4</sup> This table is taken from the writer's unpublished Ph. D. dissertation, *Relations between the British Isles and Northern Europe in the Bronze Age* (2 vols. University of London Institute of Archaeology, 1958); from which the distribution maps, figs. 52 and 53, are also adapted. The table is given here as a general guide to the relationships between the various prehistoric periods and bronze industries in trans-Alpine Europe during the Bronze Age. The correlations, to the extent that they differ from those generally accepted, are we trust, sufficiently justified in the dissertation, though space is not available to discuss them here. As a basis, we have adopted the Urnfield-period chronology advanced by H. Müller-Karpe, using his period-divisions and his absolute chronology (which is admitted to be somewhat schematic) without modification. Tumulus Bronze Age dates must be spaced out between the 13th-century date which is now reasonably certain for Reinecke D and the 16th-century Shaft Grave correlations for Reinecke A2 argued *e.g.* by Hachmann, 1957. Most of the abbreviations we have used in the table will be familiar enough, but we should mention that 'Fischer' refers to the chronology of U. Fischer in *Festschrift Mainz III*, 1952, 161 ff and elsewhere; 'VFM' is Broholm's 'vor første metalkultur'; 'Bro' refers to the nomenclature used by H. C. Broholm, *Danmarks Bronzealder*, 1943-9; 'HH' to the import-horizons delineated by Hachmann, 1959; 'T.B.B.' refers to the Taunton-Barton Bendish phase, defined in our dissertation, II, 312 ff., and very little differently by M. A. Smith, 1959, under the name 'ornament horizon'. The British Neolithic terminology follows S. Piggott, the subdivision of the Wessex Culture, A. M. Ap Simon.

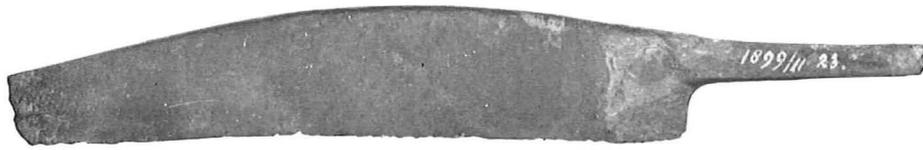
<sup>5</sup> For the distribution of these spearhead types, see E. E. Evans, *Archaeologia* LXXXIII, 1933, 197, fig. 1; cf. M. A. Smith, 1959, 178-80. The Kam Collection in the Rijksmuseum Kam, Nijmegen, contains a fine long triangular-bladed basal-looped spearhead, surely an import from Ireland. As with the other bronzes derived from the Kam Collection, it is not known whether it is an ancient or modern import.

<sup>6</sup> Other type of axes manufactured by this industry are defined in Butler, 1961.

<sup>7</sup> OW refers to the analyses of Otto and Witter, 1952; CC to those of Coghlan and Case, 1957; the numbers being the serial numbers of the analyses in their tables. Similarly, the undecorated Irish axe in the Pile hoard (Scania, Sweden) contained nearly 11% tin, while the local 'Pile axes' in the same hoard were of copper (J. E. Forssander, *Der Ostskandinavische Norden*, 1936, 170-2).

<sup>8</sup> But in the case of the socketed axe from Trawsfynydd in Wales, Savory was surely right when he thought it to be of Breton type, rather than when he identifies it (1958, 17, fig. 2: 1, Pl. IIIA) with the Taunton type. Similarly, M. A. Smith's addition to the list (1959, 171), the axe from the Leopold Street hoard, Oxford, has little in common with the Taunton type except its rectangular cross-section; its mouldings are different from those characteristic of the Hademarschen-Taunton type, and its length is atypical. Admittedly it belongs to the same period, and may be merely a variant.

<sup>9</sup> This *terminus ante quem* applies, strictly speaking, to the establishment of the Wilburton industry, and not necessarily to the date of deposit of the individual Wilburton-type hoards (cf. now Isleham, Cambs., D. Britton. *Antiquity* XXXIV, 1960, 279-282), which may, of course, be late in the history of that industry.



