PERSONAL ARMAMENT

IN

MIDDLE AND LATE BRONZE AGE FRANCE

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INTRODUCTION
CHAPTER I

INTRODUCTION

The title of this thesis explains the original intention of the writer, namely to survey the offensive and defensive armament in use in Bronze Age France, based on existing essays. However, the lack of broad studies on groups of arms and armour, and in many cases the inadequacy of specific recording has made this impossible at the present, without an enormous amount of basic classification. The background of the bronze weapons is also severely limited, since actual contexts for the specific items, if known, are normally confined to the provenance only. Few weapons occur in association with other objects; settlements with weapons are very few and almost all without definite stratigraphical evidence, and the numbers of graves containing swords, spears, etc. is very scanty. Use has therefore to be made of bronze hoards of various sorts, in which the value of associations for the weapons is often equivocal, and of typological classification, a method which seems well documented in fact, but only useful for broad comparisons. Since these methods are forced on the prehistorian of the French Bronze Age, it is essential that detailed studies exist for the artifacts.

Recently the position has greatly improved for the western part of France, but there has been no adequate correlation with actual weapons in the east or contacts with these. The east of France received settlement and influence from the Urnfield complex, and developed its own bronze weapons alongside intrusive material, so particular study of these and their interaction with the west is essential. Thus it was felt that more direct contribution to the understanding of the Middle and Late Bronze Age would come from a detailed examination of the most prominent weapon in use, namely the bronze sword. Apart from the intrinsic value of such a
large and expensive weapon, the sword appears to have been the most prized arm normally buried with its owner; it was also susceptible to varied typological development, and in no other weapon in France is this so evident. As far as possible the swords have been set in their context among other weapons, but the situation regarding spearheads in France is virtually unknown, apart from Briard's recent study (1965). It has been assumed, as is the usual practice, that axes do not represent weapons, but how far this is true is unknown in the present state of information. The known contexts suggest woodworking tools, as they are rarely met with in graves anywhere.

Thus the span of this thesis includes all bronze swords or rapier with a length of more than c.35cm. until the development of Hallstatt swords, with particular reference to the later M.B.A. and throughout the Late Bronze Age.

Swords have received attention from various authors over the years. Chantre in 1875 produced, for the time, a most comprehensive and analytical work, with fine lithographical illustrations, in very large and sumptuous volumes. His lists of hoards and individual bronzes are still of some value, but, being unaccompanied by illustrations relating specifically to the entries, much is now unidentifiable. Chantre and Perrin (1876) were instrumental in publishing much of the material from the late settlements in France and Switzerland, especially around the Lac du Bourget. Gabriel and Adrien de Mortiller drew heavily on this in publishing their Musée Préhistorique (second edition, 1903); they divided swords along with other material into their Morigen and Larnaudienne periods, giving good illustrations for very many objects. Sword classification had received a great impetus outside France before this time by Montelius' publication in 1876; Evans' study of bronze artefacts (1881) was also much read and widely known in France.
CHAPTER I

Much the most important essay in sword classification came in 1903, when Naue had tackled the swords of most of Europe in Germanic style, and divided them up into his system of Typen. This became the most usual work on which to assess the French weapons. A specific survey of great value was however effected in France three years before this, in Breuil's publication of the swords (and later, other bronzes) of the Seine Basin (1900) which, in this area, has not yet been superseded, at least in the detailed publication of finds. He did not of course know of Naue's classification, but Déchelette based much of his ambitions and copious scheme for French Bronze swords on the latter author (1910, II; 199-210). Déchelette's work on the Bronze Age in France, including the weapon classification, has remained the standard work up to within the last few years; and in many ways it has deserved its longevity, since he recognised the individuality of various French or western formats of sword manufacture (i.e. Rixheim, Roenoen, Rod-tanged swords). His work seemed to stun French archaeologists by its obvious efficiency, and, apart from Coutil's work, nothing of any great stature was produced on French weapons for the next fifty years. Coutil is a much underrated worker, since his study of French swords, published from 1926-28, is the best single work on this topic to the present. He described a great number of individual finds, many of which were illustrated (unfortunately, on minute scale); and this, taken with his studies on the Bronze Age in Normandy (192) and various other publications (e.g. 1914) supplements Déchelette's synthesis of weaponry with much of the background detail lacking in that author. Subsequent destruction of much of the material covered by him in the Second World War has perhaps unfairly higlit the inadequacies in his work, which is of much value.

In the west, Micault and de Lisle contributed to the knowledge of bronze swords in Brittany (1883) with a catalogue (unfortunately
very scantily illustrated) of bronze swords, and hoards containing these. De Lisle's classification of sword types is accurate and virtually that in use today, while many of his perspicacious remarks about bronze hoards have unfortunately been ignored over the last 80 years. Since then, apart from specific publications by various authors, knowledge of the Bronze Age in West France has been due to L. Marsolle, and above all, in the last few years, P.-R. Giot and J. Briard. There has been no single counterpart in the east; Millotte has done most in various publications in the last twenty years to elucidate the S.E. Bronze Age, supplemented on a regional basis by Hatt, Zumstein, Vignard, and Courtois. Specific studies of swords have come from Blanc (1955) and more recently Bonnamour (1966) and Coffyn (1966, 1967), while publications of individual hoards by Cordier et al. 1962, 1963; Millotte, 1958, 1960) have added to the information. In the last few years there has been an 'explosion' in studies of the French Bronze Age, of which the best work is undoubtedly that by Briard on the Breton and Western Atlantic Bronze Age (1965). He has drawn on Cowen's typologies of bronze swords (1952, 1954, 1955) for much information on flange-hilted weapons, particularly about the origins of carp's-tongue swords. The present writer has also used Cowen's publications as a basis for study of flange-hilted swords in East France, supplemented by more recent finds. Muller-Karpe's classification of cast-hilt weapons (1961) is taken as the definitive work on many of the imported swords of this class, with specific lists and examples quoted by Sprockhoff (1931, 1934) of general use. Correlation with British material has been facilitated by discussion with C. Burgess.

It is hoped that a surer typological footing may be given to the material by the following study of French bronze swords, particularly in the East which has largely been omitted by Briard. It is the intention of this present work to follow
the extension into the South-East of Atlantic sword types, to assess their interaction with intrusive Urnfield elements, and describe the manifestations of peculiarly 'Western' traditions in sword manufacture along the routes which are evident from the patterns of sword distribution. The main aim is assessment of the extent of sword production of various cultural backgrounds, the local forms taken by these exotic weapons, and finally the construction of a framework of relative dating to which single swords can be assigned, a first step towards a fuller picture of armament in Bronze Age society.
CHAPTER II

ATLANTIC RAPIERS AND RELATED GROUPS
CHAPTER II

ATLANTIC RAPIERS AND RELATED GROUPS

Tréboul and Cheylounet Swords

The Tréboul group, characterised particularly by its large cast-hilt 'rapiers' has been known for some time, and has received considerable attention since the time of Micault (1883) and Déchelette (1910). Various authors have contributed to the classification and dating of specific hoards or weapons (e.g. Sandars, 1957), but none so much as Briard and Giot in numerous fairly recent publications, especially Briard (1965) Chapitre VI). He has laid out finds from all the known Tréboul hoards, discussed the range of artifacts found, and has illustrated many of the swords. It is therefore unnecessary to describe these in detail since it would largely involve repetition of Briard's study, but specific points about the sword connections, typology, and dating need some discussion.

Briard (1965, 79ff) dates the whole Tréboul group to Bronze Moyen II, after Hatt's chronology, and sees the main origins for the series in the Armorican Tumulus group of his Bronze Ancien III and Bronze Moyen I. The occurrence of flanged axes in Tréboul hoards as well as blade-flanged simple un-looped palstaves with square stop-ridge suggests, as he asserts, a continuance from the later Tumulus series, with a development of the more complex midrib and some shield pattern types also in the hoards. The contemporaneity of the earlier forms is illustrated by the multiple mould from Plumieux, with simple flanged axe and straight-sided palstave with stop-ridge, midrib, and flanged blade (ibid, fig. 30). The rapiers include the large cast-hilt versions (probably as much swords as rapiers) with bronze hilts, blades exactly similar but with organic hilts, and smaller versions of these, either
CHAPTER II

plain or decorated. Some of these daggers with four rivets in the hilt approximate to Trump's Group I rapiers (1962, 80-84, figs.1-4), and a few are known as well outside the Breton area, quoted by Briard. One from the Oise at Pont-St.-Maxence (Durvin, 1961, 214-6, fig.2) should be added to these, and suits the relationship with small Tréboul daggers better than that with Atlantic trapeze-butt rapiers which seem to owe more to the Late Tumulus (Hagenau typo) two-rivet rapiers.

The large weapons with cast hilts have already been referred to as 'rapiers' but as Briard points out (1965, 88) they are much heavier and broader than the Atlantic trapeze-butt rapiers of the Noailles series and resemble these only in a general sense. They must have been used in a thrusting movement since the hilts are very short and difficult to grasp. Probably their development as very impressive looking weapons against an Early Bronze Age dagger background suggests the real reason for the construction rather than their functional capabilities.

Although their origins from Early Bronze Age daggers can be demonstrated on typological grounds the large rapiers have parallels which demand mention. Butler and Bakker (1961) in describing a hoard from Ommerschans in the Netherlands draw attention to the similarity between the Plougrescant, Beaune and Ommerschans swords. These enormous weapons, far too large to be hafted (and could only have been used with two hands had they been) are all unpierced for rivets, and are virtually identical in form and cross-section, like a smaller version from Kimberley, Norfolk (Greenwell, 1902, 3). Butler also mentions a ribbed object from the hoard which looks like an ingot (?) (or bronze binding) of the variety seen in the Vermeison and Cannes-Ecluse hoards (see Chapters Rod-tanged Swords), which must be Bronze D/Ha Al date,
offering another parallel for dating the Ommerschans blade. A loose find in the River Waal at Nijmegen reported by Butler is a classic Tréboul blade, which further strengthens Tréboul contacts with this area; and more northerly associations are implied by the Beaune type blade fragment quoted by the same author (1961, 203) from N. Jutland.

Briard illustrates contacts with N. Germany in the shape of a Wohlde dagger (1965, 105) from La Vicomté-sur-Rance, and another from Montcontour, and Butler (1963, passim) quotes many instances of contacts between the N. German/Scandinavian area and Britain and France. Among these are axe types, noted by Briard. But Butler's attempt to ascribe the Zwaagdijk and Wolfhagen rapiers directly to the Tréboul series is surely incorrect (1964, 37-43, figs. 1-2), since the characteristic cross-section, blade shape, decoration, length, and flat-topped butt profile is completely absent. Far more likely, if parallels are to be sought, is a connection with lozenge-section N. German rapiers with multi-rivet butts, shown extensively by Hachmann (1957, e.g. Taf. 38, 3, etc.). Likewise, Butler's remarks about Mont-St-Aignan (see below; 1964, 39) being related to Zwaagdijk are incorrect, since he was unaware of Hundt's technological study of this rapier (1962). His general idea of some sort of connection between Tréboul rapiers and the Northern series must however be likely; several possible daggers/short swords can be suggested, for example Virring (Hachmann, 1957, Taf. 27, 1), Lockstedter Lager (ibid., Taf. 14, 39). Various of the different characteristics of Tréboul rapiers can be seen on blades of assorted form in the Northern area (Scandinavia, N. Germany), but particularly on Sögel derivative daggers, which usually have a 4-riveted butt, ogival outline and 'teardrop' incised pattern (ibid., Taf. 38-40). Tracing contacts with the North at this time leads to other interesting possibilities as Tréboul prototypes; the best of which, in respect of section and shape, is the
hoard from Kelibia (ibid. Taf. 62,1-6). But all the blades on Nachmann's Taf. 62 show features of Tréboul weapons - the dagger from Annedal (no.7), almost identical to the Hungarian Kelibia hoard, is from Sweden, but could from its shape be almost a Tréboul rapier. Although none of the cast-hilt short swords from the North shows the characteristic 'scalloped' cutout of the Tréboul rapiers the two short swords/rapiers cited above have patina remains on their butts of this form (Virring, and more characteristically Lockstedter Lager, Mound 74; Nachmann, 1957, Taf. 14, 39). This last also has a midrib in the upper part of the blade of a rounded form, changing to a ridge nearer the point; but, unlike Tréboul rapiers, has three pendant triangles hatched at the butt.

