

# THE TOLLEBEEK SPEARHEAD

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**ABSTRACT:** A find is described, from Tollebeek, near Urk in the Northeast Polder in the Netherlands, of a large spearhead with slits and circular perforations in the blade. Several close parallels are known in the Paris basin and elsewhere in France; fewer in England. Typologically the spearheads of Tollebeek type are related to some of the spearheads with lunate openings, dating to the later part of the Wilburton phase of the Late Bronze Age in Britain.

**KEYWORDS:** Bronze Age, spearheads, typology, Wilburton/St.-Brieuc-des-Iffs phase.

## 1. FIND CIRCUMSTANCES

At a time between 1970 and 1975, Mr. T.J. Ritsema, a farmer at Tollebeek, near Urk in the Northeast Polder, broke open a large lump of sandy earth that he had plowed up on the southern part of parcel H 105 (fig. 1) and had brought to his farmyard. Inside the clump he found a large bronze spearhead. After cleaning the spearhead with a potato knife, he mounted it with a nail on the wall of his sittingroom.

Curious as to the date and value of the object, Mr. Ritsema showed it in 1983 to Mr. W. Oosterhof, curator of the Schokland Museum, who then made the find public. Subsequently, Mr. Ritsema kindly gave permission for the study and publication of the spearhead to the B.A.I. in Groningen and the I.P.P. in Amsterdam. At the B.A.I. the fragment of a wooden shaft preserved in the socket of the spearhead was removed for wood species determination and <sup>14</sup>C dating. In 1984 a small-scale excavation was carried out at the findspot by the I.P.P. (Hogestijn, 1985; Palarczyk, 1986). In 1987 a metal sample was taken for analysis by Dr. P. Northover (Oxford).

The find-spot overlies the northern slope of a Saalian ice-pushed ridge, with a capping of cover-sand. At the find-spot, which is c. 4 metres below NAP (*Normaal Amsterdams Peil* = Normal Amsterdam Level), the upper surface of the Pleistocene ridge is at c. 3 metres below the present surface, and is in turn covered by peat and marine clays datable to the period between c. 6500 and 3000 BP; fresh-water detritus and Urk sands of the later Middle Ages; and by earth excavated from the nearby Urkervaart canal when it was dug just before the Second World War. The highest part of the Pleistocene ridge is to the southwest of Parcel H 105, where

it reaches the present-day surface, at an altitude of c. 3.5 metres below NAP.

At the find-spot there is now a stratigraphical hiatus, due to natural erosion, from c. 3000 BP to c. 700 BP. The Urk sands are the sediments resulting from this erosion of the ridge. Although the erosion started in Neolithic times, and continued during the Bronze and Iron Ages, it was strongest in the later Middle Ages (Wiggers, 1955: p. 131). Layers of Urk sands have been mapped over an area of several square kilometres, and can reach a maximum thickness of 3 metres; generally, however, their thickness is only a few centimetres, and the amount of displaced ridge material is estimated as at least 7500 cubic metres. Combining this estimate with an estimated maximum surface of the eroded ridge area of c. 25,000 square metres, it would appear that the top of the ridge was situated at least a half metre below NAP, and perhaps higher. In the Late Bronze Age, the period from which the Tollebeek spearhead dates, mean sea level was 1.5 to 1 metre below NAP (van der Plassche, 1983: fig. 20). We can therefore safely conclude that in the Late Bronze Age the top of the ridge was not yet covered with peat or other sediments.

At Parcel H 105, ploughing and the digging of drainage ditches, etc., was restricted to the uppermost metre of earth, and therefore did not reach the level of the Pleistocene subsoil. Since the spearhead was found in a lump of sand, one can conclude that its primary deposition had not occurred at Parcel H 105 but somewhere else – presumably higher on the slope of the ridge. The preservation of part of the wooden shaft in the socket of the spearhead indicates that this deposition must have taken place at a level at or below the top of the groundwater table.



Fig. 1. Location of the Tollebeek find.

Two different agents must be considered as possibly responsible for the disturbance of the original deposition spot of the spearhead, and its subsequent transportation with part of its matrix. The first possibility is the machine transportation of ridge material during the construction phase of the Northeast Polder, when the Urkervaart canal was dug through the ridge. The excavated earth, mixed with large amounts of water, was deposited along both sides of the canal. The other possibility is the displacement of material when the ridge was eroded by water action, producing the sedimentation of the Urk sands previously mentioned. Both types of sediments are present at Parcel H 105, and there is nothing to facilitate a decision as to which of these agents is responsible for the displacement of the spearhead.

In the Late Bronze Age, the ridge was situated between the southern bank of a former course of the Overijsselse Vecht and the northern bank of one of its tributaries (Wiggers, 1955; Palarczyk, 1986). Apart from the spearhead, no other Late Bronze Age finds are known from this ridge (Hogestijn, 1985). In the Late Bronze Age, only the Pleistocene outcrops of Urk, Tollebeek and Schokland rose above the surrounding peaty area. They were the only dry islands along the Overijsselse Vecht between the beach barriers of North Holland to the west, and the sandy soils of Friesland, Groningen, Drenthe and Overijssel to the east. Possession of these ridges could have given the occupants opportunity to control any river traffic along the Over-

ijsselse Vecht, which affords easy access to the western, eastern and the northern parts of the Netherlands. Verlinde (1987) has suggested that the banks of the Vecht were a trade route in the Late Bronze Age and Early Iron Age, as half a dozen Urnfields are known along the course of this river. The Drenthe plateau, at some distance to the east, certainly had a relatively dense occupation in the Middle and Late Bronze Age. On and near this plateau there are a number of finds of spectacular Middle Bronze Age prestige objects, such as the oversized Exloërmond basal-looped spearhead and the giant Ommerschans sword, both of West European origin. These objects, and the western European looped palstaves in the hoard of Bargermeer 1900, which are more or less contemporary with the Tollebeek spearhead, could, perhaps, have reached Southeast Drenthe from the west by the Vecht route. A contemporary diffusion of prestige objects along this route in the reverse direction, from east to west, is apparently represented by the knives with double-T handle (Butler, 1973), with find-spots at Hardenberg and Vroomshoop in Overijssel, Valthe in South Drenthe, and Appelscha in Friesland.

In the Late Bronze Age cereals were grown on coversands and on sandy clays. In this period the landscape of the eastern part of the IJssel-Vecht basin consisted mainly of peat bogs, freshwater lakes and swamps. The sandy soils of the Pleistocene ridges were probably the only suitable locations for cereal production; while their immediate