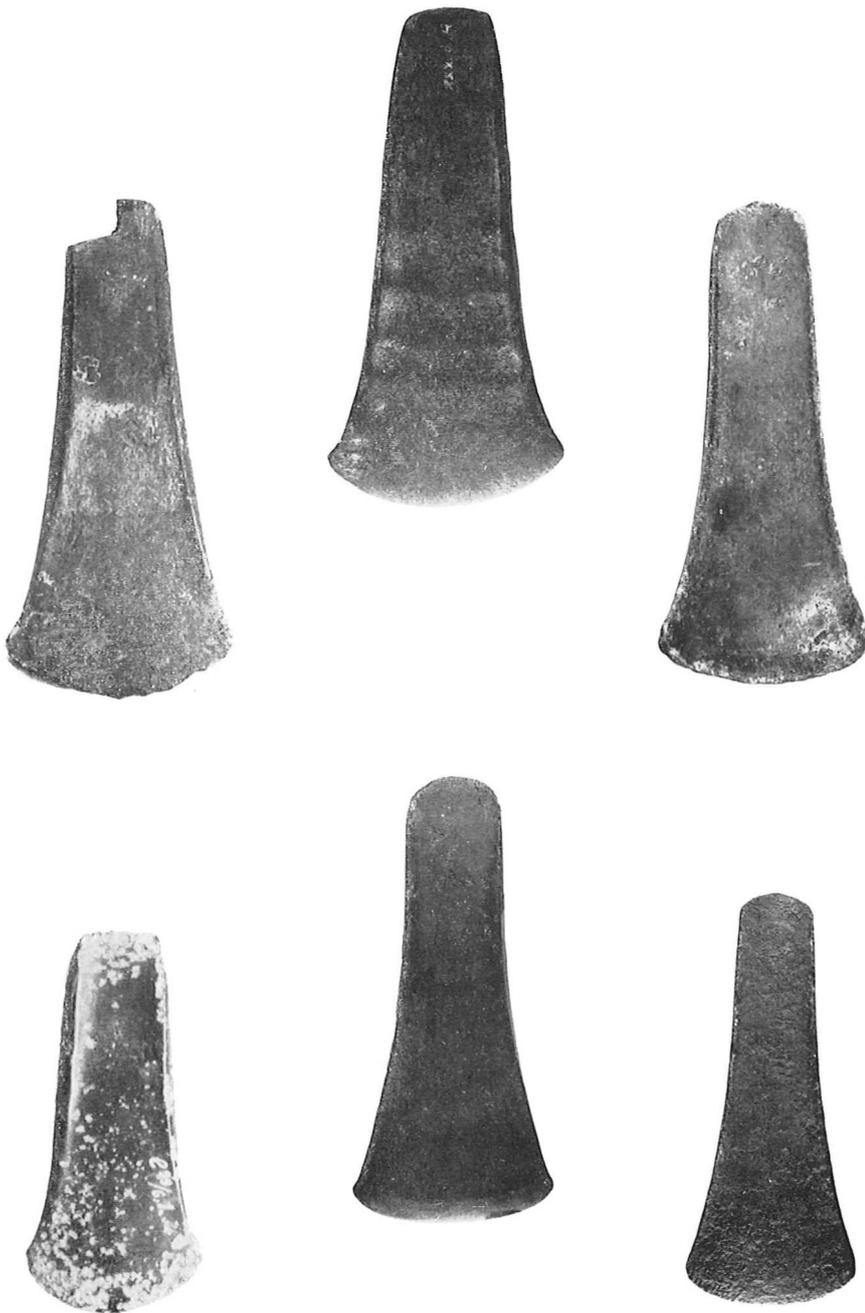
1. Bargeroosterveld. The hoard of 1899.



2. The hoard from Epe, Gelderland.



Bargeroosterveld. The hoard of 1896.



Some low-flanged axes from the Netherlands.

Upper row: 1 Emmen, Drenthe; 2 Kam collection, Nijmegen; 3 Valthe, Drenthe;  
lower row: 4 's-Heerenberg, Gelderland; 5 Suawoude, Friesland; 6 Donkerbroek,  
Friesland.

