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FIRST CENTURY MILITARY DAGGERS AND THE MANUFACTURE AND SUPPLY OF WEAPONS FOR THE ROMAN ARMY

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In this paper I will discuss the chronology and typology of first century Roman daggers and their sheaths. I shall then attempt to draw, from that evidence and from other historical and archaeological material, answers to two questions. Firstly I want to identify where these daggers and sheaths were made, and whether the location of manufacture changed during the first century. Secondly I wish to see what evidence there is that could identify who made the daggers. Again I want to see whether this also changes during the century. There are three main problems that we must keep in mind when we consider the evidence that we shall use to answer these questions. The first problem is the fact that our sample is very small. We only have just over seventy inlaid sheaths and I have listed about sixty daggers (see Appendices 1 & 2). This is all that remains of several tens of thousands of weapons that must have been in use at any one time.[1] The second problem, which relates to the first, is the small proportion of our sample that can be dated at all closely. The final problem, which may not affect the arguments in this paper but should be borne in mind, concerns the limited geographical distribution of the weapons. This, in fact, may simply reflect the large number of troops in Illyricum, in the Rhineland, and in Britain at various times in the First century A.D.[2]

I

The establishment of a chronology and some form of working typology is clearly central to the discussion of any artifact, particularly when it was in use over a period of time and over a wide geographical range. Because of the importance of typology and chronology, and because of the problems associated with them, I propose to look at them in detail.[3] Secondly having established a chronological framework we want to see whether geographical distribution had a bearing upon the form and decoration of daggers and sheaths independent of any chronological changes we might observe, for this may be a pointer to place of manufacture.

There are some practical problems involved in establishing a chronology, besides the obvious problem of the paucity of dated examples. Let us for a moment think about how and when any particular dagger or sheath came to be in its archaeological

context. Firstly they were costly pieces of equipment, and, therefore, it was in the soldiers' interest to look after them. This applies regardless of whether daggers and sheaths were private property or government issue; either way the soldier would lose if weapons were mislaid.[4] We must not, of course, completely discount the possibility that weapons were lost whilst still in use. It is reasonable to assume, nonetheless, that most of the weapons extant today were old or broken weapons that had been discarded at the end of their useful life. Secondly, because they were durable pieces intended to last, their useful life might have been quite long, lasting well after the date of their manufacture. The effect of these factors, for our purposes, will be to blur or smudge the dating in one direction giving it a later bias. We will be able to establish the date of the introduction of a new type, or of a new feature, with some certainty, after taking due account of our meagre evidence, but we will have greater difficulty establishing the date at which an old feature, or type, ceased to be manufactured. For example, in the earlier part of the first century daggers were made with flat tangs; we can say with confidence, on presently available evidence, that daggers with rod tangs were introduced no earlier than the very end of the reign of Claudius, or, more probably in the the principate of Nero. We cannot say whether the older type with flat tangs ceased to be made at the same time as the newer type came into use, or whether it continued to be manufactured for some time after; it certainly continued in use to judge from the archaeological record, but this may merely reflect its useful life, not that it was still being made.

II

In this paper, my particular interest is not with the origins of the Roman military dagger, nor with their introduction into service with the Roman army. I am concerned with their use in the early principate, when they were associated with elaborately inlaid sheaths, and with their final disappearance in the later first century A.D. The fact that military daggers were found at Castillejo, near Numantia, dating to the second century B.C., serves to confirm their long history prior to the principate of Augustus.[5] Because of my concern with the daggers of the principate, I have concentrated my attention almost exclusively on those daggers that can assigned to the period from Augustus onwards. For convenience I have listed all the daggers of this period known to me, with a brief description and references, in Appendix 1. The first part of the list consists of those daggers, which can be dated, placed in chronological order. The second part lists the remaining daggers, those that cannot be dated at all closely. A study of the dated examples brings to light certain features that it is possible to date.

These are i) the form of the midrib, ii) the form of the tang, and iii) the presence, or absence, of rivet holes through the shoulders of the blade. Three further features appear to be characteristic of the latest daggers: iv) very slim blades, v) blades with very little waist, and vi) blades with very slight midribs.[6]

i) Midribs. There are basically two forms: simple upstanding midribs, and midribs flanked and defined by grooves. The latter is found in its most developed form on daggers such as those from Hod Hill (App.1, No.11) and from Leeuwen (App.1, No.54). The earliest dated occurence of the midrib defined by grooves is on a dagger from the Auerberg (App.1, No.8), which is of Tiberian or early Claudian date. The dagger from Augsburg-Oberhausen with a grooved blade and a rod tang could also be early in date (App.1, No.7).[7] The dagger from Dunaföldvár (App.1, No.39) found in the River Danube - and so unprovenanced - seems to have a midrib defined by grooves. It was associated with a sheath of Type A (App.2, No.7), which, possibly, could be dated as early as the principate of Augustus. The dating is not certain, and so we must not place too much reliance upon its testimony. Simple upstanding midribs are found on daggers with early provenances; for example those from Dangstetten (App.1, No.2), dated c.15 to c.10 B.C., and from the Titelberg (App.1, No.1), dated c.30 to c.10 B.C. This form of midrib is also found on the Castillejo daggers already referred to. There is a dagger, with a simple midrib, from a Flavian context at Nijmegen (App.1, No.18). As the authors of the published report on this dagger state, it is possible "daß er schon vor 70 n. Chr. in klaudisch-neronischen Zeit hergestellt worden ist".[8] There is an undated dagger, possibly from Nijmegen (App.1, No.51) which has a very similar blade form, but with a mid rib defined by grooves. This warns us to be wary of placing too much reliance on the blade form for dating, until we have more evidence.

ii) Tangs. We have already noted above that the earliest daggers that are of interest to us, have flat tangs pierced to take the rivets that fastened their handles. The Castillejo daggers appear to have flat tangs. There is little doubt that this feature is found on the earliest daggers: see for example Appendix 1, Nos.2-4, 6 and 10-14. The earliest example of a dagger with a rod tang that can be closely dated is from a Neronian pit at Usk (App.1, No.15). There is a dagger from Kingsholm (App.1, No.16) which could as early in date. There is also the dagger from Augsburg-Oberhausen (App.1, No.7) noted above, which has a rod tang, and which could be even earlier in date. The problems in dating the material from this site, make me

loathe to place any great weight on this evidence.[9] The evidence suggests that the rod tang was introduced at the very end of the principate of Claudius, or at the beginning of Nero's reign. The dagger of Flavian date from Nijmegen (App.1, No.18), mentioned above, had a flat tang, but proves only the continued use of daggers with this feature. It may have been made earlier. The same applies to the unprovenanced dagger from Straubing (App.1, No.20); the site was first occupied in the Flavio-Trajanic period. Whatever the exact date at which the manufacture of daggers with flat tangs ceased, we know that rod tangs were introduced in the principate of Nero, or slightly earlier.

iii) Rivet holes through the shoulders of the blade. This is an early feature. The daggers from the Titelberg and from Dangstetten (App.1, Nos.1 & 2) each have four rivets through their shoulders, two either side of the tang. The more usual number, in the first century A.D., is two; one each side. Although an early feature, it does appear to continue in use for some time. The daggers from Nijmegen and Straubing, mentioned above, have rivet holes. They are from Flavian contexts or sites but could have been made earlier. However the dagger from Rißtissen (App.1, No.19), which had a rod tang as well as rivet holes through its shoulders cannot have been made earlier than the end of the principate of Claudius. It was found with a sheath of Type A (App.2, No.32), which I shall argue is itself to be dated, on the basis of its decoration, to a later period (see below). The earliest securely dated dagger without rivet holes through its shoulders is that from a Neronian pit at Usk (App.1, No.15). It has a rod tang as we have already noted. Possibly of the same date are daggers from Kingsholm (App.1, No.16), and from Mainz (App.1, No.14). The latter may have had a flat tang, and is very possibly later in date; the former has a rod tang, and is more certainly of pre-Flavian in date. The dagger from Augsburg-Oberhausen, referred to above, lacks rivets through its shoulders, and could be earlier in date. We have noted the problems of this site. The evidence strongly suggests that the omission of rivet holes from the shoulders of daggers coincided with the introduction of rod tangs, and should be dated to Nero's principate and after. The Rißtissen and Mainz daggers show that some of the older traits lingered on after new features had been introduced.

To summarise briefly the evidence we have looked at so far: the introduction of the grooved blade seems to have occurred in the reign of Tiberius, but blades with simple midribs continued in use up until the Flavian period. Flat tangs, like simple midribs, are an early feature, but it seems that they were not

replaced by the rod tang until, at the earliest, the end of the principate of Claudius, or, more probably, in the principate of Nero. The third new feature, the omission of rivet holes through the shoulders of the blade, was contempary with the introduction of the rod tang. The earliest certain examples without rivet holes also have rod tangs. The dagger from Rißtissen with its rod tang and pierced shoulders shows that some old traits lingered on. None of the new features discussed above would have altered the overall appearance of the dagger very much. Even the discontinuation of the flat rivetted tang did not herald a new form of dagger handle, to replace the old composite handle, as the extant, but badly corroded, handles of the Usk and Caerleon daggers (App.1, Nos.15 & 21) show. The daggers from Vindonissa and from London (App.1, Nos.32 & 59) have wooden handles that are clearly secondary. The main effect of the change, from flat, rivetted tangs to rod tangs, would have been to make the fixing of handles less secure; it may also have made them easier to put on. Since it seems unlikely that the Roman army would have deliberately purchased daggers with "built-in obsolesence", it seems likely that it was easier - and therefore cheaper? - production that was the reason behind the change.

The remaining three features that can be dated are all found on daggers with the later features defined above; ie. on daggers with rod tangs, no rivet holes in the blade, and midribs defined by grooves. Daggers do not necessarily display all of these features.

iv) Slim blades. These blades are very clearly distinguished from wider blades; they are all under 4.5cm wide at their maximum, whereas the wider blades are all 5cm or more wide. There is a distinct gap into which scarcely any daggers fall; one exception being a dagger from London (App.1, No.59). Many of the slim daggers are under 3.5cm wide - as in examples from Vindonissa that are between 3.4cm and 3.1cm wide (App.1, Nos.31 & 32), and an example 3.5cm wide from Gelligaer (App.1, No.36). The earliest example, of a blade as narrow as this, may be that from the Auerberg (App.1, No.8), which appears to be c. 3.5cm wide at the shoulder, and could date from as early as the principate of Tiberius.[10]

v) Little or no waist. Many of the slimmer daggers have very little waist - see examples from Vindonissa (App.1, Nos.25, 26 & 31) - but other slim blades have a marked waist - again from Vindonissa (App.1, Nos.27 - 30). Equally, there are broad blades with little or no waist, as for example the blade from Chester (App.1, No.23).

vi) Reduced or vestigial midribs. Most of the Vindonissa

daggers already referred to have much reduced midribs (App.1, Nos.24, 25-26 & 28), one example (No.27) has the midrib replaced by a groove.

The dating of these features is fairly certain, for, with the possible exception of the Auerberg dagger, all the daggers with these features are of Neronian or later date. What is uncertain is the extent to which these daggers are found with, or without, piled cores.[11] On the basis of a purely visual inspection I would say that none of the Vindonissa ones has a piled core. Nor, would it seem does the Chester dagger (App.1, No.23). The Augsburg-Oberhausen dagger already referred to (No.7) has a grooved blade which appears to have no midrib; it clearly has no piled core.[12] Its blade width is uncertain, because it is badly corroded. It could date to any time between c.10 B.C. and c.A.D. 50. Of the features just described the one that would have had the most obvious effect on appearance is the considerable reduction in width found in the very slim blades. However, the most probable reason for the reduction in width of the blade is, not to change the appearance of the weapons, but to reduce the quantity of iron required in their manufacture. Now I want to turn attention to a consideration of the sheaths.