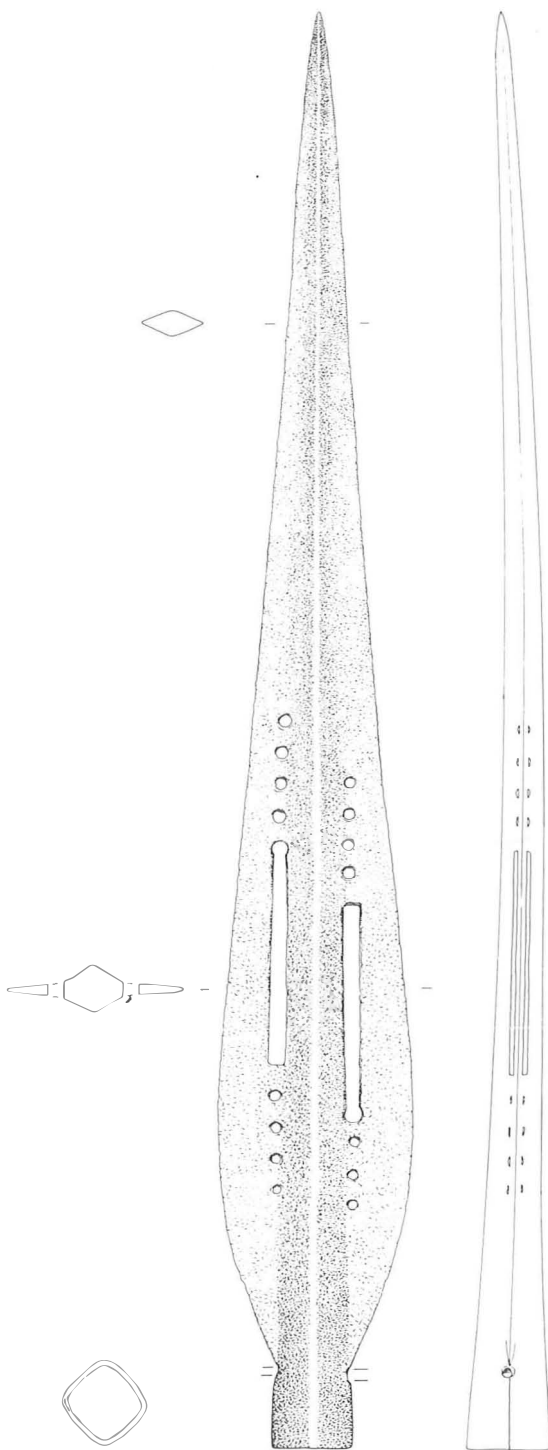


Fig. 2. The Tollebeek spearhead. Scale 2:5. Drawing J.M. Smit (B.A.I. Groningen).

vicinity provided ample opportunity for hunting, fishing and animal husbandry. The few other finds of the Late Bronze Age in the Northeast Polder north of the Overijsselse Vecht stem from the peaty

western edges of small lakes. Due to the predominantly westerly winds, these lakes slowly eroded their eastern edges, while at the same time peat started to grow on their western sides. This continuing process of erosion in an easterly direction, and the later erosion which shaped the Zuiderzee, are among the main causes of the scarcity of Bronze Age and later prehistoric finds in the area; apart from the spearhead, no other Late Bronze Age finds are known from this ridge. This erosion of the potential data unfortunately makes it impossible to establish, or reconstruct, a detailed regional context for the Tollebeek spearhead find.

In the Middle Bronze Age, burial practices in the west and in the northeast of the Netherlands provide evidence for status differences, presumably of the 'achieved status' sort. Such indications of social structure no longer occur in the Urnfield grave record of the Late Bronze Age; in that period prestige objects were no longer deposited in graves, but rather in votive or personal hoards (as in the Heerde hoard from the edge of the IJssel valley, or the exceptionally rich Drouwen hoard of 1939 in Drenthe), or found their way eventually into scrap metal deposits (as in Drouwener Veld, cf. Butler, 1986; 1987). We can only assume that similar deposition practices existed in the Polder area, where the Tollebeek spearhead is a so far unique surviving example of the (presumably deliberate) deposition of a status symbol.

## 2. DESCRIPTION

The principal features of the Tollebeek spearhead can be summarized as follows:

1. Unusual length (47.5 cm; maximum width 6.2 cm).
2. A long, narrow, slightly flame-shaped blade.
3. A ridged socket with rounded-lozenge cross-section.
4. A very short socket-tube extension (only 2.8 cm in length), with peg-holes directly under the blade.
5. A long, nearly parallel-sided slit (7.1 cm x 5 mm and 7.2 cm x 4.5 mm respectively), squared off at one end but somewhat keyhole-shaped at the other end, in each side of the blade (the rounded head uppermost on one side, lowermost on the other); the slits are parallel to each other, but not at the same level.
6. A row of round perforations, c. 3 to 4 mm in diameter, in each side of the blade, partly above and partly below the slit (4+3 round holes on one side, 4+4 on the other), placed asymmetrically.

The patina of the spearhead is mostly ochreous, with varied green and black patches; it has partly been scraped off. A sandy encrustation is present in the socket and the perforations. The surface is

somewhat corroded, and is scratched as the result of heavy-handed cleaning.

Inside the socket was a fragment of the wooden shaft, with a length of 33 cm. The wood type could not be determined exactly, but is of the *Prunus* family (determination by Ingeliese Stuyts, then of the B.A.I. Botanical Department, Groningen).

A radiocarbon determination from the wood of the shaft gave a date of  $3050 \pm 70$  BP (GrN-12267; see section 5.3).

### 3. CLASSIFICATION AND PARALLELS

Spearheads similar in size and form to the Tollebeek spearhead, and with slits and round perforations of similar character, occur, if rather rarely, in France and England.

French examples were included by Briard (1963) in a list and map otherwise devoted to looped spearheads. Briard included under the designation *pointes de lance ajourée* both spearheads with lunate

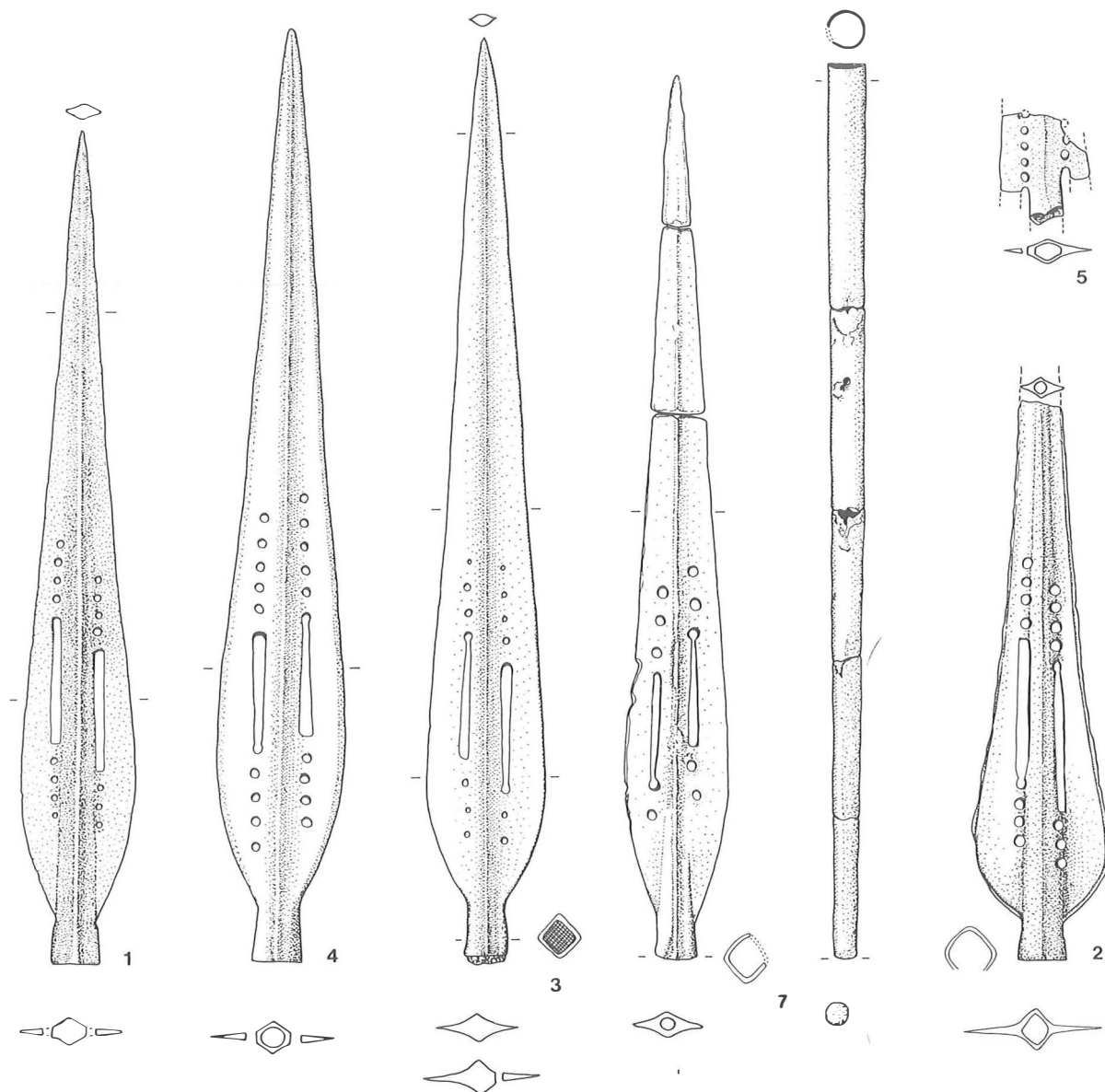


Fig. 3. Spearheads of Tollebeek type. 1. Tollebeek, N.O.P.; 4. Seine at Paris (Bercy); 3. Seine at Paris (Austerlitz); 7. Museum Grasse (with cylindrical chape?); 5. Seine, Dep. Essone; 2. R. Oise at Clairoux. Scale 1:4. 1 after original, drawing J.M. Smit (B.A.I.); 4 after Mohen; 3 after O'Connor; 7 and 2 after Blanchet & Lambot. Redrawn by B. Brouwenstijn (I.P.P.).