Just how far one can carry these comparisons, or how valid the similarities may be, is uncertain, even though the predominantly earlier dates of the Northern specimens would suit. There are significant connections, mentioned earlier, in trade of palstaves of various sorts (Butler, 1963, 48ff.) between the North and the West, including France, and the finds described by Butler (1961). Until more work is done on direct connections, and more finds are made this problem must remain unsolved, and the Northern origin a good possibility. With an eye on other connections than the North, the find of 'Cypriot' daggers or spearheads at Plougerneau (Briard, 1965, 60-1), but of a much earlier date is notable, being imported up the Atlantic seaboard presumably; the amber space plate Briard mentions (ibid, 107) from Lesconic, may however only speak for more Northern connections. Sandars (1957, 62) mentions some Swiss daggers similar to Tréboul rapiers, and Bockeberger (1964, 23, fig. 26: 36) shows a classic Swiss Tréboul blade exported from Brittany or copied faithfully locally. These seem to lie on a thin S.E. area of distribution, marked also by the Rhône at Lyon Tréboul rapier (Holste, 1942).

Thus although Briard's typology for the Tréboul rapier seems
substantially correct, the possibility of Northern, and ultimately Hungarian, influence via Sögel daggers and derivatives (with organic and cast-hilts), seems to have been underrated so far, but more work on this specific topic may elucidate this further.

Holste (1942) was the first author to devote specific attention to a class of swords or rapiers with cast hilts which he called "Westliche Vollgriffschwerter". In this group he included all weapons with what Coffey called a 'scalloped' cutout of the lower hilt (1913,58), and this comprises Tréboul, Cheylounet and several weapons of varying form, found in Germany. Muller-Karpe (1955) added others to the group, but saw the S.W. German group as distinct from the specifically Western types (Tréboul, Cheylounet). The most recent study of these swords, with further additions to the numbers, has been by Hundt (1962), who considered them from a technological standpoint. He has in fact clarified the typology not so much as a result of classification of various series of the weapons, as by publishing drawings of X-ray photographs of the sword hilts. This was his main object, and to determine the casting methods used in the production of the hollow bronze hilts.

Among all these weapons, two different series stand out. The first is based on the Tréboul/Cheylounet type of blade, seen in a less extreme form in the Atlantic trapeze-butt rapier and its cast-hilt versions. The shoulders are square and the butt drawn out laterally, while the scalloped cutout is broader, flatter and more exaggerated than the other series. The second series of weapons is characterised by a generally narrower butt, without the flat broad shoulders, and by a high arched cutout with only a small central semicircle and 'wings' which project down the side of the blade. Included in this latter group are swords with a simple arched cutout (e.g. Spandau; Hundt, 1962, Abb. 3, 4). From Hundt's X-ray
illustrations it is immediately apparent that second series weapons are constructed like rod-tanged swords of both types (q.v.), and since the latter show such cutouts in the patination it is assumed that the cast-hilt swords occur in this horizon. They will be considered more fully under rod-tanged swords.

The first series seems to have as its common factor the use of a broad-butted blade, either of general Tréboul form, or the narrower shape of a trapeze-buttp rapier. The riveting, whether functional or decorative, on the butts varies from eight graduated rivets (Tréboul); six, sometimes graduated (Cheylounet); and four, or in one case, two, usually graduated (cast-hilt Atlantic rapier). These diversions correspond broadly to other typological differences, noted variously above, but most marked in two spheres of manufacture, namely the size and shape of blade, and decoration on the weapons. Briard’s figures of Tréboul swords should be compared with figs. A,B, the two swords from Le Cheylounet, and the shapes and decoration of Jugnes (Chantre, 1875, 109, fig. 80; Coutil, 1928, Pl. II, 14), St.-Pol-de-Lizonne (Dordogne) (A. de Mortillet, 1910, 115-9, fig. 52) and Reugney (Doubs) (Millotte, 1958, 9, Pl. VI, 73). (These have not been illustrated from the author’s drawings since it is unknown how accurate they are; the drawing of Le Cheylounet reproduced by Briard (1965, fig. 33, 6) after Dechelotte is an example of inaccuracy drawn out and scaled to large size—so bad, in fact, that for some time the drawing was presumed to be of a quite different sword).

These Cheylounet type swords all have decorated blades, with longitudinal channels forming ribs down the centre to the point, splaying out in three cases at the butt to a decoration of triangles. Of the five swords, three have decoration on the butt of the hilt (Le Cheylounet, Jugnes, Reugney) in a frame pattern, and the same three are hatched or channelled.
on the hilt. The use of herringbone cross-hatching and chevrons on Le Cheylounet and Reugney is paralleled by the same motifs on some of the cast-hilt rapiers (see below) particularly Gradhof (Hundt, 1962, Abb. 4: 1-3), and also on St. Genouph (ibid, Abb. 4: 5, 6, 9) and Mont-St-Aignan (see below). By contrast, Briard records no decoration on Treboul hilts apart from dotting around the butt and rivets of one specimen (1965, fig. 26, 3).

Cheylounet weapons have been termed 'swords' (above) because of their length (Jugnes, 87 cm., Le Cheylounet (undecorated specimen) 81 cm.) and the blade construction which does not taper so markedly as the Tréboul or Atlantic trapeze-butt rapiers with cast hilts, and has a low multi-ribbed cross section but with broad edges. A curious feature of at least three Cheylounet swords is that they curve in markedly below the shoulders like Treboul rapiers, but then recurve out again; this effectively gives them a broader blade with a sort of 'ricasso'. Why this method of construction should have evolved is uncertain; there is no independent date for the swords since none are associated, except with each other (Le Cheylounet; the M. Fourvière's attribution of a pair of bracelets to these is puzzling.), so influence from swords with such a ricasso could be possible, if the Cheylounet type continued long enough. This sort of blade is however seen on Spanish, S. Western stelae (Almagro, 1966, passim), and the connection was noted by A. de Mortillet for the Defesa stone (1910, 115-9; Almagro, 1966, fig. 16), referring to the sword from St.-Pol-de-Lizonne. Several of these stones have broad-butted swords with small pommels depicted upon them in low relief (Almagro, 1966, Lam. V, VI, XII (Defesa), XIV, XXVI), and the copper blades serving presumably as models for these have been found from the Argar culture (Savory, 1968, 198, Pl. 50). Daggers with four rivets in a rectangle also occur with these - a classic Rosnoen riveting method, but at a date according to Savory much too early for these, and in
fact too early for rapiers or swords in France at all (1968, 199: "fifteenth century or later"). Almagro's Bronze II (1966, 204) and his date for the Alemtejo stones at 1000-800 is somewhat too late, but on average if a date in between these authors is estimated for the later El Argar expansion then the Cheylounet swords would seem to imply some connection with S. Spain. The largely S. France distribution of Cheylounet weapons would support this (Briard, 1965, fig. 34).

The origins of Cheylounet swords should probably be seen within this general complex of western rapier types, with a basis possibly in Tréboul weapons. Both Cheylounet swords and the cast-hilt rapiers show frequent decoration on the hilts and butts, and in the former type, on the blade; it is suggested that this might derive from the cast-hilt Early Bronze Age dagger, as seen in the Rhône area, where various triangle decoration occurs on the hilt and blade. This is supported possibly by Hundt's conclusion that casting methods from triangular cast-hilt daggers were carried over into the production of the rapier hilts (1962, 56-7). The date of the swords must be later than Tréboul weapons, parallel with the trapese-butt rapiers; how long they continued is not certain, but if the blade basal curve can be considered a ricasso, possibly until the production of Atlantic leaf-shaped swords (q.v.).

The cast-hilt rapiers resemble the other two types in general form of hilt, but differ by having less of an exaggeratedly scolloped butt. The St. Genouph hilt (Hundt, 1962, Abb. 4:5, 6) is also narrower than Tréboul or Cheylounet butts in proportion and shows the less extreme arched cutout, suggesting a typological progression towards the second series hilts mentioned above. Like them the central cutout arch is less broad and shallower, and although this tendency is less evident on Abbeville (Briard, 1965, fig. 33, 4; see below) it is noticeable on the butt of the Mont-St.-Aignan specimen.
(fig. 2, see below). This would seem to be due to the narrower butt for which the hilt was designed, and it reaches its logical culmination in the second series hilts, designed largely for rod-tanged swords (q.v.) (Hundt, 1962, Abb. 2, 2-4).

The Niffer rapier (ibid, Abb. 2, 1) is slightly different from the others, resembling the Heitersheim weapon (ibid, Abb. 1) in having a plain curved butt; this latter rapier has a 4-rivet butt construction more typical of Northern weapons and with the hilt shape may be an import to Germany. The Niffer hilt although showing characteristic decoration, as far as can be determined from the bad drawing, may copy Northern swords or be a Western weapon of exceptional form for this type.

The connections and affiliations of the 'westliche Vollgriffschwerter' now seems fairly clear. Taken as a whole all swords with a scollopéd butt outline led to some confusion in dating; this was inevitable until the clarification of their internal construction by Hundt (1962) and Muller-Back (1959) by X-ray photography. Thereafter they fell into two series, one of which lies within the sphere of Atlantic rapier types (most of which had organic hilts of a similar pattern, see below), Tréboul and Cheylounet weapons; the other, succeeding, series seems to be directly associated with rod-tanged swords, and thus of an early Urnfield date.
CHAPTER III

ATLANTIC TRAPEZE-BUTT RAPIERS

These have been divided into two classes, depending on the blade cross-section:

**Class I - 3-rib cross section**

**Noailles series - broad butt, high cross-section, narrow blade**

Around Amiens (Somme)
Artannes (Indre-et-Loire) Hoard
Chinon (Indre-et-Loire) (fig. 1)
Fort-Harrouard (Eure)
Léger at Ploulec’h (C.-du-N.)
Loire at the Pont d’Amboise (Indre-et-Loire)
Loire at the Pont d’Amboise (Indre-et-Loire)
Le Mesnil Martinsart (Somme)
Mont-St.-Aignan (S.-Mar.) Hoard, 2 rapiers (fig. 2)
Noailles (Oise) (fig. 3)
Pordic (C.-du-N.)
St. Genouph (Indre-et-Loire) Hoard
St. Quentin (Aisne)
Seine at Paris (B. M., WG 125) (fig. 4)
Seine at Paris (Ashmolean, 1927-2228) (fig. 5)
Seine at Paris (Ashmolean, 1927-2229) (fig. 6)
Somme at Pont-Rémy (Somme)

**Rouen series - narrow butt, low section, broad straight blade**

Camon (Somme)
Doubs at Molay (Jura)
Glisy (Somme)
Loire at Thouaré (L.-Atl.) (fig. 7)
probably Loire (L.-Atl.)
Lyon (Rhône) (fig. 8)
Moselle at Belleville (M.-et-M.)
CHAPTER II:

Naguée (M.-et-M.)
Saône at Ray-sur-Saône (H.-Saône) (fig.9)
Schelmenhofstadt (Bas-Rhin)
Seine at Criquebeuf (Eure)
Seine at Oissel (S.-Mar.)
Seine at Paris (Ashmolean, 1927-2230) (fig.10)
Seine at Pitres (Eure) (fig.11)
Seine at Villeneuve-St.-Georges
probably Seine

Class II - oval hollow-ground cross-section

Near Amiens (fig.12)
probably around Amiens (Somme)
Caen (Calvados)
Camp de Bélifontaine (Somme)
Condé-sur-Noireau (Calvados)
Etinehem (Somme)
Fort-Harrouard (Eure)
Glisy (Somme)
Loire at Nantes (L.-Atl.) 3 rapiers (fig.14)
probably Loire (L.-Atl.) c.52 cms.
Roué (L.-Atl.)
Salins (Jura)
Saône
Saône at Auxonne (H.-Saône)
Seine at Les Andelys (Eure)
Solente (Oise)

Find Circumstances: Three hoards contain rapiers (Artannes, Mont-St.-Aignan, St. Genouph), one is known from a grave (Naguée), and several fragments were collected at Fort-Harrouard, a settlement site. The rest are single finds.
CHAPTER II:

Form: All the weapons in the group have a more or less broad trapeze-shaped butt, usually with two rivets in the upper part and sometimes with two notches towards the shoulders. Some rapiers have notches in place of the rivet holes, and the great majority of weapons have either a tapering or straight blade, although a few leaf-shaped blades are known. The 47 classifiable examples have been divided on the basis of their blade cross-sections; the two classes correspond broadly to Trump's Groups II and III. Her Group I, most of which are under 35.5 cm. (1962, 80-4), have very few counterparts in France, and as they seem to be related to Tréboul weapons, have been considered with these.