III

Our approach to this body of material has to be different from our treatment of the daggers, for the simple reason that so few dated examples are available, and because the variables are more complex; not only are there differences in the construction of the sheaths, but also variations in the decoration to consider. I will look first at the structure of the sheaths, and then at the decoration. An initial inspection of the sheaths shows that there are two clearly distinguishable forms, which I have labelled Types A and B. Type A sheaths are made of iron, with a wood or leather liner, and are engraved on the front to take inlay. Type B sheaths, on the other hand, were made of wood and leather, and had decorated iron plates fixed to their fronts. The plates were engraved for inlay, and they are the only part that usually survives in an archaeological context. The two forms of sheath can be dated in relation to each other. The evidence for dating Type B is better than that for dating Type A, and so, contrary to normal practise, I shall start with these sheaths, and work backwards in time, and look at Type A last. I shall conclude my comments with a consideration of the date at which these inlaid sheaths were introduced. The evidence from British sites is especially instructive. Of the 21 sheaths, presently known from Britain, sixteen are of Type B and only five of Type A.[13] This fact alone points to the probability that Type B sheaths continued in use for longer than Type A, and is

confirmed by the evidence for individual weapons. Of the five sheaths of Type A, four came from sites associated with the earliest stages of the Claudian conquest, namely: from Colchester, from Waddon Hill, and two examples from Hod Hill (App.2, Nos.23, 19, 18 & 28). The sole exception is the sheath from Lincoln, which comes from a Flavian context, and which, as we shall see, is of a form that can be assigned a later date (App.2, No.31). There is a third sheath from Hod Hill, again dating to the earliest years of the Conquest, this time of Type B (App.2, No.43), which shows that this form of sheath was current by A.D. 43. The Richborough sheath is also probably of early date (App.2, No.42). However the majority of Type B sheaths from Britain have been found on sites, or in contexts, of later date.

The evidence is unequivocal: Type B sheaths are found in later contexts, and on sites with later occupation, than Type A sheaths. With the exception of the Lincoln piece there is no evidence for Type A sheaths from contexts dating later than the reign of Claudius. The evidence from the Continent supports this view, and also enables us to put a closer date to the introduction of Type B sheaths. The earliest securely dated example comes from Velsen, where it was found in a well with a body, and a military belt.[14] The occupation of the site at Velsen I is dated to between c.A.D. 15 and c.A.D. 30. We can therefore date this dagger and its sheath to the principate of Tiberius (App.2, No.41). Confirmation is provided by the Tiberian or early Claudian date of the sheaths from Kempten and the Auerberg (App.2, Nos.33 & 34). Since there are no sheaths of either kind that can be securely dated earlier than this we must not be too dogmatic when we say that Type B sheaths were introduced in Tiberius' reign. Turning to the Type A sheaths, we find that the dating evidence is even poorer than that for Type B. The evidence from the continent does not contradict that from Britain, so far as the date of their disappearance from circulation is concerned. As in Britain, there is only one Type A sheath that is securely dated after the Claudian period. As with the Lincoln sheath, the example from Rißtissen (App.2, No.32) has features that mark it out as a late piece. It is of Vespasianic or later date. Other than this the sheaths with the latest dating are three poorly preserved examples from Mainz (App.2, Nos.24-26) from Claudio-Neronian contexts. Our main difficulty is finding evidence to help date the introduction of inlaid dagger sheaths. We have noted above that there is evidence for the use of the military dagger long before the early Principate. There is a shortage of comparable evidence for the sheaths, but there is a little, which may help us to fix the date at which metal or inlaid sheaths were introduced. There is a dagger, from Oberaden (App.1, No.3) with an inlaid handle, which originally probably had an inlaid sheath. There must remain some doubt about the date of this dagger, because inlaid handles are

not common with Type A sheaths. They are not unknown, as witnessed by the sheaths from Allériot and Colchester (App.2, Nos.22 & 23), but these are of Claudian date. Since the camp at Oberaden was occupied briefly between 11/10 B.C. and 8/7 B.C., we must question whether this dagger comes from the Augustan camp; or whether inlaid handles made an earlier appearance than other evidence would lead us to believe. Fortunately we do not have to rely upon the evidence of Oberaden alone. From Dangstetten, another Augustan military camp, occupied between about 15 B.C. and 10 B.C., there is a cast bronze suspension loop of the form used on Type A sheaths, which suggests that this type of sheath was in use in the principate of Augustus.[15] There is some evidence that this type of metal sheath was Augustan innovation; it is slight, and there is no solid evidence before A.D. 9 at the earliest as we shall see when we look at the inlaid sheaths. The Iron Age site on the Titelberg, in Luxembourg, produced, as a stray find, a Roman military dagger and sheath (App.1 & 2, Nos.1). The sheath had originally been of leather and wood with an open metal binding. It is this binding that has survived. The exact nature of the Roman military presence on the Titelberg is in doubt, but the relevant fact for our present purposes is its existence as testified by the dagger and other Roman military fittings on the site. There was clearly some form of military presence, which the excavators would date to the period between the campaigns of M. Nonius Gallus against the Treveri, and the campaigns of Drusus in Germany. In other words between 29 B.C. and about 12 B.C.[16] A similar sheath binding was found at Haltern a site occupied between c.10 B.C. and A.D. 9. This evidence, such as it is, suggests, that until the middle of the principate of Augustus, daggers with metal bound leather and wood sheaths were in use; it does not prove that sheaths with metal shells were not already in use by that date. But, in view of the lack of sheaths from very early contexts, I am not prepared to date the introduction of the inlaid sheath much before the end of Augustus' principate.

IV

Having established a basic chronology for the sheath types I want now to look at the decoration found on the sheaths and to attempt to refine the chronology. The way I approached the problem was, firstly, to list all of the Type A sheaths and the motifs and features found on them; and then to do the same for the Type B sheaths. A comparison between the two lists revealed those features and motifs that were typical of each type of sheath, and also isolated certain sheaths which had mixed sets of motifs. The evidence is summarised in Appendix 2. In the following section I intend to consider the validity of the groups defined, and where, possible, to look at the dating evidence

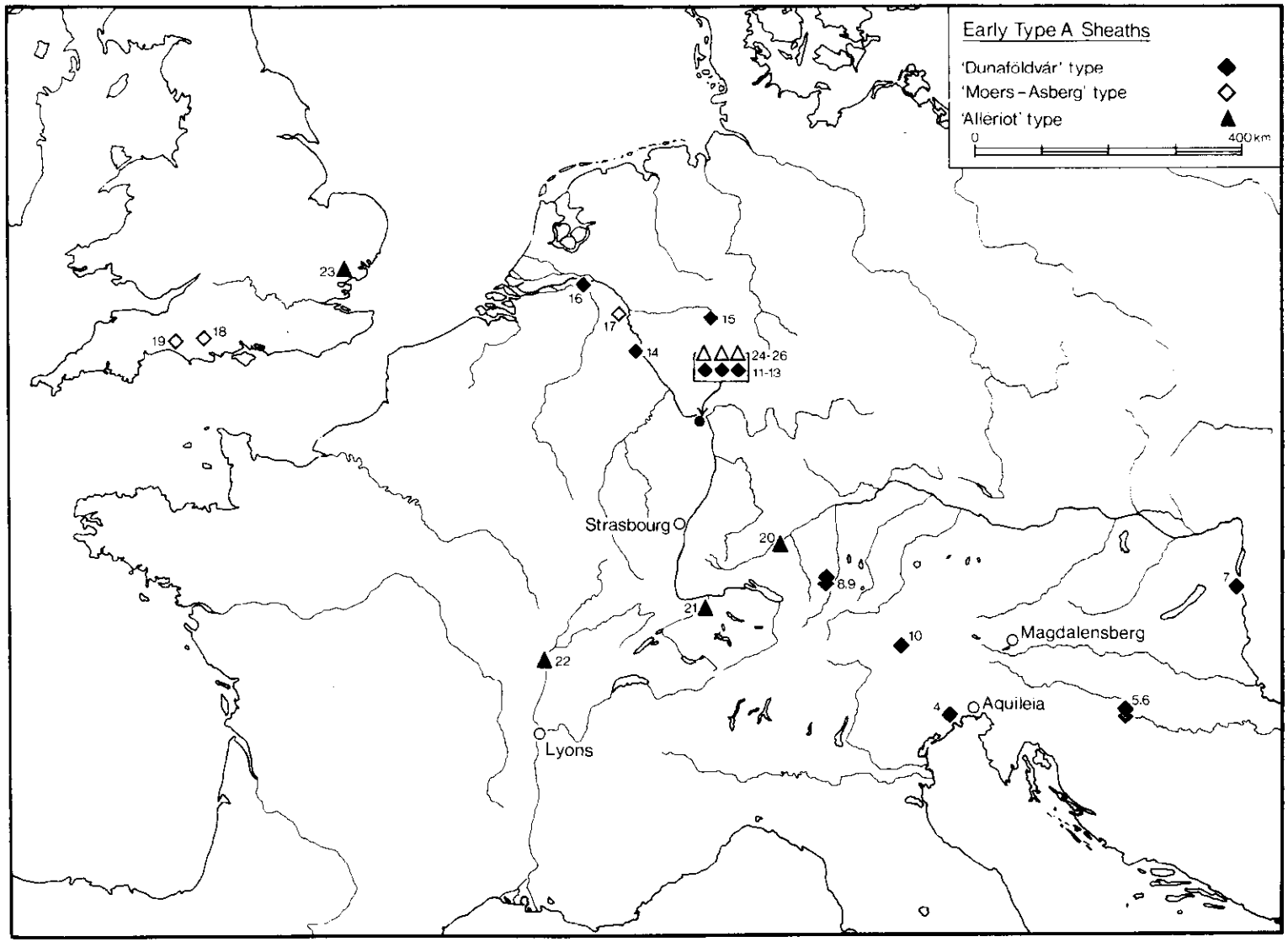
available for them. In a later section I will go on to discuss the implications of their geographical distribution, in order to see whether or not we can localise any of the groups, and, in this way, identify, however tentatively, possible manufacturing centres.

The first distinction, that can be made between the two sheath forms, is that, while most Type A sheaths are inlaid with brass, or yellow metal, some are also found with silver inlay (Appendix 2, Sections A, B & C). Type B sheaths on the other hand are always inlaid with siver, or white metal, and never with brass. There is only one exception to this rule, from northern France (App.2, No.68). The second point that can be made is that each type of sheath has its own range of motifs, and that there is remarkably little overlap between those employed on Type A and those found on Type B. As we shall see, there are small groups of each type of sheath that use motifs from the repetoire of the other form (Appendix 2, Sections D, E & F). As is to be expected in such a small sample, there are a few sheaths that defy categorisation. These are remarkably few in number and I will deal with them as and when the need arises; for our present purposes the groups are more important.

Type A sheaths can be divided into three main groups, on the basis of the metal, or metals, used in their decoration: sheaths with brass and enamel inlays, those with silver and enamel inlays, and finally those with silver and brass, but no enamel inlays.

Type A sheaths with brass and enamel inlay (Appendix 2, Sections A & B). This is the biggest single group of sheaths, and remarkably homogeneous. One division can be made however. There are three sheaths (Section B), which can be distinguished readily from the others, because their decoration is not divided into the usual "four zone" scheme, but rather consists of a narrow single zone. They also employ a much smaller range of motifs than the other sheaths. This small group is securely dated to the principate of Claudius: the examples from Hod Hill, and Waddon Hill can be of no other date; that from Moers-Asberg is probably Claudian. For convenience I have labelled these the Moers-Asberg type. The sheaths listed in Section A of the Appendix, which display the more common "four zone" scheme, and a wider range of motifs, cannot be so easily dated. Only two examples, both from the Auerberg, can be given any date at all. They are probably to be assigned to the principate of Tiberius. The typology of the decoration suggests that the sheaths listed in Section A are of a different date from those listed in Section B. The Auerberg evidence points to an earlier date. Their distribution centres on the area south of the Upper Danube, in southern Germany and Illyricum, and on the Rhineland north of