openings in the blade and those with slits and round perforations; but only two examples from his list are spearheads with lunate openings (his No. 1, Abbeville, Somme; later attributed to Nampont, Somme: Blanchet, 1984: p. 574, with further references; and one example without provenance in the Musée du Périgord, Dordogne (Briard's No. 23; cf. List B, No. 3 below).

Three slitted examples (two complete and one fragment) are from the Seine at Paris (collectively No. 13 in Briard's list; No. 3-5 in List A below). The two complete examples are from find-spots approximately 800 metres apart; the third is from somewhat farther upstream, but the exact find-spot is not known. Another slitted spearhead, found

subsequently to Briard's publication, is from the river Oise at Clairoix (List A, No. 2).

A fragment of a spearhead agreeing in size, general form, and the possession of rows of round perforations occurs in a small scrap metal hoard from Louignac (Corrèze; Briard's No. 24; our List A, No. 6 below). Only the tip ends of the 'slits' are preserved; it is not entirely excluded that these were lunate openings rather than slits, as the form of the preserved portions (the metal is here thinned, but not fully perforated) does not agree with the forms of the slit ends of the other examples here discussed. The ribs on the blade are also a feature which does not occur on the other slitted spearheads here cited. In other respects, however, it seems justified to

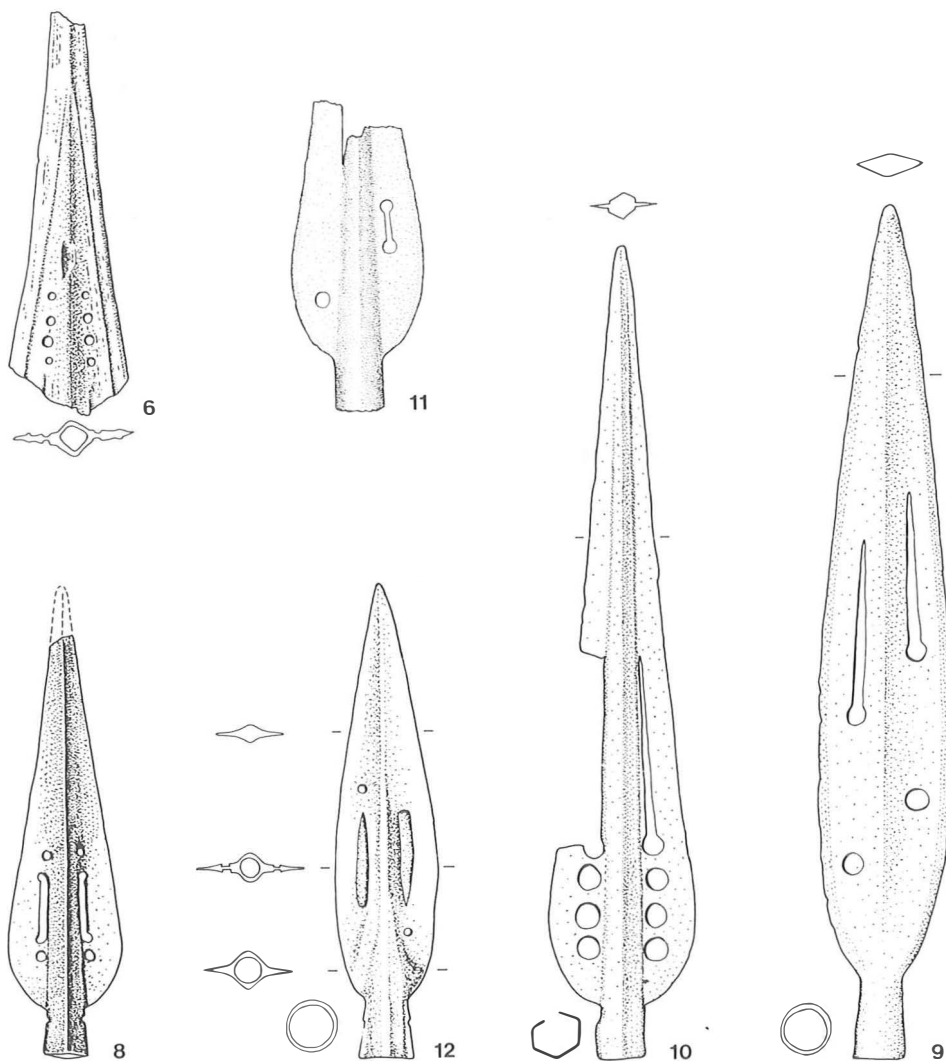


Fig. 4. Spearheads of Tollebeek type. 6. Louignac, Corrèze (hoard); 11. R. Thames at Kew?; 8. area Epernay-Chalon-Reims?; 12. Ovington, Northumberland; 9-10. R. Thames, Bray, Berkshire. Scale 1:4. 6 after Bouysonnie & Bardon; 11 after R.A. Smith; 8 after British Museum Bronze Age Guide; 12 after Card Catalogue of Bronzes, British Museum; 9-10 after Ehrenberg. Redrawn by B. Brouwenstijn (I.P.P.) except 11: by H. Roelink (B.A.I.).

follow the French authors, if with some reservation, in classifying it as a slitted spearhead. The Louignac fragment was found together with another, plain spearhead fragment and with fragments of swords which Mohen (1977: p. 121) and Blanchet (1984: p. 260) have characterized as *épées atlantiques du Bronze final II*.

Another presumably French find, for which provenance details have been lost, is present in the museum at Grasse in southern France; an illustration was published by Blanchet and Lambot (1980: p. 206), along with that of a presumably associated cylindrical chape (List A, No. 7 below). In a note by Mohen appended to this article, he states that the two objects have a similar patina, and are of very nearly the same length, which would argue for their association; and that they come probably from the collection of P. Goby.

These half-dozen spearheads have, despite differences of detail, so much in common that they could reasonably be supposed to be products of the same workshop; or at least of a small number of closely related workshops. Indeed, the Tollebeek spearhead and the two complete examples from the Seine at Paris, and the Museum Grasse specimen, are so similar that one can very reasonably suppose that they were made by the same hand.

Ehrenberg (1977: p. 14) published two spearheads from the Thames at Bray, Berkshire (her fig. 23:17 and 20; our List A, No. 9 and 10 below) which are certainly closely related to the French examples cited, if different in certain details. The two Bray spearheads have in common the long narrow-triangular slits, the base of which merges into a round perforation (two Paris examples also have this feature, only it is the apex of the triangle that merges with the round perforation). Bray No. 20 has a socket of hexagonal section as aberrant feature; its round perforations are larger than those of the Continental examples. Bray No. 17 has as deviant feature a blade (not merely the socket) of lozenge cross-section.