1, 3 Mus. Assen; 2 Rijksmus. Kam Nijmegen; 4 RMO Leiden; 5, 6 Mus. Leeu-  
warden. Photos CFD Groningen and RMOL.



Some flanged axes and palstaves from the Netherlands.  
1 Emmercompascuum, Drenthe; 2 Aijen, Limburg; 3 Rijsbergen; 4 Gem. Norg, Drenthe;  
5 Kam collection, Nijmegen; 6 between Wijchen and Nijmegen, Gelderland.  
1,4 Mus. Assen; 2,3 RMO Leiden; 5,6 Rijksmus. Kam, Nijmegen. Photos CFD Groningen  
and RMOL.



Some socketed axes and a bronze mould from the Netherlands.  
1 near Helmond, Limburg; 2, 3 Kam collection, Nijmegen; 4, 5 Heppener Maaseyck,  
Limburg; 6, 8 Havelte, Drenthe; 7 Nijmegen (from the Waal).  
1, 4, 5, 7 RMO Leiden; 2, 3 Rijksmus. Kam, Nijmegen; 6, 8 Mus. Assen. Photos CFD  
Groningen and RMOL.

# TABLE OF COMPARATIVE CHRONOLOGY

Centuries (approx) B.C.			XVII	XVI	XV	XIV	XIII	XII	XI	X	IX	VIII	VII	VI	
<b>I</b> Western CENTRAL EUROPE S. Germany			EARLY BRONZE AGE			TUMULUS BRONZE AGE			URNFIELD PERIOD			EARLIER HALLSTATT			
			A1 Unätice Straubing	A2	B1	B2	C	D	A1	A2	B1	B2	B3	C1 C2 Period	
<b>II</b> CENTRAL GERMANY E. Germany, Poland	Fischer MIDDLE NEOLITHIC	Fischer LATE NEOLITHIC	EARLY BRONZE AGE 'Early' Fürstengräber Developed			MIDDLE BRONZE AGE Tumuli & Hoards			Lausitz Culture UNSTRUT, SAALE MOUTH GROUPS SPINDLERSFELD; MITTEL-ELBE MECKL. KR. KR.						
<b>III</b> DENMARK & South Sweden	E.N. C	MIDDLE NEOLITHIC I II III IV V			LATE NEOLITHIC A B		Mosback Gr C VFM	BRO I	BRO II MIIbc	M III	M IV	M V	M VI		
<b>IV</b> SCHLESWIG-HOLSTEIN	Funnel-beaker Culture				LATE NEOLITHIC		S Ö G E L	W O H L E	K II AB	M III	M IV	M V			
<b>V</b> NORTHWEST GERMANY	Funnel-beaker Culture Single Grave Culture				LATE NEOLITHIC HHI		HHII	HHIII	HHIV	ILMENAU CULTURE 'early' 'middle'	Urnfields				
<b>VI</b> NETHERLANDS	Funnel-beaker Culture PF Beaker Culture Bell Beakers 2 II, 2 I c				LATE NEOLITHIC Veluwe Beakers		Middle Bronze Age			EMS-WESER HUNZE-EMS INDUSTRY					
<b>VII</b> N. Belgium NORTHWEST FRANCE	Michelsberg Culture Bell Beakers Western Neolithic Seine-Oise-Marne Culture				ARMORICAN EBA		WESSEX EBA I II			'ATLANTIC' MIDDLE BRONZE industries Tréboul Rosnoën			CARPS-TONGUE INDUSTRY		
<b>VIII</b> Lowland ENGLAND & Wales	Windmill Hill Culture EARLY NEO.	MIDDLE NEOLITHIC Bell Beakers B 3, C Bkrs.			LATE NEO. A Bkr, FV		MIDDLE BRONZE AGE			'First Swords' T. B. B.		WILBURTON INDUSTRY			
<b>IX</b> IRELAND & Scotland	Clyde-Carlingford Lough Gur				E. B. A. Boyne Culture		MIDDLE BRONZE AGE Omagh moulds Killymeddy moulds			Glentroot Bishopsland A		LATE BRONZE AGE Kish Dowris B			

Table of comparative chronology for the Bronze Age in Northwestern, Northern and Central Europe.