Map 1

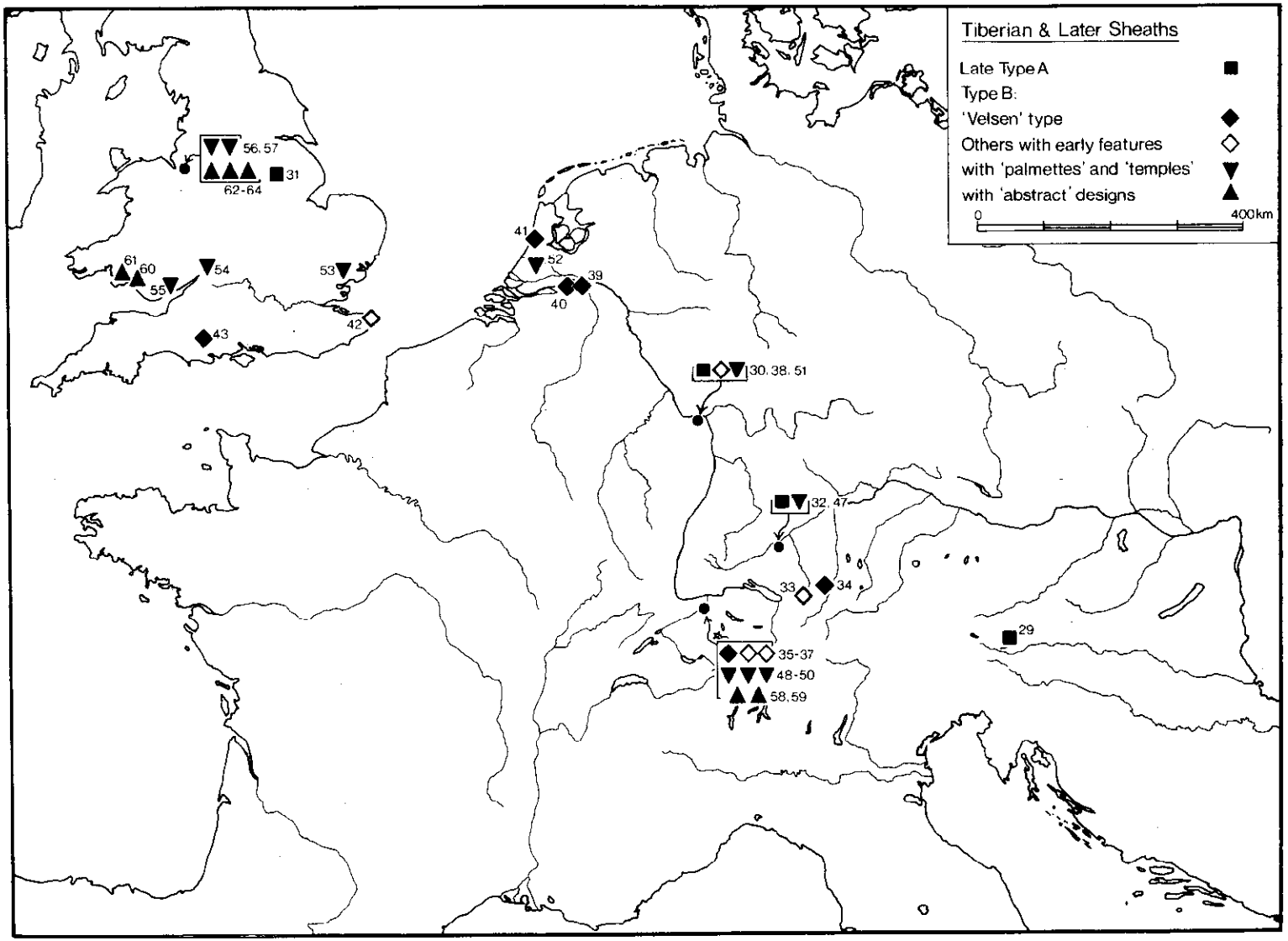

Early Type A Sheaths
'Dunaföldvár' type
'Moers-Asberg' type
'Alleriot' type
0
400 km
23
16
17
15
19
18
14
24-26
11-13
Strasbourg
20
8.9
7
21
10
Magdalensberg
22
4
Aquileia
5.6
Lyons

Mainz. If we are correct in assigning an early date to these complex sheaths, it would be tempting to date them as early as A.D. 9, for it was at that date that large numbers of troops were transferred from Illyricum to the Rhine frontier in the aftermath of the destruction of legions XVII, XVIII and XIX, under Varus, in the Teutoburg Forest. The legions transferred were XIII and XIV Gemina, and XX Valeria. It may be no more than coincidence that the first base of XIV Gemina, in the Rhineland, was at Cologne. I would not date them much earlier than A.D. 6 to A.D. 9. I have followed Edit Thomas in referring to these as the Dunaföldvár group (Map 1).[17]

Type A sheaths with silver and enamel inlays (Appendix 2, Section C). This group of daggers is much smaller than the preceding group, and less uniform in its character. Having said that, there is no denying, that the motifs used within the group are all similar. The differences may simply reflect different workshops rather than any major difference in date or typology. For example the main difference between the Rißtissen sheath and the Allériot sheath is the fact that the former does not appear to have any engraved hatching inlaid with fine lines of silver filling the fields within its decorative scheme; the latter clearly does (App.2, Nos.20 & 22). The sheaths from Vindonissa and Colchester both have this inlaid hatching (Nos.21 & 23). The sheaths from Mainz are too poorly preserved for us to be certain (Nos.22-4). The dating of these sheaths is unambiguous, for all those that can be dated are Claudian. The Vindonissa sheath may be later in date, but we cannot be sure. This dating distinguishes them from the brass inlaid sheaths quite as much as the different metal. Their distribution is also different being concentrated on the upper Rhine and adjacent areas. These sheaths I have called the Allériot type (Map 1).

Type A sheaths with decorative motifs of late Type B sheaths (Appendix 2, Section E). This small group of sheaths are inlaid in silver and brass with no enamel, and form our third main group. What distinguishes them, apart from the use of metal alone in their decoration, is the fact that they make use of exclusively late Type B decorative motifs. We shall see that Type B sheaths that use these motifs are all Neronian or later in date. The date of the sheaths under discussion is comparable. We have already noticed the sheaths from Lincoln and from Rißtissen, which fall into this group and are of Flavian date (App.2, Nos.31 & 32). The Rißtissen sheath is assigned to this group, because its inlay is all metal, and because the use of a single zone is more often found on late sheaths than on early ones; its decoration is not comparable to that on the other sheaths. The Magdalensberg sheath must date no later than the beginning of the principate of Claudius, for that is when the settlement was abandonned (App.2, No.29).[18] The sheath from

Map 2


Tiberian & Later Sheaths
Late Type A
Type B:
'Velsen' type
Others with early features
with 'palmettes' and 'temples'
with 'abstract' designs
0
400km
56, 57
31
62-64
61
60
55
54
53
42
43
41
52
39
40
30, 38, 51
32, 47
33
34
29
35-37
48-50
58, 59

Mainz (No.30) is not dated. As can be seen this tiny group is widely scattered, making it well nigh impossible to make any useful comments on their distribution (Map 2).

This is the best point at which to note two other sheaths, that cannot be categorised. One sheath from Vechten with silver and brass decoration, has a quite complex scheme of decoration. It is unfortunately undated, but typologically is probably late (App.2, No.27). The other sheath is from Hod Hill and has decoration that includes enamel and brass. It is included here, rather than being included under Sections A or B, because it has amongst its motifs a rosette with diamond shaped petals, inlaid with enamel; a motif usually found on Type B sheaths, of the Tiberio-Claudian period.

Type B sheaths can be divided into three main groups on the basis of the designs found on them. The first group are distinguished by the use of various features also found on Type A sheaths, including enamel; the second group use no enamel inlay, and employ a new range of motifs that are distinct from those found on the first group; the final group use the minimum of decorative motifs, and their designs I have labelled as "abstract". There a small number of Type B sheaths that do not form a coherent group, and will be briefly dealt with at the end.

Type B sheaths with Type A features (Appendix 2, Section F). It is possible to distinguish one group of sheaths within this group on the grounds of style, and the use of enamel. The sheaths from the Auerberg (No.34), Nijmegen (No.39), Leeuwen (No.40), Velsen (No.41) and Hod Hill (No.43), I would place in this group, which I would call the Velsen type. I would also include one of the Vindonissa sheaths (No.35). The other sheaths do not seem to form a coherent group stylistically, but they have features in common with each other and with the Velsen type sheaths. The dating of these weapons is securely in the Tiberian and Claudian periods. The examples from Vindonissa (Nos.35-37) and from Nijmegen may be later in date, but the likelihood is that they were made in the Claudian period or earlier. The examples from Britain are from Claudian sites (Nos.42 & 43). Typologically we should not date them later than the Claudian period, because the Type A sheaths, from which they copy some motifs, went out of use then. The distribution of the Velsen type concentrates mainly in the Netherlands; the exceptions being from the Auerberg, Vindonissa, and Hod Hill. The other sheaths have a southern concentration with the exception of the Richborough example (Map 2).

The three sheaths, that I have listed as possibly belonging to this group (Nos.44-46), are later in date, and, although sharing some features such as silver headed nails and rosettes,

should be considered as a seperate group. Two of them are from Britain, the third from Vindonissa.

Type B sheaths with "Palmettes" and "Temples" (Appendix 2, Section G). As the Appendix shows these sheaths display a new range of motifs, quite unlike anything found on earlier sheaths. The dating evidence for these artifacts points to their currency from the Neronian period until the end of the first century. They are thus later in date than the preceding group, and are found as far north as the fortress at Chester. They were clearly in use in the late first century. Their distribution centres on Britain in the north and on Vindonissa in the south, with a few on the Rhine. There is no one predominant concentration. One further point should be made, and that is that there is a considerable variation in the quality of the workmanship to be seen in these sheaths. It is not just a matter of seeing different hands at work, but also, of seeing that some of those hands were manifestly less skilled than others (Map 2).

Type B sheaths with abstract designs (Appendix 2, Section H). None of our extant examples need be earlier than the Flavian period. They all, with exception of the Vindonissa examples (App.2, Nos.58 & 59) come from sites first occupied in the late first century. And, with same exceptions, they come from Britain. Like the previous group they show differing quality workmanship (Map 2).

Type B sheaths with miscelllaneous designs (Appendix 2, Section I). These sheaths do not form a coherent group, but they are all probably late in date; all but, that from northern France (No.68) which is a stray find, are of Neronian or later date. The example from France is unusual in having brass inlay, and in a form that is unique. The brass forms two complete motifs, one a bust, the other an eagle, which are applied to the centre of roundels. The remaining inlay appears to be of silver.

V

Having considered at length the dating and typology of both daggers and sheaths, now is the appropriate point to draw the evidence together before proceeding to the next stage in the discussion. There are very few close associations between sheaths and daggers where the blade of the dagger is visible. Most of the associated daggers are corroded into their sheaths and so their blade forms are not known. Most daggers and sheaths are unassociated. The first major change that we have identified is the transition from Type A to Type B sheaths. We find that there are very few daggers associated with Type A sheaths. The daggers, which survive with their blades and are

associated with Dunaföldvár type sheaths, number four. They are from Dunaföldvár itself (App.1, No.39), with a midrib defined by grooves, and possibly with a piled core; from Mainz (No.45) and from Rösebeck (No.50), both with simple midribs; and finally from Nijmegen (No.51) again with a simple midrib. The Nijmegen dagger has a distinctive blade form similar to others from The Netherlands (App.1, Nos. 18 & 55). They may be a type that was made there. The only other early Type A sheath to be found with a dagger with its blade visible from was the one from Allériot (App.1, No.41). This had a simple midrib.

If we look at the evidence for the early Type B sheaths we find a similarly confused situation. This time there are five extant daggers, of which four are associated with Velsen type sheaths. The Auerberg dagger (App.1, No.8) is slim, has a midrib defined by grooves and a marked waist; the Nijmegen dagger (No.18) a simple midrib and a piled core; the Velsen dagger (No.9) is probably similar. The Leeuwen piece (No.53) has a blade with a marked waist and strongly defined grooving. Its blade has a piled core. The dagger from Mainz (App.1, No.43), associated with the fragments of a sheath which is not of Velsen type, has a simple midrib. No clear picture of associations is emerging. We cannot at present say that any particular dagger form is associated with a particular sheath type. With more evidence the picture may become more clear. What I think it does bring out is the fact that the sheaths we have been looking at so far were all in use over a comparatively short period. Although we have distinguished between those of possibly Augustan date and those of Claudian date, we are actually talking of a period of no more than fifty years from about A.D. 6 until the death of Claudius in A.D. 54. That is assumming that my early dating of the Dunaföldvar sheaths is accepted. It also suggests that daggers were not necessarily produced in the same workshops as sheaths. The different skills involved in the manufacture of daggers and of sheaths point to the same conclusion.[19] The second change we have identified is the introduction of a new range of decorative motifs - "palmettes", "temples", and so forth - on sheaths in the principate of Nero. Only one dagger can be directly tied in with a sheath of this later type. It is the one from Mainz with the legionary name inscribed in its decoration (App.2, No.51). The dagger blade is hidden, but the handle was fixed by a rod tang. Since we have argued that rod tangs date from Nero's principate and after, this association is no more than we would expect. The daggers and sheaths from Vindonissa, although not directly associated, must surely be considered as one group. Late dagger and sheath forms are predominant amongst this material. It is my contention that this second change, under Nero, is as important, perhaps more important than the earlier change, because it effected both daggers and sheaths.