Further, there is a fragmentary spearhead (pointed end broken off and missing) from the Layton collection (formerly in the Brentford Public Library, later transferred to the Museum of London) consisting mostly of objects dredged from the Thames at Kew (Smith, 1920: Pl. II:4; List A, No. 11 below). The very short socket, the lozenge cross-section of the socket tube, as well as the blade shape, connect it with the spearheads already cited. In one side of the blade are two circular perforations, connected by a narrow slit. The other side has only a single round perforation.

In briefly discussing the Bray spearheads, Ehrenberg suggested that they were to be considered as a separate variant of the 'lunate openings' spearheads, contemporary with or slightly later than the

latter. This view was subsequently adopted by Briard and Mohen (1983) in their contribution to the systematic typology of French bronzes. They distinguished between a Type 231, *à perforations lunulées*, and a Type 232, *à perforations multiples*, which in their opinion derived from the British lunate-openings spearheads.

Besides the large spearheads with slits and round perforations in the blade already cited, a few examples with similar features are known which are considerably smaller in size. These include a spearhead from France, without exact provenance (ex coll. Morel; List A, No. 8, and Note 1), which, were the missing tip present, would have had a length of c. 25 cm; and a spearhead from Ovingham (or Ovington, in Burgess, 1968a; List A, No. 12 below) with a length of 24.6 cm. These spearheads, though only half the length of the Tollebeek spearhead and its river Seine analogues, seem nevertheless to be products of the same workshop tradition. The perforation pattern of the French specimen resembles (as already noted by Smith, 1920: p. 15) that on one blade side of the specimen from the Thames (at Kew?) cited above (List A, No. 11).

The hoard from Wilburton Fen, Cambridgeshire (well-known, but never fully published; selection O'Connor, 1980: fig. 46c-49a; more fully Colquhoun & Burgess, 1988: Pl. 145-152A) contains, amidst its large assortment of spearheads, examples embodying practically all the features found on the spearheads of the Tollebeek variant. Thus, the long ogival form is found on O'Connor's No. 13; the ridged socket on his No. 12 and 13; the short socket on No. 9; round perforations on No. 14. All that is further needed to make a Tollebeek spearhead are the long slits (at Wilburton Fen there are lunate openings) and the multiple use of the round perforations (which do occur, however, on some 'Wilburton' spearheads found elsewhere: see below).

Cast slits are also found on other sorts of bronzes. In the South Scandinavian area and Schleswig-Holstein, for example, knife handles with slits (*Messer mit Rahmengriff*) are common in Period III (e.g. Prüssing, 1982: pp. 38-42, Taf. 1-3, No. 22-64a; map Taf 18a). The hilt-plates of swords and knives are sometimes provided with slits instead of round perforations for the reception of rivets. On the Lüneburger Heide this feature begins already in Period III (the *Schwerter mit geschlitzter Zunge*, *Typ von der Unterelbe*: Sprockhoff, 1931: pp. 23-25, map Taf. 30; Laux, 1971 puts them in his *Zeitgruppe IV*). In Britain, sword-hilt slits begin already toward the end of the Penard phase, but become very common and characteristic in the Wilburton phase; they occur only occasionally thereafter. A similar development takes place in France (Colquhoun & Burgess, 1988: pp. 31-32 ff., Pl. 16-40). The edges of the slits are usually not neatly finished, since they

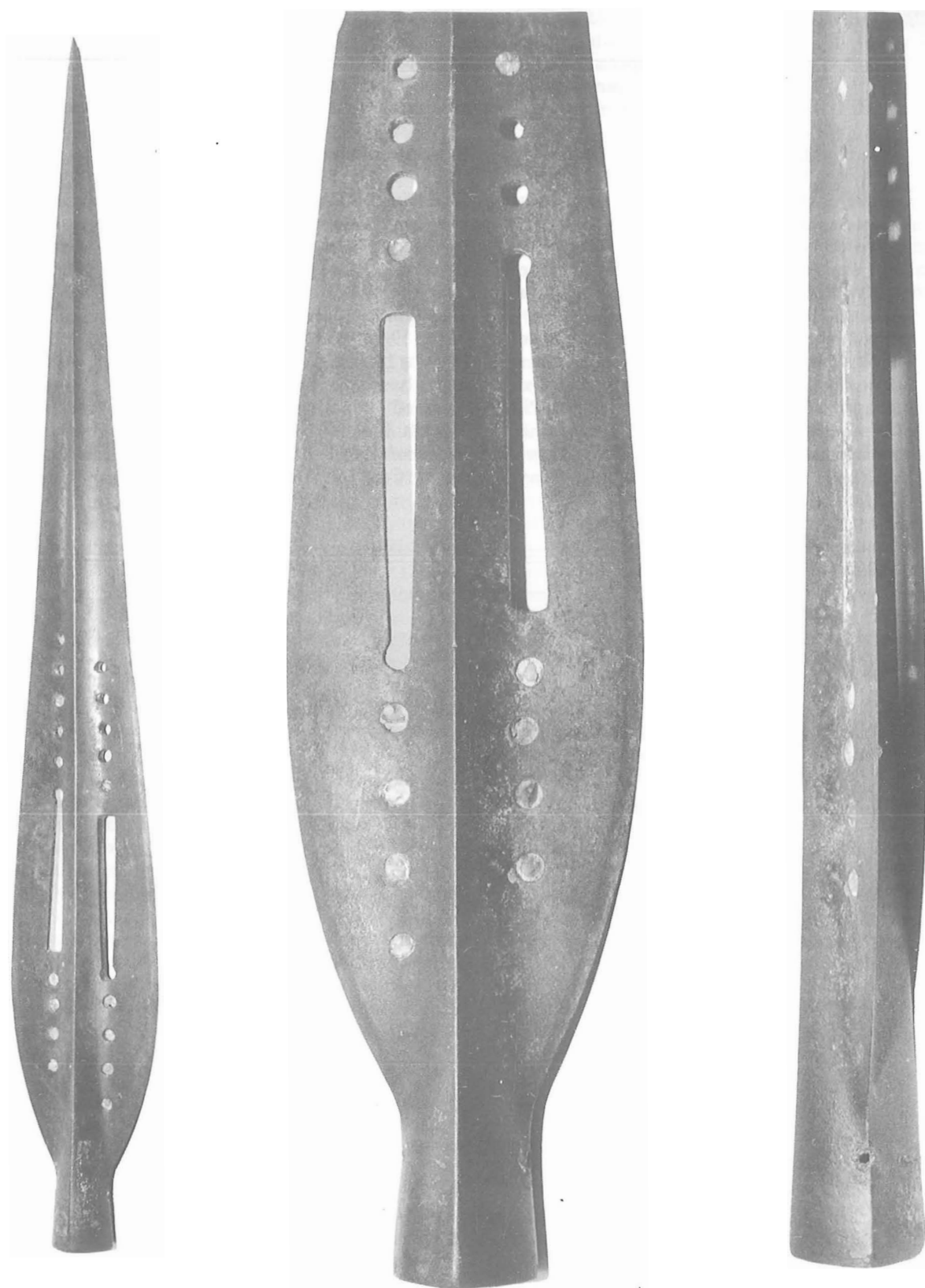


Fig. 5. The spearhead from the Seine at Paris (Bercy). Photographs J.J. Butler.

are intended to be concealed by the hilt-plates. But metal sword hilts are also known in which slits and/or round or otherwise-shaped openings, with smooth edges, have been provided, presumably for the reception of decorative inlays of other material (i.e. two examples from Chalon-sur-Saône, in the Museum there; Hitzkirch-Seematte, Kanton Luzern, Switzerland: *Archäologie der Schweiz* 11:2, 1988, rear cover; numerous examples in South Scandinavia: see Ottenjahn, 1969).