Class I rapiers are distinguished from other varieties in general by a 3-rib blade cross-section, but which may vary markedly in particular cases. The average length for 24 complete swords in Class I is 47.8 cm., but there is considerable varying, since the longest is 68.7 (Lyon, fig. 8), and the smallest 35 cm. (Seine at Pitres, fig. 11). Briard (1965, 96 ff.) is the only French author to devote much space to such rapiers with trapeze butts, and discuss connections with other countries, including Britain. He does not attempt to subdivide the group; unlike Trump's (1962) classification of British weapons, which bear close resemblance to the French examples, but which are laid out by her in a somewhat bewildering array of classes. In 1968 she simplified her former scheme by combining Wandsworth and Chatteris class rapiers in her Group II, and Barnes and Corrib weapons in her Group III. This would leave four varieties in Trump's Group II: Wandsworth/Chatteris, Thetford, Keelogue and Mortlake. I have included all swords
with flat or oval cross-section in Class II (catalogue above), and this would include Mortlake weapons (Trump's Group II), but three classes still remain in her scheme for the 3-ribbed rapiers. It would be desirable if possible, to classify rapiers by their functional characteristics, particularly by their handling or performance in use, as well as by technical differences. Trump has chosen to differentiate Wandsworth/Chatteris rapiers, and Thetford weapons (1968,214-6) on the feature of rivet holes (punched) and rivet notches (cast). This no doubt will elucidate the technological background to these, but does not lead to any explanation of the varying widths, weights and cross-sections of French rapiers, which would undoubtedly affect their use. It is proposed therefore to amalgamate Trump's rapiers with high narrow 3-rib cross section into one series (her Wandsworth/Chatteris and Thetford classes) for the French rapiers, and to name them Noailles rapiers for the sake of convenience. The eponymous weapon (fig.3) shows the characteristics, which feature a broad trapeze-shaped butt with two rivet holes (or rarely notches), but normally no shallow notches lower down. The blades taper strongly from the curved shoulders, and usually conform to the cross-section of the Noailles weapons although thinner and broader blades do occur, such as that from Chinon (fig.1). This rapier seems to be an intermediate form between the Noailles series and the remainder of Class I weapons, which form a separate type of rapier altogether.

Several rapiers form part of the collection in Rouen Museum, from various find places in the Seine. Coutil (1928, passim) has described these sketchily, and
his illustrations do not show the interesting character of the weapons. These, and most of
the remainder of the Class I rapiers have a 3-rib cross section, but with a broader blade, so
that the section appears like that from the Seine at Paris (fig.10). The butt shapes are variable,
but they are never as broad in proportion to the blade as Noailles rapiers, and are normally much
narrower, separated from the blade top by a low shoulder. The blade itself is noticeably more
straight-sided, with a more rounded point; in fact the weapons are less specialised stabbing rapiers
and suggest that the edge could have been used in attack. They represent an interesting development
of the Noailles rapier cross-section, for while the low profile 3-rib section remains, adding rigidity
to the blade, the edges and broader, and thinner than the other series and enable the edge to penetrate.

Trump does not seem to have a class corresponding to
the Rouen group just described; her nearest type is
Keelogue weapons (1962,88), with lozenge cross-
section and ground edges. Four rapiers in the Group
correspond to Keelogue rapiers; Glisy, Plouyé, and
two of uncertain provenance, one from the Seine
and the other from the Loire. However, one of the
characteristics of the Rouen rapiers seems to be a
narrowing of the butt, similar to Trump's criteria
for the Keelogue class (1962,88). This is seen in
the rapiers from the Seine, at Villeneuve-St.-Georges
(P. de Mortillet,1908,fir.65) and Paris (fig.10),
which is virtually a short sword rather than a rapier.
The remainder of these Class I weapons in the Rouen
series show a lengthening as well as narrowing of
the butt, and most possess a pair of notches, in
the butt near the shoulders, below the rivet holes. A further development of these rapiers is in the length of the blade - four in the Rouen series are over 60 cms.: Naguée (Sandars, 1957, 83, fig. 18), Doubs at Molay, Loire at Thouaré (fig. 7) and Lyon (fig. 8). The Doubs at Molay specimen (Déchelette, 1913, Pl. XIX, 1) has almost lost the appearance of a specifically thrusting sword, since the blade is broad and strong and would probably be suited to slashing blows. The cross-section appears similar to the Naguée specimen, which is almost identical but lacks the extra butt notches of the Molay weapon. Both are reminiscent of a rapier/sword dealt with under Rosnoën swords from Ray-sur-Saône (fig. 9), which is a hybrid weapon close to both types. They resemble the Ray-sur-Saône example in the narrow shoulders, and are almost exactly the same length (64.5, 65; Ray-sur-Saône = 64 cms.). It would appear that there is some influence perceptible from swords in the area of E. France at this time, either from Rosnoën swords or early forms of Urnfield, rod-tanged or Rixheim weapons.

Two other rapiers/swords remain to be mentioned, one from Lyon (fig. 8), the other from the Loire at Thouaré (fig. 7), and both of similar length (67 and 68.7 cms.). They resemble each other closely, with a wide 3-rib section and raised midrib, notches and rivets in the butt, and straight-sided blades. They are impressive weapons; the Lyon example weighs 535 grs (1 lb. 3ozs.) and must, like the other specimen, have felt quite a different weapon in the hand from the Noailles rapier (see above), which weighs 255 grs. (9ozs.). Even though the Noailles rapier is 10 cm. shorter the difference in the proportionate weight is remarkable, since it weighs less than
half the weight of the other, and the weight is
distributed quite differently, largely towards the
butt. The Lyon and Thouare weapons would best
suit the description of swords made in the tradition
of rapiers.

Class II rapiers differ most markedly from the above
weapons in their cross-section, which is lenticular
with hollow-ground edges. The central portion is more
often slightly rounded but a flat central area to
the blade is common. The butts are variable in shape,
although conforming to the general trapeze form of
rapiers. The group of finds from the Loire at
Nantes (fig. 14; Briard, 1965, fig. 31) show both narrow
and wide butts, normally with no subsidiary notches.
Trump's Group III corresponds to these rapiers (1962,
89 ff.), but she has recently amalgamated her Barnes
and Corrib classes, simplifying the whole scheme (1968,
219). This would leave three classes of oval or
flat-section rapiers in her scheme for Britain (Mort-
lake (her Group II), Barnes/Corrib and Lisburn), two
of which occur in France as no Mortlake rapiers are
known.

Only two weapons are known from France, which would
correspond to Trump's Lisburn class (1962,91). These
are a dirk from the Saône at Auxonne (Chantre, 1875,
Pl. XVI, 2) and a weapon (strictly not a rapier) from
the Condé-sur-Noireau hoard (see Rosnoen swords)
(Coutil, 1921, fig. 1, 79). The Auxonne dirk has two
rivet notches in the sides of a trapeze-shaped butt
and seems a typical Lisburn weapon. The sword from
Condé-sur-Noireau has the same sort of butt, with
broader and more pointed shoulders, and a leaf-
shaped blade of oval hollow-ground cross-section.
CHAPTER II.

The characteristics might equally or better fit Trump's Cutts class rapiers, which she states are influenced by Ballintober swords (1962,92-3), and its position in a Rosnoen hoard would better suit the attribution to this class. Lisburn rapiers do however occur at a relative date comparable to Rosnoen swords as shown by the two examples found with the Eriswell probable rod-tanged sword (see below; Briscoe and Furness,1955,218,Pl.XXXXIII) which most likely was being used contemporarily. Since the Eriswell tanged sword seems a French export, the broad notches on the two Lisburn dirks upon which Trump comments (1908,221) are not unusual when seen in a French context of the related rod-tanged sword from Triancourt. This has, apart from the long recurved tang, two 'ears' above sloping shoulders in the same manner as the Eriswell dirk and rapier, and therefore a presumably similar form of hafting.

Trump's Barnes/Corrib class has counterparts in France, but only in a general sense, since, as remarked above, the variation from one to another is sometimes large. None have blades which taper so strongly as rapiers in the Noailles Class I examples (see above), most are straight-sided and as Trump (1962,89) has commented, they are better suited to cutting. Such a blade shape seems to reflect the same sort of tendency towards a cutting weapon seen in Class I rapiers; like them there are examples with narrow butts, more of a feature of Rosnoen swords. It seems likely that these rapiers are the predecessors to the narrow-butted cut and thrust Rosnoen weapons; certainly, they have the same blade, cross-section and profile, and must have been used
in a similar manner. However, most of the specimens known only have two rivets at the top of the butt and no subsidiary notches at the base which are found on many of the later 3-rib rapiers. The weapons also show a shortening of the blade which Trump has noticed in Barnes/Corrib rapiers; the average lengths of 8 examples over 30 cm. is 39.9 cm., significantly shorter than Class I.

One weapon which seems intermediate between Classes I and II may suggest contemporaneity for part of both – Seine at Paris (fig. 6; Ashmolean, 1927-2229). This has the upper half of 3-rib and the lower part of oval hollow-ground section, benefiting no doubt from the advantages of both. The ribbed upper blade would be strong and rigid and the broad-sharpened lower half is well suited to use with the edge. However, the oval cross-section is seen on many of the two-rivet daggers and a series of 3-rivet dirks found sporadically in N. France, so it seems that typological prototypes exist for Class II alongside Class I (similar to Trump’s Mortlake class).