I want lastly in this section to consider when Roman soldiers ceased to use the military dagger. I need not do more than draw attention to the difficulties of dating the disappearance of an artifact from the archaeological record; the pitfalls of negative evidence are well known. The first evidence that we can consider is provided by Trajan's Column and the Tropaeum Traiani at Adamklissi.[20] On neither of these monuments are soldiers shown wearing daggers. There are problems in using the evidence of sculpture: we cannot be certain always of the accuracy of the details of the accoutrements of the soldiers portrayed. In this instance the evidence of sculpture is supported by the archaeological record as few of the daggers can be dated later than the end of the first century A.D.; only the dagger from Gelligaer (App.1, No.36), and the sheath from Colchester (App.2, No.53), could date as late as the reign of Trajan. Another piece of evidence is the absence of daggers or sheaths of this type from northern England, or from southern Scotland, where the Romans first campaigned and garrisoned camps towards the end of the first century A.D. The most northerly sites that have produced daggers and sheaths, to the present date, are Chester and Lincoln. Of course, new finds could alter the picture, but I suspect that they will not. All of the sites in Britain that have produced daggers and sheaths were occupied first in the pre- or early Flavian periods. A similar picture emerges on the German and Raetian limes, where the forts that have produced daggers and sheaths are those that were garrisoned in the First century. The forts on the Taunus ridge and in the Wetterau built after Domitian's campaigns, have produced, to my knowledge, no daggers or sheaths. To the south, where the frontier was pushed east from the Rhine by Vespasian and his successors, no discoveries have been made. The forts built north of the Danube produce the same picture. The cumulative effect of this evidence seems conclusive; the Roman army stopped using daggers in the Flavian period.[21]

VI

Having established the chronology and the typology of our material, I want now to begin to answer the questions that I posed at the beginning of this article. The first question that I want to answer concerns where the sheaths were made. Because of the problem, which we noted above, in trying to identify groups of daggers, I am going to concentrate my attention on the manufacture of sheaths. The sheaths made in the period up to, and including the principate of Claudius, I believe were made in specialist workshops run by civilians and and not in army fabricae. I am including all Type A sheaths, and the early Type B sheaths (Appendix 2, Section F); I would also include the late Type A sheaths (Appendix 2, Section E) in this category. Some of

the evidence is subjective; the fact that these earlier sheaths are consistent in their appearance, within their groups; all display competent workmanship, and almost all of them have at least two materials, a metal and an enamel, as inlays. Although the evidence is subjective, and therefore difficult to evaluate, it becomes more convincing when we compare the workmanship of the later Type B sheaths. These have only a small repetoire of motifs - "palmettes", "temples", and cross-hatched diamonds are the main ones - which are rarely mixed with other motifs, and yet the levels of skill shown in the execution of the designs range from the well produced to the barely competent. It is for this reason that I think that they were made in army workshops. We would not expect soldiers to have the levels of skill to be found in specialist shops. There is a danger in using what is potentially a circular argument, but the difference in the workmanship is clear and is best explained in this way. We should also note that there is very little overlap between the motifs found on the earlier sheaths and those found on the later ones; even the early Type B sheaths, which might have been expected to share some motifs, provide only four examples; in each case it is a "temple" motif (Appendix 2, Nos.34, 37, 38 & 41). The distribution of the later sheaths is a problem. Those decorated with "palmettes" and "temples" give no clue to any one production centre. If the army did produce its own daggers and sheaths, we might have expected each legion, or workshop, would have produced sheaths with a distinctive pattern. At first sight we do not have this, but no two of the extant sheaths in this group are similar. Furthermore the Mainz sheath with the name of legio XXII Primigenia in the decoration, might be taken as evidence for legionary production. The problem is that it could be quite the opposite! Whatever the answer, there was most certainly only a limited range of motifs employed. The British concentration of the sheaths with abstract designs might be just the evidence for distinctive designs that we are looking for. Unfortunately, I think that these particular sheaths are later in date than those with "palmette" and "temple" motifs. Also I suspect that the present pattern of distribution may be misleading, reflecting the recent spate of discoveries made in Britain. We should note, in particular, the similarity between two recently found sheaths from south Wales and a plate from Vindonissa (App.2, Nos.58, 60 & 61).[22]

I have argued for an early date for the Dunaföldvár type of sheaths (Appendix 2, Section A), and have suggested that the examples found on the Rhine frontier were carried there by soldiers transferred from Illyricum in A.D. 9. The implication of this being that the daggers were acquired, or issued, during service in Illyricum. If this were the case, there are two possible sources from which weapons could have been obtained: from Cisalpine Gaul, or from Noricum.

The best evidence, for the manufacture of sheaths and daggers in northern Italy, is the Type A sheath from Oberammergau (App.2, No.3). This piece does not belong to the group under discussion: it is richly decorated in silver, with silver fittings, and thus quite unlike our brass and enamel inlaid sheaths. The motifs used are also different. It is relevant nevertheless to the question under consideration, because Professor Ulbert has argued, from the maker's name on the hilt plate, and from the classically inspired decorative motifs, that it was a north Italian product.[23] The fact that it may have been a specially commissioned piece - a suggestion based on its rich decoration, and on the fact that it is unparalleled - does not rule it out of court as evidence for the manufacture of daggers and sheaths for the army in Cisalpine Gaul. Quite the reverse. Where would one go to have a special commission made, but to expert craftsmen with experience of making weapons? The Dunaföldvár sheaths may not be so lavishly decorated, but they are as skilfully made. The discovery of a sheath of Dunaföldvár type at Concordia (App.2, No.4), only a few miles west of Aquileia, may not the case, but does add to the circumstantial evidence. Aquileia was one of the centres of the metal industry in Cisalpine Gaul.[24] It also had well attested trade links with our other possible manufacturing centre at the Magdalensberg, and with the Norican iron mines.[25] The Roman trading settlement on the Magdalensberg had a long history going well back into the first century B.C. A number of Italian traders were represented: under Augustus and Tiberius there were merchants from Aquileia, Bononia, Vetulonia, and Rome at the Magdalensberg. The iron mines, iron smelting and metal working were the key to the trade with Rome. Norican metal goods were well known to Romans in Augustus' day.[26] In view of this long tradition of metal working, and the long history of trading with Rome, it would not be very surprising to find weapons being manufactured at the Magdalensberg to supply the Roman armies campaigning in Illyricum. There is a sheath from the Magdalensberg (App.2, No.29). It is a late Type A sheath, and as such not relevant to the present discussion. The transfer of a large part of the army to the Rhine would have increased the potential market for traders in Gaul, and amongst the items that the army would have required would have been arms. This may have given a boost to the metal industries of Gaul. I suspect that we can detect the products of these new centres in the silver inlaid sheaths that we have dated to the principate of Tiberius. The Allériot type sheaths (Appendix 2, Section C) have a distribution that centres on the upper Rhine above Mainz. The dagger and sheath from Colchester (App.2, No.22) are of Claudian date and must have been carried to Britain during the Claudian invasion, and so they can be discounted in considering the distribution. The sheath found at Allériot, near Chalons-sur-Sâone, may be the clue to the

location of the manufacturing centre. Is it asking too much of the evidence to suggest that these sheaths might have been produced at Lyons, the trading centre at the confluence of the Rhône and the Sâone? Another site, that may have been a centre for the production of daggers, sheaths, and other weapons is Strasbourg. In addition to a sword scabbard with a maker's name, the site has produced tantalising evidence for metal working.[27] Although the evidence for metalworking is certain, the details of the site, as published are unclear, as is its date. Both are critical for the interpretation of the site; is it a legionary workshop, or a civilian establishment? Either of these suggested centres - and they are only suggestions - would have supplied weapons to the upper Rhine frontier, if the distribution of Allériot sheaths is a guide. By way of contrast the Velsen type sheaths (App.2, Nos.34, 35, 39-41 & 43) are concentrated in the Netherlands, which inclines me to think that they were made in northern Gaul for the lower Rhine frontier. They could be seen as complementing the Allériot type. Remember also that there are some other early Type B sheaths, not included in the Velsen group, for example from Kempten (App.1, No.33) and from Vindonissa (Nos.36 & 37), which are found in the southern area.

VII

The picture that is emerging very faintly outlined, shows production in the first half of the century, in civilian workshops, either adjacent to the army's theatre of operations, as in the case of the army in Illyricum or actually within its province, as in the case of the Rhine army. There is little evidence that the Rhineland army was issued with inlaid sheaths before A.D. 9. And it is this above all else that leads me to date the daggers used by the army of Illyricum no earlier than the time of the Pannonian revolt. These daggers and sheaths I have argued were procured either in Cisalpine Gaul, or in Noricum via the Magdalensberg. With the removal of a number of the legions from Illyricum to the Rhine, the production of daggers and sheaths in northern Italy, or Noricum, seems to have stopped.[28] In Gaul the production of inlaid sheaths, and presumably daggers too, seems to have been divided between the north and the south, with the southern centres supplying the upper Rhineland possibly from Strasbourg or from Lyons; the northern centre, perhaps in the Low Countries, supplying the lower Rhine. The start of production cannot be dated earlier than the principate of Tiberius archaeologically, but, perhaps, began soon after the arrival of the legions from Illyricum? Subsequently, in the principate of Nero, the manufacture of daggers and sheaths appears to have been taken out of the hands of civilian specialists, and placed in the hands of the army's own craftsmen. It seems probable that the production of daggers

and sheaths was the responsibility of legionary workshops. The change is marked by the introduction of the rod tanged dagger, and of the sheaths with new motifs and mixed quality craftsmanship. I believe that the new situation arose in part because army units were moving their camps less frequently than in the past. This was due largely to the fact that the army was no longer engaged in large scale campaigns leading to territorial expansion and the constant movement of troops. With more permanent bases the army was in a position to set up workshops to produce weapons and equipment. Being no longer involved in major fighting meant that time and manpower were available too.[29] I also believe that the new policy came about because of the need for economies.[30] Production by the army would have reduced costs and the new attenuated daggers would have used much less iron than the old broad daggers, bringing a further saving. The Roman administration was run on what amounted almost to a fixed income: during the principate until the end of the third century, there was one recorded tax increase, by Vespasian. The only other addition was the inheritance tax introduced by Augustus. There was insufficient economic growth during the principate to increase the empire's financial resources significantly.[31] During the period of territorial expansion the army had paid for itself with booty, and with new land and resources, but once expansion stopped, the position was transformed and the army became one of the major costs that had to be borne by the state. Hence the need to reduce costs. The final stage in the process that we have been following occured under the Flavian emperors, when the army ceased to use daggers.

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number of points. Finally I must thank Mike Bishop for patience beyond the call of editorial duty.

NOTES

1) If we assume that every legionary was issued with a dagger, that would mean that there were close on 150,000 daggers in use at any one time. This number would be increased if, as I believe, some auxiliaries also used daggers. I base this conclusion on two pieces of evidence: i) the fact that many of the weapons come from the sites of auxiliary forts; and ii) the sculptural reliefs on the tombstones of auxiliary soldiers showing them wearing daggers (see ESPÉRANDIEU, VII, No.5850; VIII, Nos.6125, 6136-7 & 6207 for example). I hope to argue both this point and the case for the issue of daggers with inlaid sheaths, as opposed to purchase by individual soldiers in another paper. In the present article I am assuming these points. I should note, however the existence of a papyrus (P. Vindob. L135) in which it is clear that one of the soldiers concerned owned an inlaid dagger sheath. I believe that the key to explaining this document is the fact that the man in question is an eques (in ala Paullini) and may therefore not have been issued with a dagger, but had to purchase one privately. (This is a point that I shall be taking up in my new paper). For P. Vindob. L135 see HARRAUER & SEIDER, 1977; and GILLIAM, 1981. I would like thank Mike Bishop for drawing these references to my attention.

2) The distribution of tombstones with reliefs showing daggers is very similar to that of the daggers and sheaths themselves. The stele of Belaterus a soldier in cohors VI Delmatarum, found in Mauretania Caesariensis cannot necesarily be taken as evidence for the widespread use of daggers in Africa, since it is probable that the cohort had recently been sent to Mauretania following the revolt of Furius Camillus Scribonianus in A.D. 42. (Illustrated in HOLDER, 1980, Pl.10 B).

3) I have previously discussed chronology and typology in a section in the forthcoming British Museum catalogue of Romano-British ironwork. Unfortunately that section was written over 3 years ago and in part is superceded by the present discussion. MANNING, 1985.

4) If a soldier did not actually buy his dagger, but was issued with it he would still have had pay a deposit, which would have been forfeited in the event of lose. See GILLIAM, 1967, and the note in BREEZE et al., 1976, 93-5.

5) Reproduced in KEPPIE, 1984, fig.18.1-3.

6) A simple way to obtain more information about the structure

of dagger blades without damage to them is to use X-radiography. This might help not only with the chronology of daggers, but might also help to identify the products of different workshops.

7) For the problems of dating the Augsburg-Oberhausen find see WELLS, 1970.

8) BOGAERS & YPEY, 1962-1963, 92.

9) See note 7.

10) The width of this dagger was calculated from the published photograph and length measurement, and may not be completely reliable.