There are various reasons for agreeing with Ehrenberg, Briard and Mohen in regarding the spearheads with slits and round perforations as a variety distinct from, although related to the spearheads with lunate openings in the blade. The examples cited above have a considerable number of features in common, despite the difference in size and some variation of blade outline. Coombs (1975: pp. 19, 59, fig. 7, 68) has rightly pointed out that the lunate openings spearheads are a far from homogeneous group, varying immensely in details; many

different sorts of spearheads have the feature 'lunate openings' in common. But some lunate-openings spearheads are certainly close relatives of the slitted/round openings variant. Among these we should certainly count, for example, the lunate-openings spearheads which also have round perforations in the blade. Examples of this combination have been found scattered from Scotland and Ireland to Spain: e.g. the well-known spearhead from Donhead, near Coupar-Angus, Perthshire (Evans, 1881: pp. 188, 336-337, fig. 421); one from the hoard of Atton, Glen Cove, Angus (Haddow et al., 1956/57; Colquhoun & Burgess, 1988: No. 523, Pl. 175B); the fragmentary specimen from Crieff, Perthshire (Coles, 1959/60: p. 101); one from the Thames at Kew (Smith, 1920: fig. 14; the openings in the blade are actually in the form of isosceles triangles with rounded corners); the spearhead from the river Huelva find in Spain (length 28 cm; *Inventaria Archaeologia* E1, No. 140); an example from Moyarwood, Co. Galway, Ireland with staggered round

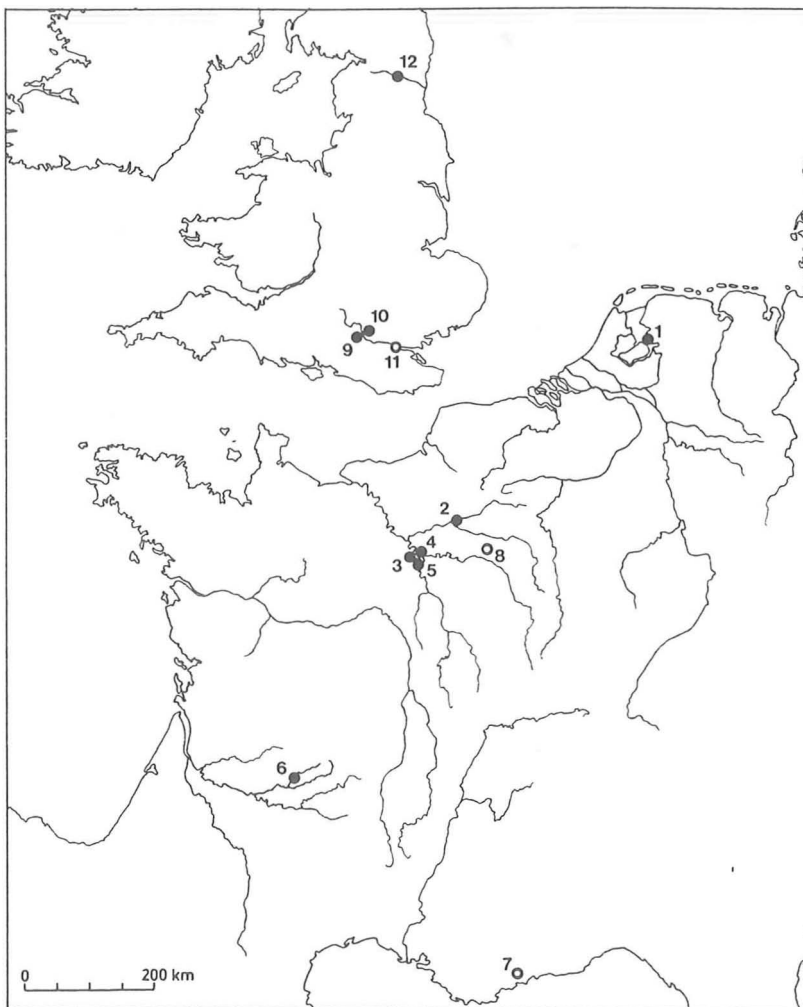


Fig. 6. Distribution of spearheads of Tollebeek type. Drawing S. Jager (B.A.I.).



perforations (Waddell, 1977-78); and a few unlocalized Irish specimens (Wilde, 1861: p. 498, fig. 371, 373).

Occasional occurrences are also known of spearheads with round perforations in the blade which have neither slits nor lunate openings; such as the example from the Wilburton Fen hoard mentioned above and the hollow-bladed spearhead from Sutton End near Petworth, Surrey (Smith, 1920: p. 15, Fig. 13; Curwen, 1937: p. 207, fig. 60:2, p. 209).

It is noteworthy that the slitted spearheads do not (except for the possible example from Louignac) have ribbing on the blade, whereas ribbing is quite a common feature especially on the finer examples of the lunate openings spearheads.

What seems especially noteworthy is that all eight of the French slit-and-round-openings spearheads have a socket-tube extension which is of lozenge cross-section; whereas, with the related British spearheads, the socket-tube extension of one of the Bray spearheads, the Kew spearhead and the example from Ovington are round, and that of the other Bray spearhead is hexagonal. Hexagonal socket-tube extensions occur on some British lunate openings spearheads, i.e. Thames at Kew (Smith, 1920: fig. 14) and Wilburton Fen (Colquhoun & Burgess, 1988: pl. 146:1).

The small number of spearheads with slits and round openings, and their comparative homogeneity, suggest that their manufacture could not have been spread over a long period of time or many different workshops. On the basis of the above-mentioned we will call the spearheads with slits and round openings the Tollebeek variant, to distinguish them from the various types of spearheads with lunate openings. Not to be overlooked in this connection is the contrast in their distribution: lunate-openings spearheads occur widely in the British Isles but there is only one certain example and one or two uncertain finds in France (List B below), whereas eight examples of the Tollebeek variant are now known on the Continent (four or five of them from the Paris basin: i.e. the three examples from the Seine, the one from the Oise, the one possibly from Champagne), while there are only four examples known in Britain.

This difference in distribution pattern could perhaps be a matter of chance, the number of specimens involved being so small. If, however, the distribution difference is real, it could suggest that (1) the spearheads of the Tollebeek variant were made in the 'Wilburton' area, thus probably in East Anglia or the Thames valley, specially for export to France, or (2) that the Tollebeek type was developed in France, presumably in the Seine valley, perhaps by an expatriate Wilburton smith. If the presently known distribution is not deceptive, the latter alternative would be the more probable one.

#### 4. METAL ANALYSIS

The metal analysis of the Clairoux spearhead (the only slitted spearhead for which a spectro-analysis has previously been published: Bourhis, 1984: p. 41, Anal. No. 3675; also Blanchet, 1984: p. 441) falls within Northover's definition (1982: pp. 72 ff.) of his 'S' metal, which he considers to be especially characteristic of St.-Brieuc-des-Iffs/Wilburton metal-work, though ultimately of West Alpine origin. But the Clairoux spearhead has a low Pb content; which is rather uncommon, though not entirely absent, in Wilburton and St.-Brieuc-des-Iffs contexts; most of the hoards of this phase for which analyses have been published contain at least one non-leaded object. Indeed, in the lengthy series of analyses from the Channel Islands (Jersey) hoard of La Clos de Blanche Pierre (Northover, 1987a; Coombs, 1988) many of the analysed objects show low lead values; though, by way of contrast, the contemporary hoard from Luzarches, Val d'Oise, has only analyses with high lead values. The metal of the Clairoux spearhead is similar to that in the hoards from Giraumont and Blanche Pierre; in particular it is remarkably close to No. 49 in the Blanche Pierre hoard, the blade fragment of a winged axe (Coombs, 1988: p. 322 No. 49, fig. 3:49).