Distribution: Fig. 15 shows the coastal and riverine distribution of both classes, virtually identical to the succeeding Atlantic types of bronze swords in this area. Class I rapiers have been divided into their Noailles and Rouen series and mapped separately; Class II is mapped as a whole. All three types are spread over much the same area but Class I has a marked concentration in the Somme/Seine Basins and in Indre-et-Loire. The Noailles series conforms exactly to these areas with only one outlier in Brittany; most surprising is the group in Indre-et-Loire, which forms a separate set of finds quite distinct from the other series. Finds of later swords do occur
in Indre-et-Loire but in fewer numbers for each type, and scattered along the Loire in the Touraine region. Of the five Noailles swords, two from the Pont d'Amboise are very alike with the same cross-section (Bastien, 1966, CCCLXIV, fig. 2:1,2), Artannes (Cordier, Millotte, 1961, figs. 1,2) and St. Genouph (Hundt, 1962, Abb. 4) are close morphologically, but the Chinon weapon (fig. 1) is somewhat different. It has a 3-rib upper blade and lozenge lower blade section with more of a cutting sword profile. It is difficult to say whether these rapiers reflect the work of one bronze founder or more general activity in the area; or indeed imports. Whatever the reasons for this isolated group it seems likely that communication was carried on along the rivers, in this case probably the Loire via Loire-Atlantique or possibly through to the Seine via the Loing. This latter route is better documented at a later period, for the distribution of Atlantic leaf-shaped swords, but throughout the era of these Atlantic types the main route was almost certainly up the Loire from its mouth, since the river would probably have been navigable as far as Orleans at least (Larousse Universal 2(1923)82). There are, however, no other Noailles swords anywhere near the small Touraine group apart from one outlier in Brittany; the weapons from Loire-Atlantique are exclusively Class II except for one Rouen series rapier (Thouaré, fig. 7) and a probably Kelvin class rapier (Briard, 1965, fig. 32,3). Comparison with Briard's (1965) fig. 34 shows how the users of these rapiers must have skirted Brittany, where Tréboul weapons were popular before and during the trapeze-butt rapier phase; they occur again in the Seine and Somme. Many of Trump's Group II (3-rib) rapiers come from the Thames, so again the pattern of contacts between the Thames/Seine/Somme areas asserts itself, to be seen
in later types.

The Rouen series — broad rapiers with 3-rib section — show the same scatter in the Somme and Seine, but in even fewer numbers, with one in Brittany and two in the Loire mouth. However, six occur in the East of France at it is most interesting to note that four of these are over 60 cms; and all are sturdy weapons — Lyon (fig.8), Doubs at Molay, Ray-sur-Saône (fig.9), Naguée. It is likely that the increased length implies a response of the makers to the longer blades of Rixheim and rod-tanged swords and possibly the earliest flange-hilted Urnfield weapons, or cast-hilt Urnfield swords: all occur in this area of the Saône/Rhône valley and to the North.

Class II rapier, especially those over 30 cms, show a more markedly Western distribution, although a few occur in Normandy and Picardy. There are in fact very scanty numbers of these so that too much import cannot be attached to present distribution, but there seems to be a relatively high density at the mouth of the Loire. Three are known from the Saône/Doubs area, and one of these 'Saône' (Mouton, 1954, fig.30, 25) is leaf-shaped. This may imply a response to the first leaf-shaped swords but with only a single example from this area it must remain uncertain; there is however the typological change in Class I Rouen series rapiers which tends to confirm the development. Such an example from Britain is mentioned by Trump (1962, 89).

Origins, Relative Date: Trump (1962, 80ff.) has discussed the probable origins of trapeze-butted rapiers in Britain, with various forms contributing to the development of the weapons. There seem to have been two main series from which the rapiers developed —
in the North-West of France the Treboul group was flourishing probably before and during part of the span of trapeze-butt rapiers. In East France there was the tradition of the Tumulus dagger on which to draw, with the German prototypes providing the trapeze-shaped butt and the somewhat later two-rivet round and trapeze butt daggers using the characteristic hafting method seen on later rapiers. Many daggers and dirks with varying cross-sections and normally 4 or 2 rivets in the butt are known from E. and N. France, with the Hagenau series perhaps the best known (Schaeffer, 1926, I, figs. 66, 67). Breuil (1900-1905) has noted some from N.E. France, and there are numerous daggers and dirks in the Evans collection (Ashmolean Museum) from South, East and North-East France. These vary between the classic Tumulus 4-rivet pattern and trapezoidal butt (cp. Schaeffer, 1926, I fig. 66, D-E; Millotte, 1960, Pl. V, 49; 1963, Pl. XV, 21), and those with a round or less extreme trapeze butt and two rivets, often with a midrib (cp. Millotte, 1958, Pl. V, 54, 55, 56; 1963, Pl. XV, 12, 20, 23). It is not intended to discuss dirks and daggers in detail, but hoards such as Arnavé (Ariège) (Cartailhac, 1898, 666-7, fig.) show a development towards the rapier form in a horizon which seems earlier than that associated with long rapiers. Two daggers were found with inter alia narrow-waisted flanged axes with slightly splayed cutting edge similar to those found in Tréboul hoards; one of the daggers with a round butt and 2 rivets has a tapering blade with possibly a 3-rib section, which would point the way towards Noailles rapiers. Central ribs are common on the small daggers, and the characteristic 3-rib Noailles cross-section might arise from a sharpened dagger, which would assume a central rib with an arris each side. Daggers with a trapeze butt do
of course continue contemporaneously with rapiers and other swords; Courtois cites four from E. French hoards with a 2-rivets and 2 notches pattern (1960, 73, fig. 26, 2). Oval cross-section daggers also occur, possibly as prototypes for Class II rapiers: one fine specimen 14cms. in length is in the Evans collection, from the Seine at Paris, and looks like a miniature rapier.

How far the trapeze butt rapiers stem from Tréboul weapons is uncertain, since there is little evidence to show any geographical or typological overlapping of the types. Trump's Group I dirks are very rare in France, and should probably be seen as Tréboul offshoots at least in France, since several similar dirks occur in the Breton hoards (Briard, 1965, figs. 26, 29). The pattern of four or six rivets on the smaller plain Tréboul blades is quite a different form of hafting, and on most of the Tréboul specimens there is a characteristic cross-section and incised decoration; on the whole they seem to represent a harking back to Early Bronze Age weapon forms rather than the developments of the Middle Bronze Age rapiers. It is however possible that the strongly tapering long blades would have affected rapier development in the Atlantic sphere to some extent, apart from the possible parallel influence from Germany (Holste, 1953, 2-6), where lengthening Late Tumulus blades provided the main impetus.

Similarity between the Tréboul and trapeze-butt types is very noticeable in the bronze hilts found on four of the latter variety, and on many of the former weapons. It had been assumed that as three of these weapons (St. Genouph, Niffer, Mont-St.-Aignan, fig. 2) showed four rivets in the hilt butt they were broad-based rapiers like Trump's Group I, and with various
other cast-hilt weapons were classified separately as "westliche Vollgriffschwerte" (Holste, 1942; Müller-Karpe, 1955). Since Hundt's study of various of these weapons (1962) it has become evident that the French examples must just be cast-hilt rapiers and not a separate group, as the St. Genouph rapier is a classic Noailles series specimen with trapeze two-riveted butt (ibid, Abb. 4,5-9). His X-ray photographs show that the outside two rivets are not functional in the same sense as the two large ones in rivet holes, but only press against the sides of the butt. The Rouen series swords with two large rivets and two small notches must have been hafted in this manner but in organic material, hence the loss of the two outer rivets. From Hundt's study it thus seems likely that the other case-hilt rapiers conform to this pattern; apart possibly from Abbeville (Briard, 1965, fig.33,4, after G. and A. de Mortillet, 1903, Pl.LXXIII,839) which although of the two rivet format has a much broader butt.

Apart from the Abbeville rapier, the other three cast-hilt examples have decorated hilts. Hundt's drawing of St. Genouph (1962,Abb.4:56,9), the most accurate to date (since it was performed after cleaning), shows the intricate chevron, oval, hatched and dotted patterns on the hilt, similar to some of the motifs on the Mont-St-Aignan rapier (fig.2) and on Cheylounet swords (see above). The Niffer rapier, known only from a bad drawing (Zumstein, 1966,142,fig.52) as the weapon is lost, conforms to the hilt shape of the other examples, but narrower and with simpler decoration, although again resembling Cheylounet swords in the radial butt decoration. Most of the decoration on the Mont-St-Aignan has been obliterated by carbonates or scratching, but it seems to have a hilt divided by horizontal bands
(like the other two) between which are three-line chevrons for at least the two top bands.

The most marked characteristic common to the hilts of Tréboul and trapeze-butt rapiers is a lower margin of 3-arched form or what Coffey (1913, 58) calls 'scalloped'. Three of the four cast-hilt French rapiers have this form, and it must have been the standard shape for organic hilts on many rapiers of all types, since rapiers with copper carbonate deposits or a groove following the original hilt are known from several areas, far apart. Coffey (1913, figs. 56, 57, 60) shows various examples, with hilts extant or disappeared; Trump (1962, fig. 9) shows the weapon from Mortlake (better drawing in British Museum B. A. Guide (1920) fig. 11, 1; see also fig. 11, 2); while Butler (1963, figs. 32, 33) shows two from N. Germany. Finally, among the French examples, 8 have visible traces of the lower hilt edge of 3-arched pattern; one, Moselle at Belleville (Millotte, 1965; Pl. II, 3) has an ogival arched base, like those seen on Rixheim and possibly some rod-tanged swords (q. v.). So when hafted, it would seem reasonable to suppose that these rapiers looked like the cast-hilt examples, all with 3-arched cutout. The broad butt of the hilt, even wider than the blade base (to extrapolate from the X-rayed examples) would be an efficient form, acting against the thumb and fingers in a thrusting weapon, yet narrower and easier to use with a slashing stroke than the Tréboul very broad hilts.

As mentioned above, three rapiers occur in hoards and one in a grave. The inhumation burial under Tumulus VII at Naguée has been described and discussed by Sandars (1957, 83, 102, etc.); it contains as an important aid to dating a long heavily ribbed pin (ibid.,
fig. 182) and broad tweezers. The pin is very like a specimen from Tumulus 4 at Schelmenhofstadt (Schaeffer, 1926, I, 12, fig. 3, n) and it is interesting to note that at this site both Tumuli 2 and 3 contain 2-rivet round-butted rapiers, both unassociated. One of these is of the low 3-rib section (Rouen series) type (ibid., fig. 67, c) but badly damaged like the other rapier. The pin Schaeffer suggests may be from the inhumation grave II in Tumulus 4 - if so, the dating evidence would hinge on the two Geispolsheim bracelets found there, and Sandars would put both these and the pin into her transitional phase-period V (1957, 80). Her map of Naguëe pins (ibid., 362, Map VI) shows an area of distribution along the Rhône/ Saône Valley and into Alsace and S. Germany, much the same as the succeeding collared pins; it also ties in well with early cast-hilt sword imports. The cross-section of the Naguëe rapier/sword would suit a late date, within Sandars' Transitional phase, since the lozenge section resembles rod-tanged swords closely and it seems that they show a Middle/Late Bronze Age Transition date. So the Naguëe grave seems to be a blend of intrusive Urnfield forms on a Middle Bronze Age background.

The three hoards mentioned above containing rapiers are of variable use in dating. The hoard from Artannes-sur-Indre (Cordier, Millotte, 1961, 143-5, figs. 1, 2) has partly disappeared, with an earlier drawing showing the full content of a flanged axe with broad cutting edge, three palstaves, a socketed axe, a spearhead, a massive bracelet and a twisted broken Noailles series rapier. Two of the palstaves were unlooped, the other had a side loop and all three had a sort of trident pattern or rib on the
blade. These should probably be dated to Broholm's period II or Montelius III (Butler, 1963, 60ff.) which would suit the trapeze-butt rapiers in the west lying typologically at the end of the Tréboul series and before Rosnoen swords. The Artannes hoard is however not strictly reliable in a direct association of the rapier with the other objects, since there was a socketed axe found among the contents with rib and concentric circle decoration. As Cordier and Millotte state (1961, 145) this cannot be earlier than Bronze Final III (see also Briard, 1965, Chapitre XIII) and thus the deposition of the hoard must be of this date. Such a mixture of types is not of course surprising, since many hoards by definition will contain earlier and later objects, but it removes any certainty of contemporaneity for the contents.

The same situation is to be found in the St. Genouph hoard (Cordier, et al., 1960, 122-7, figs. 83-10) where the contents are of manifestly different dates. Like the Artannes hoard, it is likely that an earlier group or hoard of objects was embodied with other artifacts when redeposited at a later date, but this is only one possibility. The later aspect of the hoard is shown by winged and socketed axes including and adze, a broken carp's-tongue sword, a socketed dagger also relating to the carp's-tongue complex; and two hollow-cast bracelets with angled flat terminals, of a type known particularly from E. France and Switzerland (Courtois, 1960, figs. 48-53). The other horizon, corresponding to Mont-St-Aignan and British hoards with rapiers would include the plain unlooped palstaves, possibly the spearheads and maybe the other decorated bracelets, but this is only interesting in so far as it corresponds to
hoards which seem deposited within a narrower dating threshold.