11) See note 6. By a blade with a 'piled core' I mean one that has a core that has been built up and the edges apparently welded to it. They are not elaborately pattern-welded.

12) HÜBENER, 1973, Pl.39.

13) The published information on the Richborough sheath does not make it clear what type of sheath it is. I have not been able to see the object, and have identified it on the basis of its decoration alone.

14) The Velsen dagger and sheath were found with the body of their presumed owner, and as a consequence we can say with some confidence that this is set of equipment was disposed off while still in use. As a result we can be equally confident about the dating information that it gives us.

15) FINGERLIN, 1972, Abb.13,9.

16) For the dating of the Titleberg see METZLER & WEILLER, 1977, 39; for the military equipment ibid., Abb.31-3. Also of interest is the tombstone of P. Flavoleius Cordus of legio XIV Gemina, which shows a dagger sheath with a metal edge binding (ESPÉRANDIEU, VII, No.5835).

17) THOMAS, 1969.

18) ALFÖLDY, 1974, 78.

19) We can note two possible groups of daggers: i) Those found in The Netherlands - Appendix 1, Nos.18, 51 & 55; ii) daggers with very pronounced midribs and grooves, and well finished - Appendix 1, Nos. 11, 46, 47, 49, 53, 54, 59 & 61. The distribution of the latter is concentrated on the lower

Rhine, and around Mainz, and in Britain.

20) For the Tropaeum Traiani see FLORESCU, 1965; for Trajan's Column see CICHORIUS, 1896 & 1900.

21) The tombstone of Castricius Victor of legio II Adiutrix from Aquincum, which shows him wearing a dagger, may be important. II Adiutrix was based at Aquincum only from the last years of Domitian's reign. See SZILÁGYI, 1956, Pl.XXXVI. If daggers ceased to be issued as late as this it would be tempting to link their discontinuation with the rise in army pay granted by Domitian.

22) The recent British discoveries have nearly all been of Type B sheaths and made by means of X-radiography. They have included the identification of previously unnoticed finds from old excavations. As more finds are published the predominance of the British sheaths with abstract designs may disappear. If the plates with abstract designs do prove to be a variant mainly limited to Britain, even with more evidence, we will have to explain the abstract plates from Vindonissa. Professor Ulbert, when publishing the Vindonissa sheaths, suggested that their disposal might date to A.D.69, and linked it with the troop movements of that and subsequent years. This may be the context in which we should explain the apparent link between Britain and Vindonissa (ULBERT, 1962, 16). If they are to be viewed as a type used by the British garrison, the fact that they date later than the plates with "palmettes" and "temples" may simply reflect the fact that Britain was occupied and developed as a province later than the provinces on the Rhine and Danube frontiers.

23) ULBERT, 1971, 45-8; he also draws attention to the fact that the name of the maker of the Rheingonheim sword - L. VALERIUS - is a common one in Gallia Cisalpina, see CHILVER, 1941, 75.

24) Strabo, v.2,12, where he comments that the mines are not as active as they once were. Pliny, Nat. Hist., xxxiii,78; xxxiv,2. In general see CHILVER, 1941, 167-173.

25) On links between Aquileia and the Magdalensberg see ALFÖLDY, 1974, 45-6. For the strong links with the Norican iron mines see CHILVER, 1941, 171, and CIL iii, 4788 (= ILS, 1466), and v, 810; see also CIL iii, 4809 & 5036

26) ALFÖLDY, 1974, 72-3.

27) For the gladius see FORRER, 1927, Vol.II, 529 & Taf. LXXV A; see also ULBERT, 1971, 48 for the possiblity that this could have been manufactured elsewhere. For the metalworking site

see FORRER, 1927, vol.II, 500ff.

28) We have mentioned already the possibility that the Moers-Asberg type may be a late Italian product, on the basis of their decoration and not their distribution. The late Type A sheath from the Magdalensberg may have been made on the site, but I think it unlikely. The distribution of these late sheaths is not helpful in locating where they might have been made.

29) Although the idea of fixed frontiers may not have been accepted until late in the first century, in reality the frontiers had been static since the death of Augustus (see MANN, 1974, 508-514 for the development of the concept of the static frontier). We first find forts with a regular layout being built as a matter of course in the principate of Claudius (JOHNSON, 1983, 234-245). This may indicate a change in the policy on troop dispositions.

30) The Type B sheath may have been introduced as an economy measure for it required less iron to make it than the Type A sheath. This is paralleled by the scabbard used with Ulbert's Pompeii type gladius, which was introduced in the mid first century. This scabbard used less metal than its predecessor (ULBERT, 1969). The use of silver as the inlay material, if it is proven for most late dagger sheaths, goes against the argument of economy, because it was valuable, and needed for coining.

31) On tax changes see JONES, 1974, 189-190. Economic development was limited by the available technology, which effected both production and land transport. The main source of wealth was land, and the land tax remained the government's major source of revenue. Not only was revenue restricted in this way, but there was often an actual shortage of coin to make payments, for, as the late Professor Jones has stressed, the Roman administration was run on a strictly cash basis; everything had to be paid for in coin. Which brings us back to a previous point about the use of silver for inlay.

APPENDIX 1

DAGGERS

Only daggers that survive with their blades, or blades that are largely complete have been included in this listing. Daggers which are corroded inside sheaths have been excluded, with the sole exception of the example from Usk (No. 15). Handles and handle plates have not been included.

A. Dated Daggers

1. TITELBERG (c.30 to c.10 B.C.?)
   ?Slim blade; simple midrib; ?flat tang, handle, not inlaid, intact; 4 rivets through shoulders
   Provenance & Associations: Stray find; open bronze sheath binding (App.2,No.1).
   Length overall, with sheath: 34.5cm
   Reference: METZLER & WEILLER, 1977, Abb.31

2. DANGSTETTEN (c.15 to c.10 B.C.)
   Small broad blade; simple midrib; flat tang; 4 rivets through shoulders
   Provenance: ?
   Length of blade: c.16cm
   Width of blade: c.5cm
   Reference: FINGERLIN, 1972, Abb.14.5

3. OBERADEN (11/10 to 8/7 B.C.)
   Blade form uncertain, piled core; flat tang, inlaid handle; 2 rivets through shoulders
   Provenance: ?
   Length overall, extant: 23.6cm
   Length of blade, extant: 14.3cm
   Width of blade: 5.5cm
   Museum: Dortmund: E101
   Reference: dating - WELLS,1972, 216-8

4. HALTERN (c.10 B.C. to A.D. 9)
   Slim blade with extended shoulders, incomplete; simple midrib; ?flat tang; ?no rivets through shoulders
   Provenance & Associations: ?; open bronze sheath binding (App.2,No.2)
   Length overall, extant: c.13cm
   Length of blade, original: c.22cm
   Length of blade, extant: c.12cm
   Width at shoulders: c.5cm
   Museum: Röm.-Germ.Mus., Haltern

5. LORENZBERG (c.10 B.C. to c.A.D. 50) (Fig.1)
Broad blade; simple midrib; ?flat tang, inlaid handle; ?rivets through shoulders
Provenance: ?
Length overall: c.29cm
Length of blade: c.19cm
Width of blade: c.5.6cm
Reference: ULBERT, 1965, 46, Taf.3,1 & 24

6. AUGSBURG-OBERHAUSEN (c.10 B.C. to c.A.D. 50)
?Broad blade, piled core; simple midrib; flat tang, handle not ? inlaid; 2 rivets through shoulders
Provenance & Associations: Found with large deposit of Roman material, no known structures
Length overall: 30.1cm
Length of blade: c.21 cm
Width of blade, extant: c.4cm
Reference: HÜBENER, 1973, No.445, Taf.8,9 & 39,1; WELLS, 1970

7. AUGSBURG-OBERHAUSEN (c.10 B.C. to c.A.D. 50)
Blade form uncertain; flat with two grooves; rectangular cross-section rod tang; no rivets through shoulders
Provenance & Associations: see previous entry & references
Length overall, extant: 23.2cm
Length of blade: c.17.5cm
Width of blade, extant: 2.9cm
Reference: HÜBENER, 1973, No.446, Taf.8,13 & 39,2

8. AUERBERG (c.A.D. 10/15 to c.A.D. 40/45)
Slim blade, marked waist; ?midrib defined by grooves; ?flat tang, handle not inlaid; ?rivets through shoulders
Provenance & Associations: ?; Type B sheath (App.2,No.34)
Length overall: 28.5cm
Length of blade: c.20cm
Width of blade: c.3.5cm
References: ULBERT, 1975, Abb.17:2a;

9. VELSEN (A.D. 15 to A.D. 30)
Incomplete blade, shoulders missing; ?simple midrib, ?piled core
Provenance & Associations: In well, with Type B sheath (App.2,No.41), belt fittings, and skeleton
Length extant: ?
Width of blade: ?
Reference: SCHIMMER, 1979, 111-4 & fig.6

10. COLCHESTER (Claudian/Neronian)
Heavily corroded, broad blade; simple midrib, ?no piled core;

flat tang, handle not inlaid; ?rivets through shoulders
Provenance & Associations: Region 5, area C: few finds or features later than Neronian
Length overall, extant: 30.1cm
Length of blade, extant: 20.7cm
Width of blade: 6cm
Reference: HAWKES & HULL, 1947, Pl.CIV,No.1
Museum: Castle Mus., Colchester

11. HOD HILL (Claudian)
Blade with pronounced waist; midrib defined by grooves; flat tang, handle not inlaid; ?rivets through shoulders (similar to Nos.46 & 47)
Provenance: stray find
Length overall: 33.6cm
References: BRAILSFORD, 1962, fig.12:B2; MANNING, 1985, No.V 7
MUSEUM: B[ritish] M[useum], Durden Colln. 92.9.-1.1210

12. HOD HILL (Claudian) (Fig.12)
Blade with marked waist; midrib defined by grooves; flat tang, handle broken off, not inlaid; 2 rivets through shoulders
Provenance: stray find
Length of blade: 23.9cm
Length of handle, extant: 9.1cm
Width of blade: 5.2cm
Reference: MANNING, 1985, No.V 8
Museum: B.M., Durden Colln. 92.9.-1.1211

13. HOD HILL (Claudian)
Incomplete blade; simple midrib; flat tang; 2 rivets through shoulders
Provenance: stray find
Length overall, extant: 15.1cm
Reference: MANNING, 1985, No.V 12
Museum: B.M., Durden Colln. 92.9.-1.1213

14. MAINZ (Claudian or later)
Slim blade; ?midrib; flat tang; no rivets through shoulders
Provenance & Associations: from a site with a ditch which produced an Augustan or Tiberian coin, and a Claudian coin; ditch overlain by a later feature. Exact location of dagger unclear.
Length of blade: 20cm
Width of blade: 4cm
Reference: BEHRENS & BRENNER, 1911, 114, & Fig.28, No.E1; p.67, for context.

15. USK (Neronian) (Fig.2,65)

Slim blade corroded in sheath, form unclear; ?midrib; rod tang, handle intact, not inlaid; no rivets through shoulders
Provenance & Associations: from a Neronian pit, which contained this dagger and its sheath (App.2,No.65), and a second sheath plate (App.2,No.45)
Length overall, with sheath: c.31.5cm
Width of blade: under 4cm (from X-ray)
Unpublished, report forthcoming
(*)

16. KINGSHOLM ? (pre-Flavian)
Slim blade; midrib defined by slight grooves; rod tang; no rivets through shoulders
Provenance: ?
Length overall: 35.2cm
Reference: MANNING, 1985, No.V 10
Museum: B.M., Lysons Colln. 1819.2-10

17. KINGSHOLM (pre-Flavian)
Broad blade; slight upstanding midrib; ?tang; ?rivets through shoulders.
Provenance: ?
Length of blade, extant: 24cm
Reference: MANNING, 1985, No.V 11
Museum: B.M., Lysons Colln. 1810.2-10

18. NIJMEGEN (Mid-Flavian)
Broad blade; simple midrib, piled core; flat tang; 2 rivet holes through shoulders; handle not inlaid
Provenance: "Grube 370": contained late 1st century pottery; with Type B sheath (App.2,No.39)
Length overall, extant: 27.4cm
Length of blade: c.26.5cm
Width of blade: 5.2cm (BOGAERS & YPEY, 4.9cm)
Reference: BOGAERS & YPEY, 1962-1963
Museum: Rijksmuseum G.M.Kam, Nijmegen, 1960/370

19. RIßTISSEN (Vespasianic or later)
Broad blade; midrib defined by grooves; rod tang; 2 rivets through through shoulders
Provenance & Associations: "Kastell 2", found with Type A sheath (App.2,No.32)
Length overall, extant: 24cm
Length of blade: c.23.5cm
Width of blade: c.6.5cm
Reference: ULBERT, 1970, No.259, & Taf.16

20. STRAUBING (Flavian or later)
Much corroded blade; ?flat cross-section; ?flat tang, handle not inlaid; ?2 rivets through shoulders

Provenance: stray find
Length overall: c.30cm
Length of blade: c.21cm
Reference: WALKE, 1965, 152 & Pl.106, No.5

21. CAERLEON (Flavian or later)
Slim blade, corroded; midrib defined by grooves, no piled core; rod tang, part of composite handle in situ, not inlaid; no rivets shoulders
Provenance: ?
Length, extant: 12cm
Width of blade,extant: 4cm
Unpublished, report forthcoming
(*)

22. CAERLEON (Flavian or later)
Tip of dagger with piled core
Provenance: ?
Length, extant: 3.2cm
Unpublished, report forthcoming
(*)

23. CHESTER (Flavian or later)
[It is not possible to give details of this dagger at the time of publication]
Monograph, Grosvenor Museum, forthcoming
(*)

24. VINDONISSA (?Flavian)
Broad blade; grooves down centre of blade; tang missing; no rivets through shoulders
Provenance: ?
Length of blade: 25.9cm
Width of blade: 5.6cm
Museum: V.M.