The Tollebeek spearhead has in the meantime been analysed by Northover. Its tin, lead, nickel and bismuth values are generally similar to those from the Clairoux spearhead, but with respect to arsenic, antimony and silver the Tollebeek values are considerably lower. Still, Northover (in litt., 1987) considers it likely that the metal is of Wilburton/St.-Brieuc-des-Iffs to early Carps Tongue date. He regards the low lead value as likely to suggest a French rather than a British origin. In general, comparisons may be made with the analyses for the St.-Brieuc-des-Iffs hoard and other French hoards of the phase (Briard & Onnée, 1972; Bourhis, 1984; Blanchet, 1984: pp. 440-441, listed under *Bronze final* II:), and the Wilburton-phase analyses published by Northover (1982; 1987a; 1987b); the analyses recently published by Rychner (1988b: pp. 71-76) illustrate the related alloys of the Late Bronze Age in Central Switzerland.

Details of the Clairoux and Tollebeek analyses are as follows:

Element	Clairoux	Tollebeek
Sn	7.5	8.21
As	c. 1.5	0.27
Sb	c. 1	0.31
Ag	0.5	0.11
Ni	0.15	0.14
Pb	0.50	0.77
Co	-	0.04

Element	Clairoix	Tollebeek
Au	-	-
Zn	0.001	0.02
Bi	0.07	tr
Fe	0.02	0.05

## 5. DATING

### 5.1. Relative dating

Recent studies of the Late Bronze Age material of Britain and France (Burgess, 1968a; 1968b; 1974; Briard, 1965; Briard & Onnée, 1972; Northover, 1982; 1987; Coombs, 1988), and especially of the bronze hoards, have shown that for a time similar bronze industries flourished on both sides of the English Channel: the St.-Brieuc-des-Iffs industry in western France, the Wilburton industry in southern and eastern England. The same sorts of swords, chapes, ferrules, etc. were made in the two provinces. But apart from their similarities, there are also some major differences between the bronze industries on either side of the Channel. Among these are that on the French side a limited range of spearheads was produced (chiefly plain pegged spearheads; only a few main varieties have been recognized: plain spearheads with normal-sized and those with short socket; Mohen's 'Paris type'); while in the Wilburton industry on the British side a great deal of energy and ingenuity was invested in the diversification of spearheads.

The Paris area is very rich in Late Bronze Age finds. These include many prestige objects, as the handsome monograph of Mohen (1977) has abundantly shown. Clairoix is in the centre of the rich find area near the confluence of the Oise and the Aisne; prestige objects such as the crested bronze helmets from Montmacq and Armancourt and several grandly proportioned spearheads occur in the vicinity. Nearby, also, at Giraumont, occurs a good-sized hoard of the St.-Brieuc-des-Iffs phase (Blanchet, 1984: pp. 247-248, fig. 135). Such areas, presumably with local elites, were obvious magnets for prestige products such as the spearheads of the Tollebeek type.

The St.-Brieuc-des-Iffs phase in Brittany was equated chronologically by Briard (1965: pp. 175, 298-299) with HaA2 in Central Europe and Hatt's Bronze final II in eastern France. This dating was followed by Mohen (1977: pp. chronological tables pp. 229, 236) with respect to the hoards related to the St.-Brieuc-des-Iffs phase in the Paris Basin, i.e. Luzarches, Champcueil, Charenton, Paris and Boutigny. Blanchet (1984) also discusses the hoards of that period in Picardy and northern France under the heading 'Bronze final II', but in his final summary with chronological table (pp. 368-369),

taking account of recent excavation evidence, and especially the associations with pottery in settlement sites, he allows the St.-Brieuc-des-Iffs-related material to begin at the end of B.f.II, but to flourish mainly in HaB1/B.f.IIIa. In his chronological table, which summarizes his later view, he assigns the Caix hoard to B.f.II, but gives a B.f.IIIa date to hoards such as Giraumont (which was B.f.II on page 253) and Luzarches.

Thanks to the extensive publications of recent years (Mohen, Gaucher, Blanchet, O'Connor, Coombs, et al.) it is now clear that St.-Brieuc-des-Iffs material is far from being typical only of the Breton province. There are more hoards of this phase in the area of the Seine and its tributaries (about 15) than there are in Brittany itself (half a dozen). At least half of these Paris Basin hoards contain objects certainly or probably assignable to HaB1. As examples we may mention the typical HaB1 *Pfahlbaunadel* in the Picardy hoard of Brécly, Aisne (Blanchet, 1984: p. 251, fig. 137:12) or the two HaB1 bracelets and the HaB1 Urnfield knife in the Boutigny II hoard (Essone; see the assessment by Jockenhövel, 1980: p. 79, with Taf. 74).

Other HaB1 pins, razors, bracelets, knives, and winged axes are among the Central European Urnfield types found in other such hoards; and there is the double-axe ingot in the Caix hoard. A comprehensive assessment of the relationships of this hoard group is surely overdue, but the general pattern is already sufficiently clear.

The earlier part of the Wilburton phase in Britain (with the Andover and Nettleham hoards), so closely interwoven with St.-Brieuc-des-Iffs, is therefore also to be equated chronologically with HaB1. There is a consensus among British commentators that later Wilburton (which includes the key hoards of Wilburton and Isleham, and most of the other 'Wilburton' hoards) overlaps the beginning of the HaB3/Bronze final IIIb/Carps-tongue/Ewart Park phase; which is in turn contemporary with the Swiss HaB2 (= Müller Karpe's HaB3).

It has been postulated, on the basis of fairly voluminous hoard evidence, that the sister form of the Tollebeek-type spearheads, the lunate-openings spearheads, was created only in the later part of the Wilburton phase (Burgess et al., 1972: p. 214; cf. Northover, 1982; Coombs, 1988; Colquhoun & Burgess, 1988; etc.). Spearheads with lunate openings are also present in hoards of the phase of Broadward and Ewart Park (Burgess et al., 1972).

In Spain the Huelva river deposit, with its lunate-round openings spearhead, also includes Carps-tongue swords. It has traditionally been dated to the 8th century, though a date in the 10th or 9th century has recently been advocated on the basis of Pantalica II-fibulae in the find (see Jockenhövel, 1980: p. 122 with note 33 for references).