Mont-St-Aignan (fig.2) originally had ten palstaves associated in the hoard with the cast-hilt rapier mentioned above, and another rapier with notches in the butt belonging to the Noailles series. Eight palstaves are extant in Rouen Museum, two with shield decoration, two with shield and line, and four with ornament of radiating lines on the blade; all are unlooped. All these axes are characteristic N. French (Butler, 1963,65) and British types (Smith, 1959, passim); most of the British counterparts occur in Ornament Horizon hoards, as Trump states (1962,88-9) and seem to run on until the earliest leaf-shaped sword imports. The French evidence is so thin, with only this one certain hoard, that not much can be decided about the duration of rapiers except what can be determined through typology. Briard (1965,104ff) draws various parallels with rapier and palstave types in other countries, after Butler (1963,59ff) who has shown the broad trade patterns of various palstaves of French origins or connections. Several separate areas can be delimited for the French and British axes (Smith 1959, Maps 2,3; Savory, 1948, figs.4,5), across which trapeze-butt rapiers are spread as seen above. The date of these weapons, stemming partly from Tréboul and Late Tumulus weapons must lie within what Butler (1963) calls "Atlantic Middle Bronze industries" which he correlated with Montelius's Periods II bc and III in the North, and Bronze C to Ha Al in S. Germany (ibid, Pl.XXI). Briard's relative dates are similar — he would equate the Tréboul group with Hatt's Bronze Moyen II and rapiers with Bronze Moyen III. This approximates to Sandans' period IV
(1957,5), with a Transitional date (Period V = Bronze C and D) for Naguée. Thus the Middle Bronze Age trapeze-butt rapier seems to continue up to the growth of Rosnoen swords, particularly in the west, and the earliest straight swords in the East (IIa type, Rixheim, Rod-tanged, and Rosnoen).
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ROSNOEN AND FRENCH BALLINTOBER SWORDS
ROSNOEN AND FRENCH BALLINTOBER SWORDS

ROSNOEN SWORDS

This group of swords has been defined by Briard (1965, 151); the following examples are known from France:

Swords with rivet notches

1. around Amiens (Somme)
2. around Amiens/Bourdon (Somme)
3. le Bru at St. Joachim (L.-Atl.)
4. La Chésine at Nantes (L.-Atl.)
5. Condé-sur-Noireau (Calv.) Hoard
6. Cornospital (Morb.) Hoard
7. Corseul (C.-du-N.)
8. Eaucourt-sur-Somme (Somme) (fig.1)
9. Fort-Harrouard (Eure-et-Loir) Settlement
10. Fourdan (Morb.) Hoard
11. Kergoff (Morb.) Hoard
12. Kergoustance (Fin.) Hoard
13. Larnaud (Jura) Hoard
14. Loire at Nantes (L.-Atl.) (49.5cm.)
15. Loire at Nantes (L.-Atl.) (48.5cm.)
16. Loire at St. Anne (L.-Atl.)
17. probably Loire (L.-Atl.) = Four swords
18. Longueville (S.-et-M.) Hoard (fig.2)
19. Les Morandais (C.-du-N.)
20. Oise at Compiègne (Oise) 3 swords
21. Oise at Creil (Oise)
22. Oise at St.-Leu-d'Esserent (Oise)
23. Penavern (Fin.) (fig.3)
24. Penhoat (Fin.) (fig.4)
25. Poix (Marne)
26. Ru-Caoudal (Fin.)
CHAPTER III

27 Saône M: Tournus (fig 5)
28 Les Sauvageons (C.-du-N.)
29 Saxon-Sion/Gugney (M.-et-M.)
30 Seine, at Villeneuve-St. Georges
31 Thiant (Nord)
32 Vilaine at Gué de Baud (I.-et-V.)
33 Provenance unknown M: Épernay
34 Provenance unknown, probably Loire-Atlantique
M: Nantes, four swords: 52, 47.5, 46, 28 cms.

Swords with 4 rivet holes

36 Cannes-Écluse (S.-et-M.) Hoard (fig 6)
37 Condé-sur-Noireau (Calv.) Hoard
38 Lessart-le-Chene (Calv.)
39 Loire at Nantes (L.-Atl.)
40 Noailles (Oise)
41 Oise at Creil (Oise)
42 Penaverm (Fin.) Hoard (fig 7)
43 Penhoat (Fin.) Hoard (fig 8)
44 Saône M: St. Bonnet-de-Joux (fig 9)
45 Saône at Tournus (Saône-et-Loire)
46 probably Saône
47 Seine at Charenton
48 Seine at La Rochette (S.-et-M.)
49 Seine at Les Andelys (Eure) (fig 10)
50 Seine at Rouen (S.-Mar.)
51 Seine at Rouen (S.-Mar.)
52 'Seine - et - Oise'
53 Provenance unknown M: Musée de l'Armée (fig 11)
54 Provenance unknown, probably Loire-Atlantique, 51 cm.
55 Provenance unknown, M: M.A.N., 34.2 cm.
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Swords with 6 rivet holes

56 'Marne' (fig.12)
57 Marne at Fort-à-Binson (Marne) (fig.13)
58 'Seine', 58cm. (fig.14)
59 Seine at Villeneuve-St.-Georges (fig.15)

Hybrid Rosnoen swords and trapezoidal rapiers

60 Loire at Chantenay (L.-Atl.)
61 Saone at Ray-sur-Saône (N.-Saône) (fig.16)
62 Seine, between Grande Couronne and Oissel (S.-Mar.)
63, 64 Provenance unknown, probably Loire-Atlantique, 2 swords 49.5, 29.5 cms.

Find Circumstances: Thirteen Rosnoen hoards are known, containing various numbers of swords, one being located in a settlement site. Another settlement, Fort-Harrourard, yielded several daggers, one remade from a sword, and two dirks with notched butts. The rest of the swords are single finds, many from rivers as a result of dredging.

Form: Rosnoen swords are defined as weapons having a straight or tapering blade, with a method of hafting which utilises two to six rivets in notches or holes in a short tongue-like base. This base or butt is normally slightly broader than the blade and usually forms an elongated trapezoid, more or less, rounded. The trapezoidal butt is commoner in the N.West of France, while in the East a rounder and narrower profile predominates, sometimes with no broadening at all.

About 95 swords or dirks of this type are known,
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from about 70 different find-places; of these, the majority are provided with four rivet notches in the butt, this method being twice as common as the use of rivet holes. In a few cases it is difficult to decide which method has been used, but in this study a notch is taken as less than a semicircle, and a hole, whether complete or pulled out, more than a semicircle, in circumference. Most swords are clear examples of one sort or the other, but it is not known how much significance should be attached to the use of either hafting method, since weapons of both varieties turn up in hoards alongside each other. The use of rivet holes would seem much more efficient than notches alone, if any lateral pressure was to be applied to the butt, such as would occur during a slashing stroke. Perhaps the notches, and the trapezoidal rapiers, suggest a method of use more akin to a rapier than a slashing sword, that is, a thrusting movement with a straight withdrawal, when there would be only incidental lateral movement.

The average length of all the complete swords in the group is 51.6 cm.; allowing another 10 cm. from the shoulders for a haft. This corresponds well to Cowen's average for Nenzingen swords: 61 cm. (1955, 64), with which the Rosnoen group must be at least partly contemporary. Rosnoen notched weapons tend to be slightly shorter than those with 4 rivet holes - 51.2 as against 52.7, but there are insufficient numbers of riveted swords complete to make the difference meaningful. Those with 6 rivets - four swords only, three complete - measure 58 cm. average, and here the difference needs more attention since the method of hafting is so much stronger than other Rosnoen weapons. Six rivets are used, in holes, in three pairs above each other,
probably to compensate for the longer blade, and maybe also to allow the sword to be used as a cut-and thrust weapon without the rivets pulling out sideways, or the haft splitting as on a notched sword.

The cross-section of these swords is remarkably uniform. With a few exceptions it corresponds to a lenticular shape with punched edges, manifested in the blade by a smooth central area, slightly convex, and edges normally referred to as 'hollow-ground'. In fact the edges were probably hammered into this shape but the term has been retained as convenient. These hollowed edges run from the point to within a few centimetres of the shoulders, or broadest part of the butt, where they stop and are replaced by a blunt area or a milled ricasso. The cross-section described above is to be found on the majority of weapons over their whole range, but on a few specimens the construction is slightly different. Particularly in the easterly part of the weapon's distribution the cross-section corresponds to that of Rixheim swords (to which these must be related), with a lozenge profile and slightly raised midrib. The rib has been formed by two narrow chiselled grooves running parallel down the centre of the blade, creating a midrib between them. On two swords from the Saône (M:Tournus, St. Bonnet-de-Joux, fig.9) this can be seen, but the rib poters out a third of the way from the butt and the section then becomes lenticular. But on the sword probably from the Saône (M:Langres) the midrib continues to the point, as on Rixheim and Monza weapons; it is also decorated with outlines in the Rixheim/Monza manner (Kimmig, 1954, fig.98,12). A slightly thicker sword but with a section made in the same
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manner is known from Penhoat (Finistère) along with several other swords and fragments in a hoard (fig.8). Such a cross-section is unusual in the West and maybe owes its origin to E.French swords, but an entirely West French feature—is the way the two incised lines curve outwards well below the butt, as if they were hollow-grinding grooves. On swords from the Saône, it will be remembered, the lines curve outwards just under the butt and must have terminated under the haft wings. Most of the swords known thus have a plain area below the haft before the hollow-grinding starts. In many cases the edges of this area are milled to form a ricasso, or are blunted, but others seem to have fairly sharp edges, duller than the blade but probably sharp enough to cut the user if handled carelessly. For example, in the Penavern hoard (Briard, 1958,24ff.), two swords, nos.26 and 27, have sharp ricassi, one is notched, the other riveted. Both would seem to have been in use, since No.26 still has 4 rivets in their holes (so the sword must have been hafted) and the tang bent; no.27 has the upper butt broken. In the same hoard there are daggers with blunted ricassi, and four swords with milling of various sorts. It is difficult to offer any explanation why a feature so obviously useful as a milled ricasso should be omitted on many swords, especially when they occur in the same hoard. Much the same situation is seen in the hoard from Penhoat (Briard,1961,25f), where of the five sword ricassi, one is milled, two blunt, and two sharp (figs.4,8). When milling does occur, it is in a simple form, either straight across the edge, or angled, presumably for decorative effect; in the Penavern hoard, both sorts occur. There is little doubt, however, that many more of the swords must have had milled ricassi, since the edges deteriorate fastest,
and are frequently missing or oxidised so badly that detection is impossible without removal of the patina.

It has been suggested above that the use of notches in the butts of these swords would be better suited to a thrusting form of sword-play than a slashing style. But considering the blade forms of the various weapons in the group, changes the outlook somewhat for their use as rapiers. Firstly, the makers of these swords must have been well acquainted with the trapezoidal Atlantic rapier, since it is most probable that the two groups are in part contemporary. The typological connections of the two and the chronology will be considered later; but for the moment, compare the blade construction and profile of the two groups, and the balance of the weapons when hafted. A rapier such as that from Chinon (see Atlantic rapiers Chapter) has a broad butt, and blade the same width as a Rosnoen sword in the centre, but tapering to a finer point. Most rapier blades correspond to this pattern, and few are of straight-sided or leaf-shaped configuration, while many have a 3-rib cross-section, adding greater rigidity to a narrow blade. The weight of the butt counterbalances the narrow blade and makes the point of the weapon easy to swing around; in other words there is little effect on the blade from inertia. A Rosnoen blade on the other hand is straight-sided with a narrow, light, butt, so the effect of the inertia of the relatively heavy blade would make the sword handle quite differently from a rapier. Also, if the comparison is extended to Nenzingen flange-hilted swords, a straight-bladed variety, it is evident that the two types would also balance quite differently, with the Rosnoen swords proportionately heavier towards the
CHAPTER III

point. The Nenzingen bronze flanged hilt would assist in counterbalancing the blade, while the Rocnoen haft was almost entirely of organic matter.