25. VINDONISSA (?Flavian)
Slim blade, little waisting; midrib defined by grooves; rod tang; no rivets through shoulders
Provenance: ?
Length overall: 31.2cm
Length of blade: 20.6cm
Width of blade: 4.4cm
Museum: V.M. 28:16

26. VINDONISSA (?Flavian)
Blade with little waist; 4 parallel grooves down centre; rod tang; no rivets through shoulders
Provenance: ?
Length overall: c.29cm

Length of blade: c.21cm
Width of blade: c.4cm
Museum: V.M.

27. VINDONISSA (?Flavian)
Slim blade with marked waist; mid rib defined by grooves, and flanked by a pair of grooves; rod tang; no rivets through shoulders
Provenance: ?
Length overall: 27.9cm
Length of blade: 19.9cm
Width of blade: 4cm
Museum: V.M. 10742

28. VINDONISSA (?Flavian)
Slim blade, with waist; 3 grooves down centre of blade, no midrib; rod tang; no rivets through shoulders
Provenance: ?
Length overall: 28.1cm
Length of blade: 19.1cm
Width of blade: 4cm
Museum: V.M. 28:31[13]

29. VINDONISSA (?Flavian)
Slim blade, with waist, badly corroded; ?midrib; rod tang; no rivets through shoulders
Provenance: ?
Length overall, extant: 21.7cm
Length of blade: 19.9cm
Width of blade: 3.9cm
Museum: V.M. 62[...

30. VINDONISSA (?Flavian)
Slim blade, with waist; grooves down centre of blade; stump of ?flat tang; no rivets through shoulders
Provenance: ?
Length overall, extant: 21.7cm
Length of blade: 20.9cm
Width of blade: 3.8cm
Museum: V.M. 2206k

31. VINDONISSA (?Flavian)
Slim blade, little waist; midrib defined by grooves, and flanked by a pair of grooves; no rivets through shoulders
Provenance: ?
Length overall, extant: 22.9cm
Length of blade: 19.7cm
Width of blade: 3.4cm
Museum: V.M. 13.903

32. VINDONISSA (?Flavian) (Fig.1)
Very slim blade, scarcely any waist; slight midrib defined by grooves; ?rod tang, with secondary wooden grip and bronze guard; no rivets through shoulders
Provenance: ?
Length overall: 26.5cm
Length of blade: 18cm
Width of blade: 3.1cm
Reference: FELLMANN, 1966, 219 & Abb.4.1
Museum: V.M. 3302

33. VINDONISSA (?Flavian)
Fragment from point of asymmetrical blade; irregular double grooving in centre of blade
Provenance: ?
Length extant: 14.9cm
Width: 3.2cm
Museum: V.M. 28:3057

34. VINDONISSA (? Flavian)
Fragment from point, badly corroded; grooves down centre
Provenance: ?
Length extant: 14.9cm
Width extant: 3.2cm
Museum: V.M. 15:170

35. VINDONISSA (?Flavian)
Fragment from point, badly corroded; grooves down centre
Provenance: ?
Length extant: 15.4cm
Width extant: 3.3cm
Museum: V.M. 10754

36. GELLIGAER (Trajanic or later) (Fig.1)
Slim blade; midrib defined by slight grooves; rod tang; no rivets through shoulders
Provenance: ?
Length overall, extant: 17.8cm
Length of blade, extant: 15.2cm
Width of blade: c.3.5cm
Museum: Nat. Mus. of Wales "Gelligaer" 02 127

B. Undated Daggers

37. SISEK
Blade with slight waist; midrib outlined by grooves, ?possibly a piled core; rod tang; no rivets through shoulders
Provenance: R. Kulpa
Length overall, extant: 28.5cm

Length of blade: 23cm
Width of blade: 4.6cm
Reference: HOFFILLER, 1912, fig.47

38. SISEK
Blade with marked waist; simple midrib, with fine grooving outlining it; flat tang, handle largely intact, not inlaid; 2 rivets through shoulders
Provenance: R. Kulpa;
Length overall, extant: 30cm
Length of blade: 22cm
Width of blade: 5cm
Reference: HOFFILLER, 1912, fig.46

39. DUNAFÖLDVÁR
Similar to No. 37
Provenance & Associations: R. Danube; with Type A sheath (App.2,No.7)
Length overall: 32.6cm
Reference: THOMAS, 1969

40. NORDENDORF
Broad blade; simple midrib; ?flat tang; ?rivets through shoulders, handle in situ, not inlaid
Provenance: "Die alemannischen Gräber von Nordendorf"
Length overall: c.32cm
Reference: LINDENSCHMIDT, AuhV 4, 1900, Taf.11,2

41. ALLÉRIOT
Broad blade with marked waist; simple midrib; ?flat tang; ?rivets through shoulders, inlaid handle in situ
Provenance & Associations: R. Sâone; with Type A sheath (App.2,No.22)
Length overall: 35.5cm
Length of blade: 23.8cm
Width of blade: 6cm
Reference: BONNAMOUR & FERROUX, 1969

42. MAINZ
Broad blade of flat cross-section, no waist; slight midrib defined by grooves; rod tang; no rivets through shoulders; (may be a late form, and therefore irrelevant here)
Provenance: "bei der Rheinbrucke"
Length overall: 36cm
Length of blade: 25cm
Museum: M[ittelrheinisches] L[andesmuseum], Mainz

43. MAINZ
Blade with simple midrib; handle in situ
Provenance & Associations: R. Rhine; Type B sheath

(App.2,No.38)
Length overall: c.32cm
Reference: LINDENSCHMIDT, AuhV 3, Heft 2, 1881, Taf.3.2

44. MAINZ
Broad dagger with marked waist; simple midrib; handle in situ secured by rivets; decorative rivets in handle (cf. No.48)
Provenance & Associations: ?; with undecorated sheath of Type A (App.2,No.71)
Length overall: 29cm
Length of blade: c.20cm
Width of blade: 5.3cm
Museum: M.L.,Mainz R4001

45. MAINZ
Broad blade; simple midrib; handle in situ, heavily encrusted, not inlaid
Provenance & Associations: R. Rhine; with a Type A sheath (App.2,No.13)
Length overall: 36.2cm
Length of blade: c.26cm
Width of blade: c.7.5cm
Reference: M[ainzer] Z[eitschrift] 12/13, 1917/1918, Abb.6.6

46. MAINZ
Blade with distinct waist, and long point; midrib defined by grooves, piled core; tang missing, ?handle not inlaid; 2 rivets through shoulders (cf. Nos.47, 49, 53, etc.)
Provenance: R.Rhine (Gustavsburg)
Length of blade: 24.6cm
Width of blade: 5.7cm
Reference: LINDENSCHMIDT, AuhV 4,1900, Taf.52,3
Museum: M.L., Mainz

47. MAINZ
Blade similar to No.46
Provenance & Associations: R. Rhine; with Type A sheath (App.2,No.30)
Length overall, extant: c.25cm
Length of blade: c.24.5cm
Width of blade: c.5cm
Reference: M.Z. 12/13, 1917/1918, Abb.6.4

48. WEISENAU (Fig.1)
Similar to No.44, but larger; handle not inlaid
Provenance: ?R. Rhine
Length overall: 35.6cm
Length of blade: c.25cm
Width of blade: 6.9cm
Museum: M.L., Mainz 62/148

49. "UNKNOWN"
Blade similar to Nos.46 and 47, but lacking shoulders and tang
Provenance: unknown
Length, extant: 24.4cm
Museum: Wiesbaden

50. RÖSEBECK
Large dagger, blade corroded; simple midrib; flat tang, handle not inlaid; 2 rivets through shoulders
Provenance & Associations: stray find; with Type A sheath (App.2,No.15)
Length overall: 38.2cm
Length of blade: 28cm
Width of blade, extant: 5.9cm
Museum: Germ.Nat.Museum, Nurnberg R. 381

51. NIJMEGEN?
Blade with simple midrib; stump of flat tang; 2 rivets through shoulders
Provenance & Associations: ?; with a Type A sheath (App.2,No.16)
Length overall, extant: 24.8cm
Width of blade: 5.1cm
Reference: YPEY, 1960-1961, 352f & fig.9

52. NIJMEGEN
Broad blade, lacking shouders, midrib defined by grooves (may be a late form, and therefore irrelevant here)
Provenance: ?
Length overall, extant: 22.8cm
Width of blade: 5.0cm
Museum: Rijksmuseum G.M.Kam, Nijmegen

53. LEEUWEN
Similar to Nos.46, 47 & 54; inlaid handle
Provenance & Associations: R. Waal; Type B sheath (App.2,No.40)
Length overall, extant: 28.2cm
Length of blade: 26.2cm
Width of blade, extant: c.5cm
Reference: YPEY, 1960-1961, 353ff & figs.12 & 13

54. LEEUWEN?
Similar to preceding example; handle is complete, but construction is obscured by covering of bronze sheet
Provenance & Associations: ?R. Waal at Leeuwen; Sheath of bronze (App.2,No.72)
Length overall: 33cm

Length of blade: 22.4cm
Width of blade: 5.4cm
Museum: R[ijksmuseum] v[an] O[udheden], Leiden e1931 /2. 21

55. VECHTEN?
Broad blade, rounded outline; simple midrib; flattang, handle intact and inlaid; 2 rivets through shoulders
Provenance & Associations: ?; Type A sheath (App.2,No.27)
Length overall: 33.6cm
Length of blade: 22.4cm
Width of blade: 6cm
Reference: YPEY, 1960-1961, 347ff & Abb.5

56. VECHTEN
Slim blade with protruding shoulders; slight midrib defined by grooves; flat tang, broken; 2 rivet holes through shoulders
Provenance: ?
Length overall: 26.3cm
Length of blade: 21.5cm
Width of shoulders: 4.7cm
Museum: R.v.O., Leiden VF*. 1054 (I.36)

57. VECHTEN
Poorly preserved blade of diamond cross-section; flat tang; handle not inlaid; ?rivets through shoulders
Provenance: ?
Length overall: 30.3cm
Length of blade: 20.4cm
Width of blade: 5.4cm
Museum: R.v.O., Leiden VF. 537. I.21

58. VECHTEN
Broad blade with simple midrib; flat tang, handle not inlaid; 4 rivets through shoulders
Provenance: ?
Length overall, extant: 30.3cm
Length of blade: 21.4cm
Width of blade: 5.4cm
Museum: R.v.O., Leiden VF. 533. I.22

59. COLCHESTER
Similar to Nos. 46, 47, etc., but poorly preserved; flat tang, handle not inlaid; 2 rivet holes through shoulders
Provenance: "Colchester 1938"
Length overall: 32.7cm
Width of blade, extant: 4.8cm
Reference: MANNING, 1985, No. V 9
Museum: B.M.