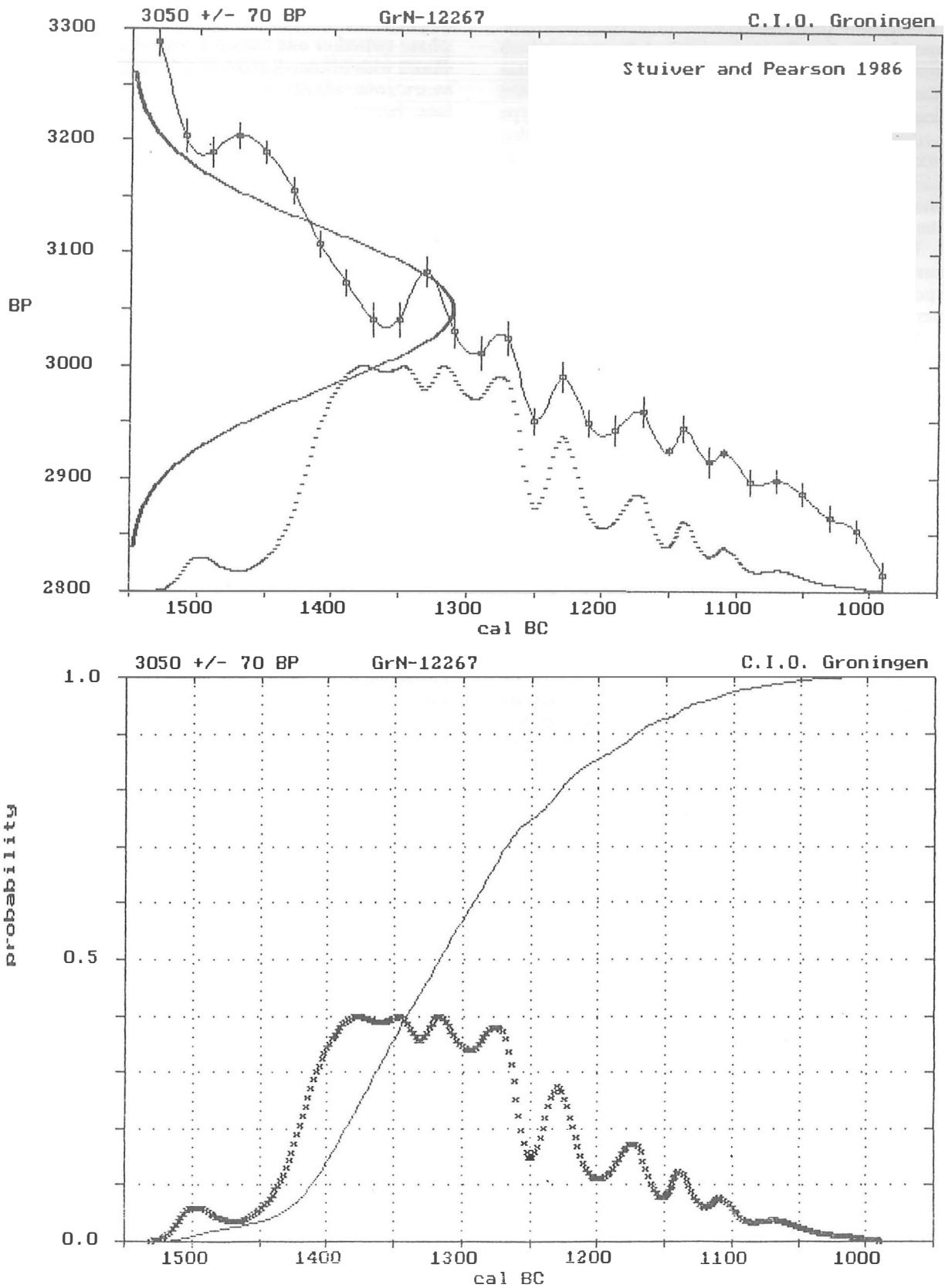


Fig. 7. Calibration of the radiocarbon date of the Tollebeek spearhead. Courtesy Centre for Isotope Research (C.I.O.), Univ. of Groningen.

Only one possible example of a Tollebeek-type spearhead, the fragment from Louignac (which could perhaps be a lunate-openings spearhead) has associations. Included in this scrap-metal hoard are fragments of 'Atlantic French' swords, of a type originating in the French Bronze final II, but also occurring, according to Blanchet's dating (1984, p. 369) in Bronze final IIIa. Related swords are characteristic of the St.-Brieuc-des-Iffs phase and the Wilburton phase.

The cylindrical ferrule illustrated with and presumed to be associated with the Museum Grasse spearhead is also a type frequently occurring in the period concerned.

There is no sign of the existence in western France or in the Seine valley of possible prototypes for spearheads of the character of the Tollebeek variant, so a British origin seems inescapable. They are therefore best dated by the occurrence of related lunate-openings spearheads as cited above, i.e. in the later part of the Wilburton phase. The evidence of the metal analyses of the Clairoux and Tollebeek spearheads is consistent with this dating.

## 5.2. Indirect dendrochronological dating

The dendrochronology of the West Swiss lakeside settlements (Gross, 1984; Ruoff & Rychner, 1986; Rychner, 1988a) provides indirect evidence for the absolute dating of the spearheads of the Tollebeek variant. As seen above, spearheads of this character were current at the end of the Wilburton/St.-Brieuc-des-Iffs phase: and this phase must be regarded as being broadly parallel with the Central European Hallstatt B1. Along the West Swiss lakes, settlements of the HaB1 phase begin in the second half of the 11th century B.C. (Hauterive, dated to the end of HaA2 with some incipient HaB1 elements, has tree-felling dates up to 1040; the HaB1 site of Cortaillod Est has felling dates beginning in 1010). The end of HaB1 cannot as yet be exactly placed. The Le Landeron HaB1 settlement has felling dates up to 954, whereas the earliest felling date at the HaB2 site (= HaB3 in the sense of Müller-Karpe) of Auvernier Nord is 878. There is, thus, a gap of some 80 years between them. This gap could be filled by prolonging the length of HaB1; or by inserting a middle HaB phase, represented for example by the transitional pottery of the cemetery of Elgg: this was the solution proposed by Gross (1984; which does not, however, seem to have been accepted by other Swiss commentators); or, finally, by advancing the starting date of Ha B2 (= Müller-Karpe's HaB3). Rychner – who denies the existence of Müller-Karpe's or Gross's HaB2, and uses this designation for what is HaB3 in the Müller-Karpe system – is content (1988b: p. 75, Note 10) to utilize the rounded-off dates of 1000-900 for HaB1.

Thus, the Central European Final Bronze Age phase (whether one calls it HaB2 with Rychner or HaB3 with Müller-Karpe) would begin, in calendar years, somewhere close to 900 BC. With it, more or less, begins the western European Ewart/Carps phase; and it is somewhere around or not too long after this date that the spearheads of the Tollebeek variant were being handcrafted.

This, incidentally, would agree with the absolute date that is now suggested for the Huelva find (see above, section 5.1).

## 5.3. Radiocarbon dating

The wooden shaft of the Tollebeek spearhead was pre-treated in the Groningen Centre for Isotopic Research (C.I.O.) with acid and alkali to remove carbonates and humic acids. It gave a conventional radiocarbon date of  $3050 \pm 70$  BP (GrN-12267).

This radiocarbon date was calibrated with the C.I.O. Groningen Radiocarbon Program (van der Plicht & Mook, 1987). This program translates the conventional age ( $\pm 3$  sigma) into an age in solar years, utilizing the calibration data of Pearson and Stuiver (1986). The result is shown in the graphs (fig. 7a), on which the Gaussian probability curve is plotted along the vertical, conventional-age (BP) axis, and the calibrated age along the horizontal axis (Cal BC). It is obvious that the calibrated age probabilities are no longer a symmetrical Gaussian curve, and cannot, therefore, be given as a mean value plus-or-minus standard deviations. The cumulative (and normalised) probability curve shown in figure 7b indicates the most probable ages as well.

The Tollebeek spearhead shaft fragment is thus dated between 1525 and 1000 BC, without preference for a particular date range within that span. As it is surely unlikely that a spearhead shaft would have been cut from the centre of a mature tree, and much more plausible that a long straight branch would have been chosen, a correction of the date for missing tree-rings is unnecessary.

In this case, the difference between the date based on archaeological assessments, and indirectly on the Swiss lakes dendrochronology, of around 900 or somewhat later, and the calibrated radiocarbon date is striking, and not easily explainable. A possible if not entirely plausible explanation could be that the shaft was an old one, and re-used when the Tollebeek spearhead was mounted on it.

## 6. FUNCTION

Giant spearheads, of around half a metre in length or longer, occur in many different varieties, and as such are not characteristic of any particular type, region, cultural entity, or chronological phase. The

giant Tollebeek-variant spearheads could have been used as a thrusting weapon, but it hardly seems likely that their size and form were dictated purely by functional considerations. In the absence of specific find contexts such as graves and personal hoards, it is not easy to go beyond vague judgments as to the intended significance of such long spearheads, e.g. that they were undoubtedly prestige objects, symbols of some sort of authority or power.

The perforations in the blade of the Tollebeek-variant spearheads are not needed to help attach the spearhead to a shaft, since the spearheads in question also have peg-holes in the socket. The pattern of blade perforations is in no two cases identical; so the slits and round perforations may have served to personalize the objects, to identify their possessor. The openings could perhaps also have been intended for the attachment of streamers or pendants, to further enhance their decorative or symbolic display function. These or similar interpretations have been suggested by Burgess et al. (1972: pp. 226-228) for barbed spearheads, and they are of course applicable to other varieties of extravagant spearheads.