Assuming that this difference in handling from rapiers is deliberate, it would seem to suggest that Rocnoen swords may have been used in a cut-and-thrust manner of sword fighting. This differs markedly from the use of a rapier which is too light to inflict a substantial, penetrating, wound with the blade edge, and which is designed for use in a stabbing stroke only. If the makers chose to alter the format of the weapon, it must surely imply a change in fighting technique, since it is improbable to see a less efficient weapon being designed for the same job as a rapier. This conclusion does not however tally with the fact that the notches seem inefficient in withstanding lateral pressure, if this was to occur during fighting.

The extent to which substantial force was placed laterally upon the haft of the weapon depends in fact, on the material upon which the sword was being used. For example, forms as disparate as the small-sword, and basket-hilted broadsword existed in the eighteenth century A.D., and their contemporary use was in quite different situations – one against defensive armament, and the other in a particular situation of personal combat against an unarmoured opponent. If a Posnoen sword is called a rapier it is surely because of a direct and misleading comparison with more sturdy, heavier, swords (e.g. Hemigkofen type) without regard to the background of its use. Whether armour was in use at this period is not known in many cases, but there is at least one indirect connection with the use of greaves.
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Hoard II, found in the settlement of Cannes-Écluse (Gaucher, Robert, 1967) contained half a bronze greave with embossed decoration, along with, inter alia, a piece from the blade of a rod-tanged sword of Bl type (q.v.). Hoard I from the same settlement contained a broken Rosnoen sword butt (fig. 6), a broken Bukova sword butt, and a Bl blade fragment, as well as many objects common to the other hoard, suggesting contemporaneity. No helmets, shields, or other body armour are known definitely from this date in France, although it is possible that some sort of protection was in use, made of leather, wood or other organic material (see Coles, 1962). With this lack of evidence, the argument becomes circular, but it seems likely, as stated above, that weapons would be developed to suit the situation. The swords in use suggest that the method of fighting was cut-and-thrust, and that it was in use against at least leg armour and maybe body armour and shields as well. If so, and the material used was of an impenetrable nature, the swords would not have withstood a slashing stroke. But they would be able to deliver such against a non-armoured opponent. In any case, it must be presumed that the hafting method was adequate for use since it was a matter of choice whether to use rivet notches or holes (both are known on rapiers) and twice as many swords have notches as holes.

Distribution: The swords are mapped in fig.17, and as can be seen the finds stem largely from the North and North-West coastal and riverine area. A few finds are known in the East of the country, largely from the Saône valley. Following C. Burgess (1960, and from conversations 1968) the swords known from Britain have also been mapped; these only amount to seven,
three of which are from the Thames. It is suggested that all these are probably imports from France since the predominant sword type in Britain was leaf-shaped, doubtless derived from Ballintober swords (Trump, 1962, 90-1; Burgess, 1960). Very few leaf-shaped versions of the Rosnoen type occur in France; it would seem that flange-hilted swords took over from these with a short butt without many intermediate examples. Those which do occur probably were imported from Ireland, or were influenced by Ballintober swords, of which there are about 24 in Ireland (Eogan, 1965, 7). Unfortunately many of the Irish swords are unprovenanced so a definite indication of their distribution is impossible, but they are less uniformly coastal and riverine than the French Rosnoen group (ibid.).

The French Rosnoen weapons have been differentiated on the map by the presence of rivet holes or notches in the butt, although as stated earlier, the two methods seem to have been functionally interchangeable. A significantly different distribution appears in France for the two methods; the notches have an overall spread, while the rivet holes in Rosnoen swords are concentrated in the Seine valley with a few outliers to the West and South-East. This in itself would mean little, but when the British and Irish Ballintober, Chelsea and Lambeth types are taken into consideration, it seems probable that some connection with Britain must be implied by the adoption of rivet holes. It is, of course, impossible to say which way the influence travelled - the French swords may have caused the effect on British weapons - but in any case the use of rivet holes predominates in Britain in all three types, and is almost always used on Irish specimens. There are even fewer Rosnoen swords
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in Ireland than in Britain (if in fact there are any definite specimens at all), so the ancestry of the Ballintober sword in both these countries is puzzling. Typologically the straight-bladed Rosnoen sword would seem to be ancestral to the leaf-shaped weapons, so the best explanation at the moment would seem to be direct imports into the British Isles from France of a few Lambeth (i.e. Rosnoen) swords. Later, under the influence of imported flange-hilted Erbenhein and Hemigkofen weapons, Chelsea and Ballintober swords would be produced by native founders.

An interesting feature of the Rosnoen sword distribution is its similarity to that of earlier and later sword types. Comparison should be made with the maps of Atlantic trapezoidal rapiers and Atlantic leaf-shaped swords, where the most striking feature is the concentration of finds from the large rivers - especially the Loire, Seine and Somme, and their tributaries; and the Thames. In the cases of those sword types mentioned, and the Rosnoen group, S.E. Britain and N.E. France seem to have been in close contact over all three periods; and, in particular, boats must have gone direct from the Seine and Somme to the mouth of the Thames. This would explain the preponderance of the use of rivet holes in British Rosnoen/Ballintober swords and in the Seine specimens; just as in the succeeding period the Thames and the Seine form the main areas of round-shouldered Class Ib and Ic (Burgess, 1960, Class III) leaf-shaped weapons.

Brittany was also probably in contact with Britain and/or Ireland at this time since the short rib characteristic of Chelsea swords (Trump, 1962, 90, fig. 19) and found on one British Lambeth sword (Burgess, 1960) is known on four swords at least from the North-West.
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(Le Sauvageons; Penhoat, fig. 4; Loire at Nantes).
Four of the few French Ballintober swords occur in the mouth of the Loire, and one of these also has a short rib, which again implies contacts with Ireland or England. Considerable activity must have been present in the Loire at this time, since there is a high concentration of finds at the river mouth, similar to the other rivers mentioned. Two finds of Rosnoen (i.e. Lambeth) swords in Britain near the Irish Sea area (Penard, Ambleside) also suggest an Ireland or West England - Brittany contact, reinforcing the conclusions to be drawn from the Breton Ballintober swords, to be considered below.

FRENCH BALLINTOBER SWORDS

<table>
<thead>
<tr>
<th>No.</th>
<th>Site Description</th>
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<tbody>
<tr>
<td>1</td>
<td>Abbeville (Somme)</td>
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<tr>
<td>2</td>
<td>Bailleul-sur-Thérain (Oise)    (fig. 19)</td>
</tr>
<tr>
<td>3</td>
<td>Kerguérou (Fin.) Hoard (fig. 20)</td>
</tr>
<tr>
<td>4</td>
<td>Larnaud (Jura) Hoard</td>
</tr>
<tr>
<td>5</td>
<td>Loire at Nantes (L.-Atl.)</td>
</tr>
<tr>
<td>6</td>
<td>Loire at the Pont de Pirmil(L.-Atl.)</td>
</tr>
<tr>
<td>7</td>
<td>Loire at Le Port, Nantes (L.-Atl.)</td>
</tr>
<tr>
<td>8</td>
<td>Seine at Pas de Grigny (Essonne) (fig. 21)</td>
</tr>
<tr>
<td>9</td>
<td>Seine at Villeneuve-St.-Georges (fig. 22)</td>
</tr>
<tr>
<td>10</td>
<td>Somme at Abbeville (Somme)</td>
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</tbody>
</table>

OTHER LEAF-SHAPED NOTCHED SWORDS, POSSIBLY BALLINTOBER

<table>
<thead>
<tr>
<th>No.</th>
<th>Site Description</th>
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<tbody>
<tr>
<td>11</td>
<td>Amboise (Indre et Loire) Hoard</td>
</tr>
<tr>
<td>12</td>
<td>L'Écluse de Trignac (L.-Atl.)</td>
</tr>
</tbody>
</table>
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13 Longueau (Somme)
14 'Marne'
15 Saône at Anse (Rhône)
16 Somme at the Port d'Abbeville (Somme)

Find Circumstances: Three swords are known from hoards, the rest are single finds.

Form: Ballintober swords have been defined by Hodges (1956) for the British specimens, and the Irish series has recently been catalogued by Eogan (1965). The usual British style of sword has a short rectangular tang with four rivet holes broadening at the shoulders above a leaf-shaped blade. Three weapons conform to this pattern in France - nos. 1, 9, 10 - two from Abbeville (Breuil, 1900, fig. 3, 23; Coutil, 1928, pl. IV, 3, 7) and the other from Villeneuve-St.-Georges (fig. 22). The cross-sections of the blades show the usual variations throughout this small group of swords; nos. 9 and 10 have a simple lozenge, while no. 1 has the normal Rosnoen pattern of a lenticular section with hollow-ground edges. These three weapons are so similar to the British series that some sort of direct connection is likely between the countries, and the most plausible explanation would be that they represent imports from Britain.

The rest of the swords in the definite Ballintober group are somewhat different, notably in the use of a much narrower tang, and rivet notches instead of holes, although in one case (Loire at Nantes; Briard, 1965, fig. 55, 3) both are used on the same sword. They are somewhat shorter than Rosnoen weapons, varying between 43 and 48 cms, and differ from these by broader shoulders and in several cases a lozenge cross-section. Blades are undecorated, apart from the sword from the
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Loire at Nantes (ibid, fig. 55, 13) which has a double incised outline, similar to some Hemigkofen or other leaf-shaped flange-hilted swords. It seems likely that the makers of these swords intended to reproduce the shape of flange-hilted swords' shoulders since all conform to this pattern except the weapon from Pas de Grigny (fig. 21). This sword is in a very bad condition, so originally the shoulders may have been pointed and broader, but in other respects this is a characteristic French Ballintober sword. The tang on this weapon shows a central midrib, presumably to strengthen the haft, and this moulding can be seen on two other French swords, Le Port, Nantes and Larnaud (ibid, fig. 55, 2; Coutil, 1914, III, 25). In this respect they resemble a class of British Ballintober sword, the Chelsea type (Burgess, 1960 (unpublished); Trump, 1962, 93), which have short ribs strengthening the tang and shoulders, and a Rosnoen style of cross-section. The extra strength of a rib at the butt would presumably be necessary to take the force of slashing blows on a flat blade section. Nine Chelsea swords are known from Britain, and one Lambeth sword has a short midrib; these ten examples are slightly more numerous than the seven French swords with short butt ribs. Four of these last are Rosnoen weapons (see above), but due to the small numbers it is not possible to draw any conclusions from the presence of this feature, except to say that it affords another example of French-British contacts.

The second group listed above includes largely doubtful weapons, generally re-made from another broken sword types. However, the sword from the Saône at Anse (Armand-Calliat, 1957, 129, fig. 2, 3) has been designed as a slightly leaf-shaped Rosnoen sword, with a
tang shaped like normal Rosnoen examples. The cross-section is more similar to Ballintober swords, but the shoulders above a probably milled ricasso, are narrow and uncharacteristic; in many respects the weapon resembles another from Italy, with a heavy lozenge-section blade and four rivet notches (Montelius, 1895, I, Pl. 31, 4). Other swords in this series are re-used blades, such as those from Somme, which have been filed down possibly from Atlantic Class I swords and been provided with two or four notches. The Musée d'Antiquités Nationales has several blades so used, one of which is from a Class II Atlantic sword, since there are several outlines on the lower part. Its provenance is unknown (see Catalogue) and it is in fact a cast copy of the actual blade; in this case it is impossible to tell, but several of the swords appear to have been filed into shape quite recently since parts are unpatinated. They have not been included in this chapter since their antiquity is unknown; one blade in the collection (Don Napoléon III, no. 360, from the Seine at Paris) has definitely been filed into a suitable handle for modern use - the handle is tarnished but unpatinated.