60. LONDON (Fig.1)
Slim blade with waist and long tapering point; slight midrib defined by grooves; rod tang, with turned wooden handle, that is not original; no rivets
Provenance: Site of building of National Safe Deposit Co.
Length overall: 33.1cm
Length of blade: 23.6cm
Width of blade: 4.8cm
Reference: PULLESTON & PRICE, 1873, 70 & Pl.VI, No.6
Museum: Mus. of London (formerly Guildhall Mus.) 3506

61. "UNPROVENANCED" (Fig.1)
Blade with waist; midrib defined by grooves; flat tang, handle complete, not inlaid; 4 rivets through shoulders
Provenance: ?
Length overall: 33.4cm
Length of blade: c.24cm
Width of blade: 6.4cm
Reference: MANNING, 1985, No. V 6

APPENDIX 2

CATALOGUE OF SHEATHS AND DECORATIVE MOTIFS

Note: Those sheaths, which I have only been able to study from photographs published without detailed descriptions, are marked (P) in the catalogue

Part I - Bronze sheath bindings

1. TITELBERG (c.30 B.C. to c.10 B.C.)
   2 cross braces, at mouth and across mid point; latter has small panel of decoration. Dagger handle not inlaid (see Appendix 1, No.1)
   METZLER & WEILLER, 1977, Abb.31

2. HALTERN (c.10 B.C. to c.A.D. 9)
   Bronze binding, no cross bracing extant (may not have had any?). (See Appendix 1, No.4)

Part II - Type A sheaths

3. OBERAMMERGAU
   Silver inlay and fittings. Dagger, with inlaid handle, in sheath. Inscription on hilt: "C.ANTONIUS.FECIT.[..."
   ULBERT, 1962a, and 1971

A.

Type A sheaths with brass, or yellow metal, and enamel inlays. Where the metal has been analysed it is brass (copper and zinc alloy), but there are a few slightly ambiguous references to gold inlay in the older literature; more analyses are needed. The daggers associated with these sheaths do not have inlaid handles. Principal motifs found on these sheaths include:

i) Segmented rosettes with alternate triangular petals of brass and enamel often set within a laurel wreath;
ii) laurel wreaths usually of enamel and between concentric circles of thin brass inlay
iii) L-shaped filets in the corners of decorative panels, usually in brass
iv) "palm fronds" and Inverted chevrons are the alternative motifs more often than not filling the fourth, triangular, zone of decoration. They are made up of alternate leaves, or chevrons of brass and enamel

v) borders of laurel leaves similar to the wreaths
vi) peltas usually in brass

4. CONCORDIA (P)
   Dagger in sheath
   BRUSIN & ZOVATTO, 1960, 79 & fig.111

5. SISEK, from R. Kulpa
   Dagger in sheath
   HOFFILLER, 1912, fig.48 left

6. SISEK from R. Kulpa
   Dagger in sheath
   HOFFILLER, 1912, fig.48 right

7. DUNAFÖLDVÁR from R. Danube
   see Appendix 1, No.39
   THOMAS, 1969

8. AUERBERG (P) (c.A.D. 10/15 to c.A.D. 40/45)
   Dagger in sheath
   EXNER, 1940, No.1 & Taf.8.3; ULBERT, 1975, Abb.17.1

9. AUERBERG (P) (c.A.D. 10/15 to c.A.D. 40/45)
   ?Brass. Dagger in sheath
   EXNER, 1940, No.2 & Taf.8.2; ULBERT, 1975, Abb.17.3

10. LADINER TAL, Südtirol
    ?Brass. Dagger in sheath
    MERCKLIN, 1928, 462, Abb.172; THOMAS, 1969, Abb.7.2

11. MAINZ, "Umgebung"
    ?Brass. Dagger in sheath
    EXNER, 1940, No.12 & Taf.8.1; THOMAS, 1969, Abb.8.2

12. MAINZ from R. Rhine
    Dagger in sheath
    M[ainzer] Z[eitschrift] 12/13, 1917/1918, 176-7 & Abb.13a

13. MAINZ from R.Rhine
    See Appendix 1, No.45
    M.Z. 12/13, 1917/1918, 177 & Abb.13b

14. KÖLN from R.Rhine
    Dagger in sheath
    LINDENSCHMIDT, AuhV 4, 1900, Taf.52.1;
    BUSHE-FOX, 1949, Pl.XXXIII, No.74A (incorrectly assigned to Rösebeck)

15. RÖSEBECK, Kr.Brilon

see Appendix 1, No.50
LINDENSCHMIDT, AuhV 4, 1900, Taf.52.2

16. NIJMEGEN?
See Appendix 1, No.51
YPEY, 1960-1961, 352f & Abb.9

B.

Type A sheaths with brass, or yellow metal, and enamel inlays; decoration in a narrow panel. Principal motifs found on these sheaths include:

i) Small segmented rosettes with enamel and brass petals.
ii) Inverted chevrons, alternately in brass and enamel
iii) Broad brass border surrounding decorative panel

17. MOERS-ASBERG (?Claudian)
Dagger in sheath
BECHERT, 1974, Abb.66a

18. HOD HILL (Claudian)
No associated dagger
MANNING, 1985, No. V 17; RICHMOND, 1968, 137-8 & Pl.40

Possibly of this group

19. WADDON HILL (Claudian)
No enamel inlay, lacks rosettes and chevrons, but has decoration in narrow panel, with broad border. "Propeller" motifs. No dagger
WEBSTER, 1961, 104-5 & photograph

C.

Type A sheaths with silver, or white metal, and enamel inlays. In the few cases, where analysis has been done, the white metal is silver. The daggers associated with these sheaths have inlaid handles. The motifs, found on these sheaths are similar to those found on sheaths inlaid with brass, the exceptions listed:

i) Hatched fields, that is, whole areas covered with fine hatched lines inlaid with silver
ii) decoration of the triangular fourth zone consists of a complex of motifs that cannot readily be described in words: incorporates a shape like hanging drapery, or like a tear drop, and often a rosette or roundel

20. RIßTISSEN (Claudian or later)
Silver inlay, but no hatched fields unlike sheaths listed below. No dagger
ULBERT, 1970, No.257, 16-7 & Taf.14

21. VINDONISSA
No associated dagger
Jahresb. der Gesellschaft pro Vindonissa 1968, 1969, 81 & photograph

22. ALLÉRIOT from R.Saone
See Appendix 1, No.41
BONNAMOUR & FERROUX, 1969

23. COLCHESTER (A.D. 43 to 49)
Dagger in sheath
DUNNET, 1971, 24, 28-30 & fig.12

The following sheaths may be of this group

24. MAINZ (Claudio-Neronian)
?Silver or brass. Dagger in sheath, handle ?not inlaid
BAATZ, 1962, 44-5 & Taf.19.10

25. MAINZ (Claudio-Neronian)
No extant decoration on sheath; inlaid handle
BAATZ, 1962, 44-5 & Taf.19.9

26. MAINZ (Claudio-Neronian)
No extant decoration on sheath; ?inlaid handle
BAATZ, 1962, 44-5 & Taf.19.11

D.

Type A sheaths with some Type B features.

27. ?VECHTEN
Silver and brass inlay, zig zag borders, silver headed nails, and hatched fields. Main decorative elements are most unusual, not paralleled on any sheath known to me. Suspension loops fixed by sets of 4 rivets. (see Appendix 1, No.55)
YPEY, 1960-1961, 347ff & Abb.5

28. HOD HILL (Claudian)
Brass, and red and orange enamel inlays. Has rosette, with enamel inlaid diamond shaped petals, of the kind found on some Type B sheaths (see below Nos.33ff). No associated

dagger
MANNING, 1985, No. V 16; BRAILSFORD, 1962, B5, p.5 & Pl.IV

E.

Type A sheaths with decorative motifs of late Type B sheaths. Their decoration is inlaid with brass and silver exclusively, no enamels have been found. Dagger handles ? without inlay. Principal motifs found on these daggers:

i) "Temple" motif consistng of... supported on columns
ii) "palmettes"; stylised, in the form of a fan of large leaves
iii) diamonds filling the centre of decorative panels
iv) single decorative panel, not subdividedlike the more common 4 zone decorative scheme

29. MAGDALENSBERG
Four sets 5 rivets at suspension points. No associated dagger
Carinthia I 145, 1955, 27 & Abb.21

30. MAINZ, ?R.Rhine
Four sets of 4 rivets at suspension points. See Appendix 1, No.47
M.Z. 12/13, 1917/18, 177 & Abb.14

31. LINCOLN (Flavian) (Fig.2)
No associated dagger
MANN, 1981
(*)

32. RIßTISSEN (Vespasianic or later)
Single decorative panel. See Appendix 1, No.19
ULBERT, 1970, No.258, 16-17 & Taf.15

Part III - Type B sheaths

Type B sheaths differ from Type A sheaths not only in their construction,but also in the materials, and in the motifs used in their decoration. With one exception (No.65 below) brass is never used. Few of the motifs found on Type A sheaths occur on Type B, or vice versa, but, as the sheaths listed above and below show, there is some overlap. One feature common to all Type B sheaths is the use of hatched fields.

F.

Type B sheaths with Type A features. In those cases where the metal of the inlay has been analysed it has proved to be

silver. Type A motifs found on these sheaths:
i) Enamel, usually red
ii) laurel wreaths and laurel borders
iii) segmented rosettes, with and without enamel

Other features characteristic of these sheaths:
i) Rosettes with diamond shaped petals, outlined in silver, the petals inlaid with enamel
ii) rosettes with a silver nail at their centre
iii) silver headed nails, singly within the decoration, and in lines as a border around the inlaid plate
iv) circles and triangles, or diamonds, in horizontal rows. The circles actually linked to the triangles, or diamonds, in a single motif.

Not all of the above features are found on each sheath; in the list below I have noted the motif, or motifs, that identify any particular sheath with this group.

33. KEMPTEN (Tiberio-Claudian)
Laurel border, no enamel
No associated dagger
KRÄMER, 1957, 119-120 & Taf.A

34. AUERBERG (c.A.D. 10/15 to c.A.D. 40/45)
Enamel, and rosettes. Dagger handle not inlaid (see Appendix 1, No.8)
ULBERT, 1975, Abb.17.2b; EXNER, 1940, No.3, Taf.9.2

35. VINDONISSA (?Flavian)
Enamel; circles & triangles. Silver lost
No dagger
ULBERT, 1962, No.1, Abb.1

36. VINDONISSA (?Flavian)
No enamel. Silver headed nails
No associated dagger
DRACK, 1946

37. VINDONISSA (?Flavian)
Segmented rosette. Associated with inlaid dagger handle fragment
Jahresb. der Gesellschaft pro Vindonissa 1973, 1974, 65-6 & fig.1

38. MAINZ R. Rhine
?Enamel; rosettes
Dagger handle not inlaid (see Appendix 1, No.43)
LINDENSCHMIDT, AuhV 3, Heft 2, 1881, Taf.3.2

39. NIJMEGEN (Mid-Flavian)
Laurel wreath, rosette, triangles & circles and silver nails
Dagger handle not inlaid (see Appendix 1, No.18)
BOGAERS & YPEY, 1962-1963

40. LEEUWEN R. Waal
Laurel wreaths, and rosettes
Dagger has inlaid handle (see Appendix 1, No.53)
YPEY, 1960-1961, 353ff & fig.12

41. VELSEN (A.D. 15 to A.D. 30)
Laurel wreath, rosette,and silver nails
No dagger handle (see Appendix 1, No.9)
SCHIMMER, 1979, 111-4 & fig.

42. RICHBOROUGH (?Claudian)
No enamel, but circles & diamonds. (Not certainly Type B sheath)
No dagger
BUSHE-FOX, 1949, No.74, 123-4 & Pl.XXXIII

43. HOD HILL
Enamel, rosettes, and silver nails
No dagger
MANNING, 1985, No. V 18

Possibly in the above group

44. VINDONISSA (?Flavian)
Silver nails
No dagger
ULBERT, 1962, No.3, Abb.3

45. USK (Neronian) (Fig.2)
Rosettes
No dagger
Unpublished, report forthcoming
(*)

46. CHESTER
? Rosettes
No dagger
Unpublished excavation (CHE/HW '80, small find no.705)
Monograph, Grosvenor Museum, forthcoming
(*)

G.

Type B sheaths with "palmettes" and "temples". Where

analysis has been done the inlay metal is silver. Principal motifs found on these sheaths include:

i) "Palmettes", formed of large leaves

ii) "temples". Triangular pediment supported on 3 or more columns.