The most obvious common feature of the find-spots of Tollebeek-variant spearheads is their association with important rivers and river junctions: the Seine/Marne confluence, the Thames, the Oise/Aisne confluence, the Tyne. (This applies also to the few Continental finds of lunate opening spearheads: the Somme, the Huelva; looped spearheads on the Continent are also strongly river-oriented). As we have seen above, the Tollebeek find was also associated with a river, the Overijsselse Vecht, near its confluence with the IJssel.

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## 8. NOTE

1. The objects from the Morel collection are believed all to come either from Champagne or from the lower Rhône valley (*British Museum Bronze Age Guide*, 1920: p. 129). Déchelette attributed, on the basis of information from the Abbé Breuil, a 'grande lance à tranchant ajourée' in the British Museum ex coll. Morel – thus apparently the same specimen we are here discussing – to a hoard found somewhere in the triangle Reims-Epernay-Châlons; i.e. in Champagne. The hoard (No. 543 in Déchelette's list of bronze hoards), is there stated to have also included three short swords, three chapes of lozenge section, and three small spearheads. The lozenge chapes would suggest a dating in the St.-Brieuc-des-Iffs phase. But no such hoard is mentioned by Gaucher (1981) or other recent sources.

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## APPENDIX: Lists of spearheads

### A. Spearheads of the Tollebeek variant

#### The Netherlands

1. Noordoostpolder. Tollebeek. Present paper.

#### France

2. Oise. Clairoix. River Oise. Flame-shaped blade. Round perforations: 4+4, 5+3, diameter 3 to 5 mm, staggered. Rectangular slits, merging into a round perforation. Found 1937, by M. Dieu, on the right bank of the river. Length 31.7 cm (incomplete); width 7.8 cm. Ogival blade. Perforations: on one side 4 round, inverted keyhole, 3 round; on other side, 4 round, keyhole, 3 round. Museum Compiègne. Blanchet & Lambot, 1980: pp. 205-206; drawing by B.

- Lambot; Blanchet, 1984: p. 260, fig. 141 (photo); 515, No. 7. Paris, Pont d'Austerlitz. River Seine.
3. Flame-shaped blade. Round perforations: 4+3, 4+3, staggered. Triangular slits, merging into round perforations in 'keyhole' fashion. Lozenge-sectioned socket tube. Remnants of a wooden shaft fragment inside socket; also a (wooden?) peg is in situ. Length 53.0 cm; width 7.0 cm. Museum Carnavalet, Paris, 206; cast St. Germain, 15.178c. Ex coll. Gréau.  
 Froehner, 1885: p. 147, Pl. XIV:727; Mohen, 1977: p. 121, No. 75-118, with older references.  
 O'Connor, 1980: II, fig. 54:3 (drawing).
  4. Paris, Pont de Bercy. River Seine. Length 52.8 cm, width 7 cm. Round perforations: 5+4 on each side. Keyhole-shaped slits; staggered. Lozenge-sectioned socket tube.  
 Muséum Carnavalet, Paris, 205 (on loan to Musée Pré-historique, Nemours); ex coll. Gréau. Plaster casts St. Germain (15.178c) and Musée de l'Armée, Paris.  
 Froehner, 1885: pp. 146-147, No. 726, with drawing; Mohen, 1977, No. 75-118, fig. 455; Briard & Mohen, 1983, p. 145, fig. 1:1.
  5. Dép. Essone. No exact provenance. River Seine. Fragment (present length 6.0 cm, present max. width 4.6 cm). St. Germain, 26.328. Acquired 1881, ex coll. Tou-louze.  
 Mohen, 1977: No. 91-201, fig. 456.  
 Briard & Mohen, 1983: 145, fig. 1:2.
  6. Corrèze. Louignac. Sand pit in wood near Château de Lons. Hoard find.  
 Large fragment (21.3 cm). Round perforations: 4+?, 4+?; tips of slits or lunate openings. Diagonal ridges on blade. Found with fragment of plain spearhead, fragments of swords.  
 Museum Ernest Lupin, Brive, 85.5.7-12.  
 Bouyssonie & Bardou, 1911 (drawings); Briard, 1963: p. 578, note 39 (with supplementary details of find-spot); Blanchet & Lambot, 1975; Blanchet, 1984: p. 260, fig. 141.
  7. Provenance?  
 Length 52 cm. Perforations: on one side 3 round, inverted keyhole, 1 round; on other side, 2 round, keyhole, 2 round; staggered.  
 Museum Grasse. Presumably with cylindrical ferrule, length 52.8 cm.  
 Blanchet & Lambot, 1980: p. 206 with drawing by M. Rouvier-Jeanlin; with supplementary note by J.-P. Mohen, 1980, p. 207.
  8. Provenance? (Dep. Marne, betw. Reims/Epernay/Châlons?)  
 Hoard? Length c. 25 cm (tip missing). Round perforations: 2+2, 2+2; rectangular perforations merging at each end with a round perforation.  
 British Museum, M1 1241. Ex coll. Morel.  
 British Museum Bronze Age Guide, 1920: p. 129, fig. 136; Déchelette, 1924: p. 80, No. 543 (cf present paper, Note 1).  
 and 2+2 blade perforations, staggered. Short socket extension.  
 Reading Museum, 110.51 (TCB 101).  
 Ehrenberg, 1977: p. 14, fig. 23:17.
  10. Berkshire. Bray. Oakley Court. River Thames.  
 Length 42.8 cm, width 7.8 cm. Flame-shaped blade; long triangular slits and 4+4 round blade perforations. Polygonal socket section; short socket extension.  
 Reading Museum, 43.53.  
 Ehrenberg, 1977: p. 14, fig. 23:20.
  11. Surrey. Kew? River Thames.  
 Large fragment; original length indeterminate. Lanceolate blade, with on one side two round circular perforations connected by a narrow slit; on other side only a circular perforation.  
 Present length 16.6 cm; width 6.9 cm.  
 Museum of London, O.1463; formerly Brentford Public Library, ex Layton Collection.  
 Smith, 1920: p. 15, Pl. II:4.
  12. Northumberland. Ovington (or Ovingham). Tyne bank.  
 Length 24.6 cm; width 5.3 cm. On each side one round perforation and one roughly imperforate indentation, staggered.  
 Private possession.  
 Burgess, 1968a: pp. 31, 69; 33 fig. 22:8; Annable, 1987: fig. 142:2.
- B. Spearheads with lunate openings, found on the Continent and in the Channel Islands
- France*
1. Dep. Somme (80). Nampont.  
 Flame-shaped blade. Short socket. Length 23 cm; width 6.4 cm.  
 Museum Abbeville (No. 76).  
 Breuil, 1903: pp. 511-522, fig. 5, No. 39; Gaucher & Mohen, 1974: p. 117, fig. 28d, fig. 36; Blanchet, 1984: p. 574; Briard & Mohen, 1983: pp. 143-144, fig. 1.
  2. Provenance?  
 Musée du Périgord,  
 Briard, 1963: p. 576, No. 23.
- Spain*
3. Prov. Huelva. River Huelva.  
 Dredge find, with other objects; presumed to be shipwreck deposit. Flame-shaped blade; round socket section; on each side, a round perforation above and below the lunate opening. Length 28 cm; width 4.7 cm.  
 Museum Madrid, No. 32.443.  
*Inventaria Archaeologia*, España, EI, No. 140.
- Channel Islands*
4. Jersey. Clos de la Blanche Pierre.  
 Small example; lunate openings not fully perforated. In scrap metal hoard.  
 Coombs, 1988: fig. 3:39.
- England*
9. Berkshire. Bray. River Thames, above Bray lock.  
 Length 45.1 cm, width 7.0 cm. Lanceolate blade, triangular