Distribution: French Ballintober swords, of which only the 11 definite specimens have been mapped, occur mainly in the same areas as their Rosnoen counterparts (fig. 17). The unusual concentration of the rivet holes feature in Rosnoen swords in the Seine valley has been noted above, and it is interesting to see this pattern repeated for the present series. The three probably British swords come from the Somme and Seine, closest to the Thames where the main concentration of British weapons is to be found.
The remainder is scattered: four from Brittany/Loire, two from the Seine area, and two from the lower Saône region. There may have been more direct contact with Ireland/W. England from the Loire region at this time, since the British Ballintober swords show a slightly more extensive South-West distribution. This may be on the England-Ireland route rather than necessarily implying contacts with the Loire, but one at least of the Loire weapons has the short rib characteristic of the Chelsea swords (see above). Another has two rivet holes (Loire at Nantes), which may possibly be a British feature.

Origins and Relative Dates, Rosnoen and Ballintober Swords:

It has been mentioned above that Rosnoen swords have a more or less trapezoidal butt-plate, similar to the much broader feature on Atlantic rapiers. Most of the examples in each group are easily classifiable into one series or the other, but several weapons are known which could be included in either. One of these is the sword from Ray-sur-Saône (fig.16) which has a three-rib cross-section, a rapier feature, but a narrow butt with two rivets and two notches. The butt shape resembles most Rosnoen weapons, but the rivet holes and notches are arranged in a manner found on rapiers, closer together and following a curved line, rather than two holes directly above the notches like Lessart-le-Chêne (Coutil,1921,fig.1,88) a Rosnoen sword. The blade is straight-sided and its length is c.64 cm; it is a strong weapon, more akin to a sword than a rapier.

Some of the same hybrid features are seen in a sword from the Seine, between Grande Couronne/Oissel (Coutil, 1928,Pl.II,31) which has a slightly leaf-shaped blade and oval hollow-ground cross-section. The butt is
trapezoidal, with broad shoulders (the normal rapier shape), but with four notches which suggest the Rosnoen mode of hafting. Briard (1965, 151ff) mentions several examples of what he calls hybrid Rosnoen/rapiers, and most of these show some narrowing of the butt. The same process is seen in the rapier from the Seine at Paris (M: Ashmolean, 1927-2230; q.v.) whose shoulders are only slightly broader than the unusually wide and heavy blade; the weapon suggests more a short cut and thrust sword than a true stabbing rapier. Again, on the Seine at Villeneuve-St.-Georges rapier (q.v.; P. de Mortillet, 1908, fig. 65) the butt is narrow, almost rectangular, but with a 3-rib cross-section to the blade, as with the previous weapon.

On all these rapiers mentioned so far there are two rivets at the top of the butt, and two shallow notches at the lower sides. These are discussed in the chapter on Atlantic rapiers, and must have fulfilled a similar but less efficient function as Rosnoen notches. It seems likely that they would serve as a prototype, and along with the narrower butt on some specimens would be carried over into the different type. The same applies to the blade cross-section since one-third of the rapiers known from France have the oval hollow-ground configuration usually associated with Rosnoen swords. These would fall into Trump's Group III rapiers (1962, 89ff), of which there are many more in Britain than France. It seems likely that the Rosnoen blade cross-section originated in these rapiers, but rapiers with narrow butts usually have the 3-rib cross-section. Since what dating evidence there exists for rapiers implies that they are earlier than Rosnoen swords, it would seem that several features in various combinations were taken over and used to create the latter type.
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Other weapons may have had a part in the origin of Rosnoen swords. In the hoard from Penavern (Briard, 1958, Pls. V-IX) a flange-hilted sword of IIa (Nenzingen) type (Cowen, 1955) occurs alongside riveted and notched Rosnoen specimens. Its cross-section is similar to the rest; this is not uncommon for these swords, but the hollow-grinding does not normally stop short of the shoulders as in this example. This seems to be a Rosnoen attribute, since the hollowed edge on eastern weapons carries on up to the shoulders (Cowen, 1955, Abb. 1-3). So this sword would seem to be a local version, copied from the Urnfield swords of South and East France and the other parts of their range. With the Rosnoen sword the only example of this type in the West, and very few from France, it does not seem likely that they represent prototypes for the Rosnoen group. The latter would rather seem to be the western counterpart to the straight-bladed Urnfield sword, with, when hafted, a degree of similarity in handling.

The origins of Ballintober swords are rather more obscure, particularly as there are so few known from France. The relative distributions of Rossoen and Ballintober swords in Britain and France are notably reversed, since while there are over 90 examples from France of Rosnoen weapons, only seven are known from Britain (Burgess, conversation, 1968). There are however about 34 Ballintober (Chelsea swords included) weapons from England, and about 24 from Ireland (Eogan, 1965); while France has only yielded 11 recognisable swords of this group. It might thus be thought that French Ballintober swords are imports; in at least 3 cases this seems certainly true (see above) but the other examples look like native specimens. Perhaps the most plausible argument would be that British Ballintobers
continued in use and popularity well after France was using leaf-shaped swords of flange-hilted type. Certainly, it appears from the date (even though scanty), that Ballintober swords are later than Rosnoen weapons, and probably stem from a fusion of these and leaf-shaped Urnfield swords.

This process of development to a leaf-shaped sword is perceptible in some of the Rosnoen examples, although here again it is not certain whether it manifests a local development or as a result of imported weapons (see chapter Atlantic leaf-shaped swords). It is more probable that the latter is the case. In any case the leaf shape is at most slight, never as much as Ballintober weapons.

Briard makes much of the similarity between Rixheim swords in East France and Rosnoen swords in the West (1965, 172-3), and in part he is doubtless correct. The same general construction is seen in both—straight blade and short butt, but there the similarity ends, although intermediate weapons do exist, such as he quotes (e.g. Prépoux, see chapter Rixheim swords). The blade construction of Rixheim swords differs markedly from Rosnoen weapons, and while one is an Urnfield weapon, based on S. Germany and Switzerland, the other is largely an Atlantic phenomenon, based it seems on earlier trapezoidal-butted rapiers. Some influence certainly must have come from the S.E. France (Rixheim) area in the mode of fighting, as both sword varieties would have handled similarly, but as seen above, there was little change necessary in the late Atlantic 'rapier' to produce the Rosnoen sword.

Much more similarity exists between Rosnoen weapons
and the earliest form of rod-tanged Monza swords, with short tange or none. It is not entirely certain whether these should in any case be classed with Rosnoen or rod-tanged swords, since the practical difference between the Seltz sword (q.v.) and 'Saône' (fig.9) is very little. A sword such as Vernaison or Saône above Pontoux (see Rod-tanged swords) has two rivets and two notches, like the Rosnoen hafting method, and there seems little doubt that this type is a different manifestation of the same sort of short-butted construction seen in Rosnoen, Rixheim, and to some extent, trapezoidal rapiers with narrow butts and wide blades. Or possibly, as discussed elsewhere, the effect of the round-butted Late Tumulus long dirks/swords manifested itself in different ways, in these weapons (Schaeffer, 1926, fig. 67, 3u).

The relative dating of Rosnoen and Ballintober swords stresses the diverse situation in sword manufacture in S.E. France as mentioned above, but clarifies the N.W. French typology. The only indications of date are from the hoards, since both settlements with Rosnoen swords yielded no stratigraphical evidence; they have been laid out in tabular form in fig.10. Briard has described most of the Breton hoards in detail (1965, 153ff) but has omitted much discussion of Longueville. Since this publication of these hoards, a find of two hoards from Cannes-Ecluse has thrown fresh light on the group, since one of the hoards contained Rosnoen sword fragments (fig. 6). It can be seen from the table that two different series of objects occur from the hoards in different areas; the main difference from the Breton group being the hoards from Seine-et-Marne and Jura (Larnaud). The Longueville hoard (Lamarre, 1945) contains as its most numerous
objects ribbed and decorated button sickles, mostly broken (at least 20 specimens), 5 fragments of median-winged axes, fragments of Rosnoen, Buková, and rod-tanged class B swords. Among the bracelet fragments were characteristic transverse and angled channel-decorated examples ('Publy' type; Millotte, 1960, Pl. XVI, 120), mock torsion specimens with plain ends, and a large heavily ribbed bracelet with everted terminals (Lamarre, 1945, no. 31), which Lamarre suggests may be an Atlantic type. He states that a possible Atlantic import is the heavy ribbed palstave fragment (no. 12), but four fragments of decorated anklets of recurved spiral type and a pin fragment with threaded collars (nos. 45-8, 44) are classic S.E. French/S. German types, as are all the objects mentioned earlier. Sandars (1957, 362, Map VI) plots the distribution of collared pins (including Longueville), and they show the same pattern as Urnfield sword imports into France, particularly cast-hilt Ha A weapons (q.v.) and Rixheim swords (q.v.), from S. Germany and N. Switzerland all along the Saône and Rhône valleys. The anklets, which Lamarre calls pendants (1945, 111) because of the lack of a central rib as in the Hagenau Tumulus series (Schaeffer, 1926, passim) are in fact the Late Tumulus/early Urnfield series with corrugated centre plates and incised decoration (Sandars, 1957, 68-70, fig. 15, 5, Map V). Kräikes' map of the Urnfield examples, similar to the Speyer and Wollmesheim examples (1960, Abb. 3) shows a Middle Rhenish concentration with a spread to the Saône/Jura and the Upper Seine basin. Longueville should be added to both authors' maps, since neither seem to have recognised the objects as anklets, but they conform exactly to the Wollmesheim, grave 2, pattern of a recurved spiral anklet, with possibly the end of one of the square-sectioned spirals in the hoard.
(Lamarre, 1945, fig. 4, 38). It is also interesting to note that the mock-torsion bracelet fragments in Longueville (ibid, fig. 4, 35-37) are exactly similar to two composite bracelets in the Wollmesheim grave (Krahe, 1960, Abb. 6, 13, 14).

Much of the contents of the Longueville hoard is paralleled by material in Hoard I at Cannes-Écluse (Seine - et - Marne). Apart from the swords mentioned above, a Rosnoen butt with rivet holes was found with median-winged axes, button sickles, Publy bracelets (and one fragment of decorated bracelet like that from the La Foype hoard (see chapter Hemiszkofen swords; Chantre, 1875, II Album, 31, 1, 29-32). Four pin heads are among the finds in the hoard, with broad circular flat heads; three with heavy ribbing on the shank (Gaucher, Robert, 1967, fig. 26, 1, 2, 3, 4). Such pins are known in various contexts (Millotte, 1963, Pls. XX, 12: XXII, 11: XXXIX 1-3; Sandars, 1957, figs. 31, 8, 10; 33, 1-4) including an inhumation grave at Pougues-les-Eaux(I), with a notched and tanged razor similar to those known from the Atlantic area of the Rosnoen group (Sandars, 1957, fig. 33, 1-4). Sandars would assign these to her First Urnfields (ibid, 139ff).