Also found:

iii) Cross-hatched diamonds, filling a whole panel

47. RIßTISSEN (Vespasianic)
"Temple" and "Palmette"
No dagger
ULBERT, 1959, p.71 & Abb.14

48. VINDONISSA (?Flavian)
"Temple" and "Palmettes"
No dagger
ULBERT, 1962, No.4, Abb.4

49. VINDONISSA (?Flavian)
"Temple" and hatched diamonds
No dagger
ULBERT, 1962, No.5, Abb.5

50. VINDONISSA (?Flavian)
"Palmettes"
No dagger
Unpublished, Vindonissa Museum

51. MAINZ R.Rhine
"Palmette"
Dagger in sheath, rod tang, no handle
Inscription on sheath: "LEG. XXII PRIMI"
LINDENSCHMIDT, AuhV 4, 1900, Taf.11.3

52. ZWAMMERDAM
"Temple" and hatched diamonds
No dagger
HAALEBOS, 1981, 114-5 & fig.3

53. COLCHESTER (c.A.D. 75 to c.A.D. 125)
"Temple" and "Palmettes"
No dagger
CRUMMY, 1983, No.4229, 134-5 & fig.154

54. GLOUCESTER (c.A.D. 70 to c.A.D. 90)
"Temple"
No dagger
HASSALL & RHODES, 1975, 79 & Pl.VIc

55. CAERLEON (Fig.2)

"Palmette"
No dagger
Exacavations of Glamorgan-Gwent Arch. Trust
Unpublished, report forthcoming
(*)

56. CHESTER
"Palmettes".
No dagger
Crook St., 1973-4 excavations, small find no.1308
Monograph, Grosvenor Museum, forthcoming
(*)

57. CHESTER
"Palmettes".
No dagger.
Old Market Hall excavations, 1967-9
Monograph, Grosvenor Museum, forthcoming
(*)

H.

Type B sheaths with abstract designs. Where analysis has been carried out the inlay material has proved to be silver. No daggers have been found in direct association with any dagger of this type. The decoration of these daggers still displays a vestigial 4 zone division but the only recognisable motif is the cross-hatched diamond.

58. VINDONISSA (?Flavian)
ULBERT, 1962, No.6, Abb.6

59. VINDONISSA (?Flavian)
ULBERT, 1962, No.7, Abb.7

60. NEATH
Similar to No.61
Exacavations of Glamorgam-Gwent Arch. Trust
Unpublished
(*)

61. LOUGHOR (Fig.2)
Similar to No.60
Excavations of Glamorgan-Gwent Arch. Trust
Unpublished
(*)

62. CHESTER
Crook St., 1973-4 excavations, small find no.458

Monograph, Grosvenor Museum, forthcoming
(*)

63. CHESTER
Goss St., 1968-70 excavations, small find no.278
Monograph, Grosvenor Museum, forthcoming
(*)

64. CHESTER
Deanery Field, 1924-6 excavations
Monograph, Grosvenor Museum, forthcoming
(*)

I.

Miscellaneous inlaid Type B sheaths.

65. USK (Neronian) (Fig.2)
One panel decorative scheme, with stylised floral motif. Much of sheath survives.
Dagger in sheath (see Appendix 1, No.15)
Unpublished, report forthcoming
(*)

66. CHESTER
Fragment, possibly as No.63.
No dagger
Crook St., 1973-4 excavations, small find no.893
Monograph, Grosvenor Museum, forthcoming
(*)

67. VINDONISSA (?Flavian)
Bird motifs - Cranes ? - within borders of cross hatching.
No dagger
ULBERT, 1962, No.2, Abb.2

68. "NORDFRANKREICH"
2 roundels inlaid with naturalistic motifs in brass, one the bust of a man, or deity, the other an eagle with wings spread
No dagger
M.Z. 30, 1935, 68 & Taf.6.3

PART IV - Sheaths without inlay

There are a small number of sheaths that conform, in general terms, to our two forms of sheath, but which differ in detail and have no inlaid decoration.

69. CARNUNTUM
?undecorated iron sheath of Type A
Carnuntum Museum

70. MAINZ R. Rhine
Undecorated iron sheath, with dagger, handle not inlaid
LINDENSCHMIDT, AuhV 4, 1900, Taf.11.1

71. MAINZ
Undecorated bronze, or brass, sheath, with dagger (App.1,No.44)
M.L., Mainz 4183

72. LEEUWEN
Bronze, or brass, sheath of Type A, decorated with small amount of filigree-like decoration; matching decoration on guard of associated dagger (App.1,No.54)

73. XANTEN
Undecorated bronze, or brass, plate from Type B sheath
Bonner Jahrbücher 176, 1976, 422-4

74. NIJMEGEN
Thin bronze, or brass, plates from a ?Type B sheath. Decorated with patterns of parallel, fine incised lines on both faces. One face more highly decorated than the other.
Rijksmuseum G.M.Kam, Nijmegen 1932: 18 .10 .32 .3

There are six inlaid sheaths, which were listed by Professor Ulbert in 1970, that I have not seen. I give them here with their numbers in Ulbert's list, which will give further references:

Mainz (Nos.7 & 8);
Holzmühlheim (No.14);
Klein-Hettingen (No.16);
Ilischken (No.19);
and Auerberg (No.51)

CAPTIONS TO FIGURES

Fig. 1: 5: Lorenzberg (after ULBERT, 1965); 12: Hod Hill; 32: Vindonissa (after FELLMANN, 1966); 36: Gelligaer; 48: Weisenau; 53 Leeuwen (after YPEY, 1960-61); 60: London; 61: "unprovenanced". (Nos. refer to Appendix 1). Scale 1:3.

Fig. 2: 31: Lincoln; 45: Usk; 55: Caerleon; 61: Loughor; 65: Usk. (Nos. refer to Appendix 2). Scale 1:2.

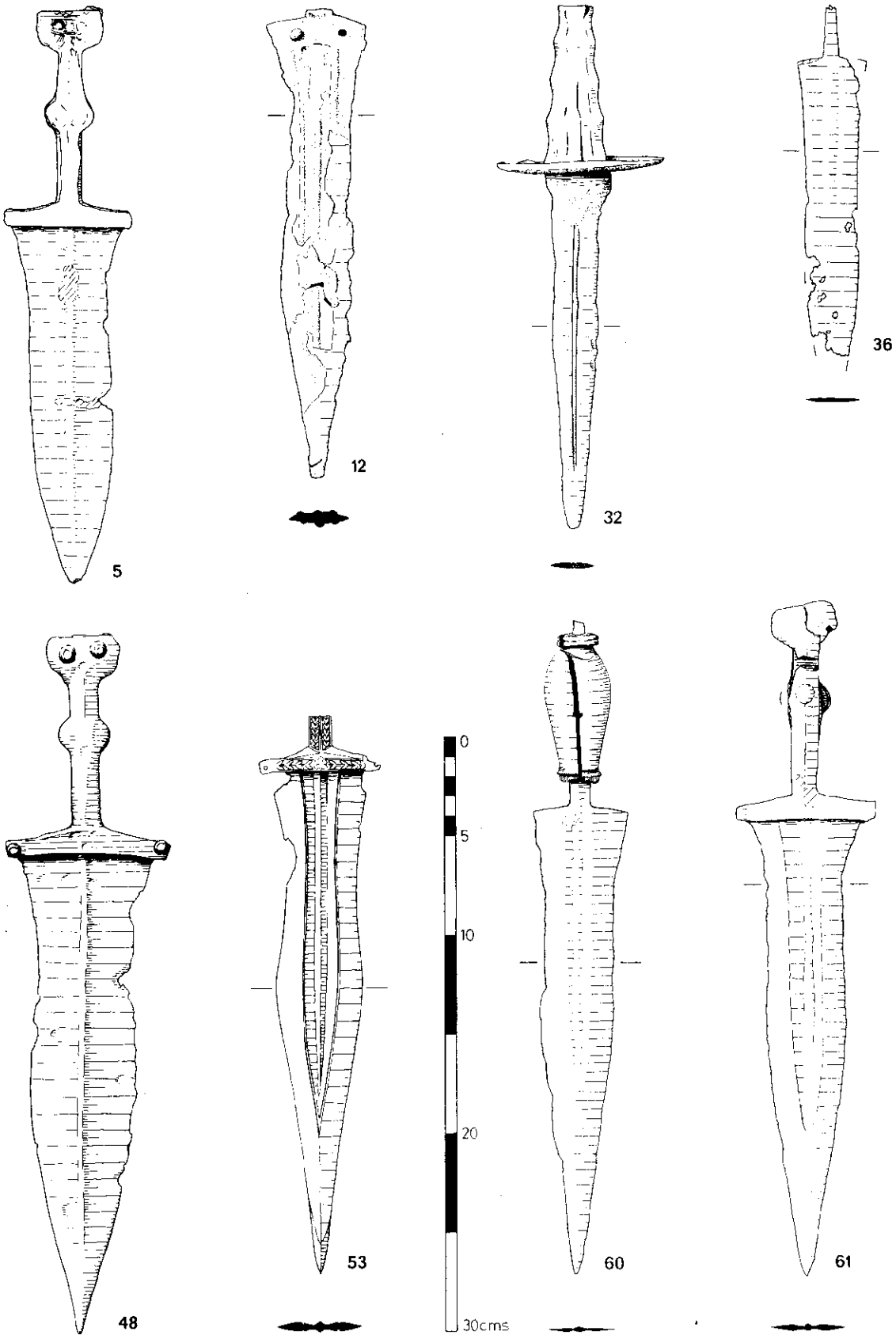

Fig. 1

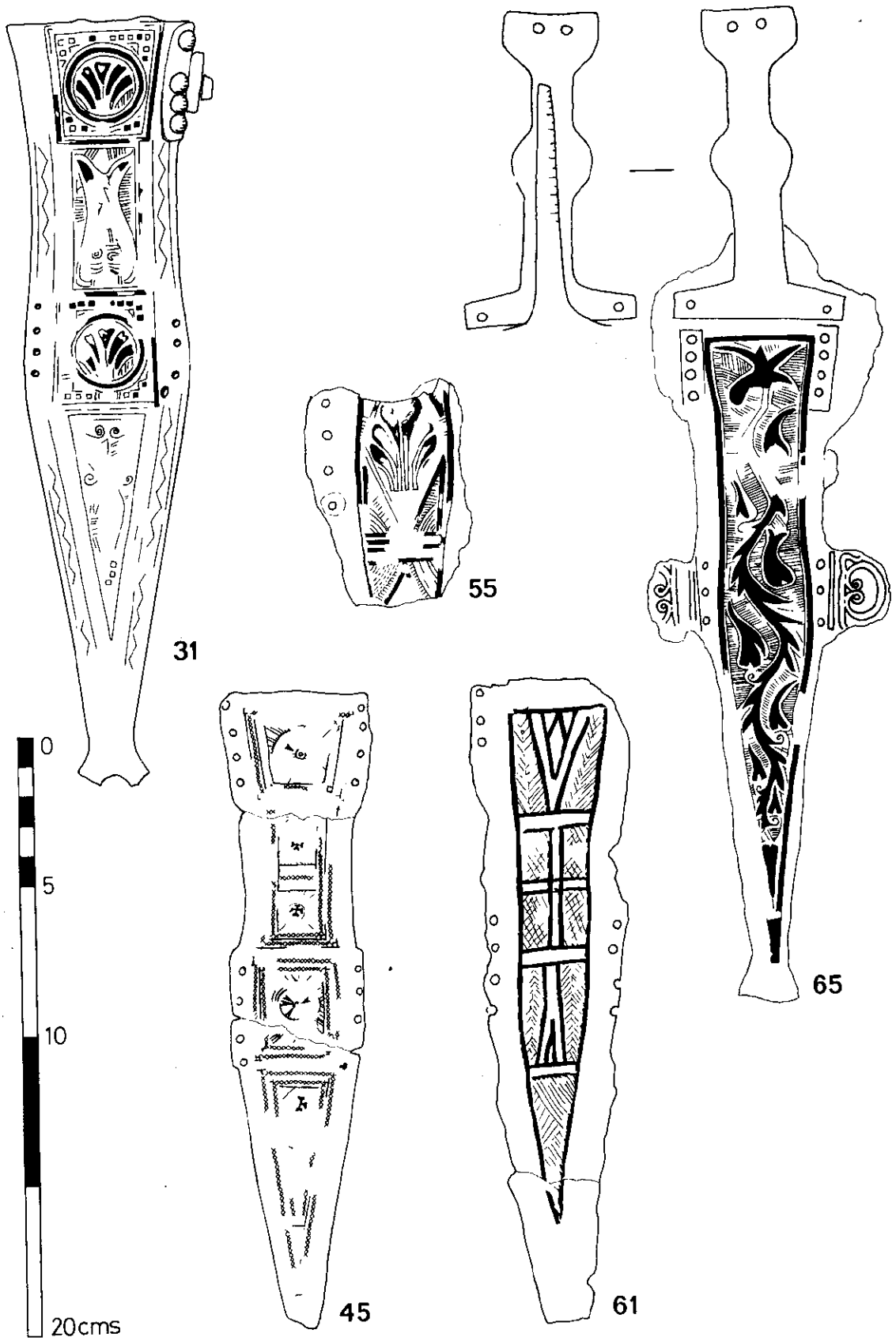

Fig. 2

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