Sickles are the most numerous objects in both the Cannes-Écluse hoard I and Longueville; all except one are of the button type, and many are decorated with channelling at the base. Lamarre (1945, fig. 7) maps the finds of sickles from France, and the distribution is predominantly south-eastern, especially in the Upper Rhône/Saône region. Sickles are a new feature at the time of the First Urnfield expansion, and in both Longueville and Cannes-Écluse are mixed with Late Tumulus elements, in this case the flat-
headed ribbed pins probably based on the trumpet head Tumulus models. Median-winged axes are also common to both hoards and like the sickles occur in many hoards in the East of France, being a characteristic artifact of the earliest Urnfield phase. They occur in the Larnaud hoard which also contains Rosnoen sword fragments (Coutil, 1914) although the overall date of the hoard must be later than the earliest Urnfields. The presence of Forel and Atlantic leaf-shaped sword hilts, Le Bourget arrowheads, and waisted socketed axes suggest that the date should be in Phase B at the earliest; but there is an earlier horizon perceptible in the hoard, shown by types in common with the hoards mentioned above. Publy bracelets and variations of these, such as those from Carlipa (Ricalens, Soutou, 1965, nos. 8, 9, fig. 5) at least one anklet (Coutil, 1914, Pl. VI, 2) and open-cast ringed pendants (ibid, Pl. IV, 51, 52) show at Larnaud the same horizon as that found in the hoards above, and in assemblages such as Publy itself (Millotte and Vignard, 1960, 27-30, Pl. XIII-XVI). With the eponymous bracelets this hoard combines a pin fragment with threaded collars and a mock-torsion plain-ended bracelet, and all the usual objects from this horizon, except Rosnoen swords. Various hoards from Germany of this type are reported by Muller-Karpe (1959, 147ff) especially Stockheim (ibid, Taf. 156-8), Winklesass (Taf. 148-9) and Windsbach (Taf. 155). This last contains what Muller-Karpe suggests are Atlantic elements — the decorated bracelet and heavy looped palstave (1959, 186, Taf. 155, 1, 4), but he omits mention of the fine ground-down Rosnoen sword and blade fragment in the hoard (ibid, Taf. 155, 8, 18). The sword has been rounded at the point and re-used, but it is a classic Rosnoen weapon, with
two rivet holes below and notches above; a typical long-socketed Rosnoen spearhead is the other Atlantic feature in this hoard (ibid, Taf. 155, 7). There is an interesting correspondence between the bracelet with incised decoration from Windsbach and the fragments in the Clans hoard (Guébhard, 1911, fig.) which contains a ribbed pin with trumpet head and a Class B2 rod-tanged sword.

Hoard like those described above are assigned by Millotte to his Bronze Final I/IIa, with median winged axes running right through both periods; and both collared and heavy ribbed trumpet-headed pins in the earlier series, preceding Binningen pins (1963, 148-9, Tableau). Elements in the hoards suit some of Müller-Karpe's Br. D. Stufe (1959, 188-90, Abb. 22-25) such as the heavily ribbed bracelet in the Longueville hoard which resembles versions of those found in the Baierdorfer and Riegsee Stufen. The Publy type of bracelet and other finds such as anklets and tanged decorated knives would suit a Ha Al date through parallels with Müller-Karpe's S. German chronology (ibid, Abb. 28-30). This ties in well with Sandars' First Urnfield date for the series, mentioned above.

The Atlantic hoards (see fig. 18) are somewhat different; palstaves and spearheads constitute the commonest objects apart from swords. The commonest form of axe in the Rosnoen group is the heavy-ribbed palstave with side loop (Briard, 1965, 155-6), median-winged axes being rare. One is known from the Ru-Caoudal hoard (ibid, fig. 50, 7) and another in a possibly Rosnoen association, Plouyé (ibid, Hoard no. 245). Briard cites three others known from the west, two single finds
and one from a lost hoard (1965,157); these all seem to be imports from the east. No sickles are known from western Rosnoen hoards, but a form of simple generalised spearhead is known from nearly all the associations, often with a long socket and small blade. The Kergouestance hoard shows a direct British contact, a spearhead with ribbed and looped blade (Briard,1961,I,1; 1963,573,fig.1,1); Briard has collected these for France along with other characteristic British spearheads. It is significant that the main area of finds is in the Seine/Oise/Somme area, where most of the Rosnoen swords with rivet holes were found, and the principal contacts with Britain in the succeeding period are situated (i.e. Atlantic Class I swords). The other occurrence of a basal-looped spearhead in contexts relating to swords is with the Tirancourt rod-tanged weapon (Francqueville, 1905,373,fig.) which must be contemporary with Rosnoen swords.

Other typical finds from the Atlantic Rosnoen hoards include tanged razors with notched tops to the blades and several square-socketed hammers, both of which are well known in British hoards (inv. Arch. G.B.7, etc.; C.M. Piggott,1946,passim). Fourdan contains a different form of open handled razor, with a suspension ring, somewhat like ring-handled razors further east (Müller-Karpe,1959,Abb.25), but this is the only example from these hoards. Three hoards have examples of flange-hilted swords from them; one, Penavern, has been discussed above, the others have both fragments of hilts and shapes of Atlantic type in them, which suggests a later date than the hoards without these. Examples of Rosnoen swords occur in Atlantic leaf-shaped sword hoards (q.v.) and in fact
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it is impossible to draw any sort of rigid division between them since many of the specific examples are scrap in scrap hoards. At least it suggests that the Rosnoen type was long-lived, and continued into the same horizon as Ballintober swords.

The Larnaud hoard contains Rosnoen, Ballintober and Atlantic slotted hilt fragments (Coutil, 1914, Pl. II), but is too broadly dated to be of any use in clarifying the typological scheme set out above for Ballintober swords. However, all three hoards containing these weapons also include later forms, i.e. Atlantic leaf-shaped weapons; Larnaud, Kerguérou (Briard, 1961, 34, no. 6) and Amboise (if this is in fact a sword; Cordier et al., 1960, fig. 3, 27). So it can be assumed that, on the present evidence, Rosnoen swords, influenced by leaf-shaped weapons, gave rise to the Ballintober type. How far the French weapons can be considered imports or native productions is not entirely clear, but Rosnoen swords held the major position before the adoption of the leaf-shaped sword, with hardly any use at all of the hybrid form, unlike Britain.

Thus the Rosnoen sword, developing probably from the Atlantic rapier, is the predominant variety before Atlantic Class I swords appear, and are maybe still in use for some considerable time contemporarily with the latter. The hoard evidence suggests in a general way that the actual swords were in use over the area of two different series of bronze artifact industries — the Urnfield and the Atlantic, and that they are manufactured according to the method generally seen within the Rixheim and early rod-tanged sword groups. Like these groups the dating is difficult to determine, but the Urnfield parallels suggest a S. German counterpart
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of Br D into Ha A: that is, early Urnfields in E. France (Millotte's Bronze Final I and IIa, Sandars' Transitional Tumulus, First and Second Urnfields).
CHAPTER IV

LATE TUMULUS RAPIERS AND ROD-TANGED SWORDS,

CLASS A
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LATE TUMULUS RAPIERS; ROD-TANGED SWORDS, CLASS A

These apparently different sword types have been included in the same chapter because of what appears to be a direct typological development from one to the other, in the same area. The round-butted Late Tumulus rapier has been mentioned elsewhere in this study in its relationship to other sword or rapier groups; this chapter deals only with the possible transition from these weapons to Monza and related swords of Class A.

Late Tumulus rapiers

La Truchère (Saône - et - Loire)
Rhône at Pont-Lafayette (fig.1)
Rhône at La Quarantaine (Rhône)
Saône near Lyon (Rhône) (fig.2)
Saône at Tournus (Saône-et-Loire)
Sarry (Saône-et-Loire)
Schelmenhefstadt (Bas-Rhin) Tumulus 2,II

Vernaison swords

Doubs above Pontoux (Saône - et - Loire)
Saône at Marnay (Saône - et - Loire) (fig.3)
Vernaison (Rhône) Hoard (fig.4)
Provenance unknown, M:Besançon A207

Class A Rod-tanged swords

Seltz swords

Cher at Foëcy (Cher) 2 swords
Montières (Somme)
Saône at Mâcon (Saône - et - Loire)
Seltz (Bas-Rhin) (fig.5)
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Monza swords
Cher at Brûère (Cher) Cast-hilt (fig. 6)
Saône at Mantoche (H-Saône)
Seine at Paris (fig. 7)
Upie or Malissard (Drôme) (fig. 8)
Provenance unknown M: Epinal (fig. 9)

Tirancourt swords
Ferme de la Colombine (Yonne) (fig. 10)
Seine at Ile St.Ouen
Tirancourt (Somme)
Yonne at Sens (Yonne) (fig. 11)

Bukovà Swords
Cannes-Ecluse (S.-et-M.) Hoard I
Rhône at Grigny (Rhône)
Saône at Pedry (H.-Saône)
Seine at Villeneuve-St.-Georges (fig. 12)
Provenance unknown, M: Besançon
Provenance unknown, M: AN (Moulage) (fig. 13)
Provenance unknown, probably Seine, M: de l'Homme

Late Tumulus rapiers/swords
A variety of weapon with a straight-sided blade is known from S.E. and E. France, which appears to be a developed form of Late Tumulus dagger. Like the latter these swords or rapiers (their function is uncertain) have two rivets in a rounded butt, and most commonly have a midrib. The classic type seems to have only two rivets in the butt and no subsidiary notches, but these developed later as a pattern intermediate to Vernaison swords. Schaeffer's series of daggers, dirks and swords from the Hagenau area (1926, figs.
figs. 66, 67) show the development, but the typical form is found in the Saône area, for example the sword from the Saône at Pont Lafayette (fig. 1). The sword from the Saône near Lyon (fig. 2) is a long and impressive weapon, and is probably a later model of these swords, since there are two notches below the rivets in the butt. The midrib on the blade is rounded in section and flanked by two incised lines which continue right up to the end of the butt plate, although by that stage the midrib has disappeared, flattening out a few centimetres from the rivets. A slanting channel in the patina appears to show one wing of the original hilt, but the cutout shape is uncertain. At 426 grammes the weight of this weapon would suggest a use as a slashing sword as much as a rapier; this seems likely in view of the straight-sided blade.

As previously mentioned, these swords cluster in the area of the Saône valley and S.E. France generally; whether they are an indigenous development is not certain, since Coutil mentions three similar weapons (1928, Pl. III, 24, 25, Pl. IV, 35) from the Middle Rhine/Hesse area. Millole notes an example from the Aar-Emme canal, in Switzerland (1963, 311, Pl. XXIII, 5), while Hachmann (1956, 49, Taf. 17, 6-10) mentions the fine example from the probable grave at Liesbuttel in Schleswig-Holstein. With the sword was a belt hook, tweezers, spiral-handled razor, and flint spearhead: Hachmann dates these relatively late, in his B2 period (ibid. 50). One of the French specimens is associated with other objects, that from Sarry (G. and A. de Mortillet, 1903, Pl. LXXXIV-LXXVI). Apart from a curious decorated pommel (ibid, 848-9) the hoard contains the butt of a Late Tumulus rapier and a fragment of blade, a blade fragment of 3-rib section (i.e. Nosailles series rapier), and pieces of flat-knobbed sickle, roll-ended bracelet, and ribbed bracelet. There seems to be a fairly broad span of dates, leading up to types represented in the Vernaison hoard - the flat-knobbed sickle and ribbed
bracelet, but with seemingly earlier inclusions - the 3-rib rapier. It would thus date this Tumulus rapier in an early horizon, associated with the Br D date of the Vernaison hoard as its latest inclusion.

**Vernaison swords**

There are four swords only in this group, one of which, the eponymous example (fig.4) is from a hoard. They seem to represent an improved version of the last group, from which they differ by having a tapering butt plate separated from the blade by two notches, and a rounded lozenge-shaped cross-section of the blade. There are two rivets in the butt, and it is likely but not certain, as will be seen later, that the notches held two more.

The similarity to Rosnoen swords (q.v.) is striking, in the use of four rivets in a slightly trapeze-shaped butt. It will also be noted that several swords included in the Rosnoen group are known from the area of the Saône or upper Rhône, where all four of the Vernaison swords are found. The division between the two is in fact largely typological - in use they would have been virtually identical - but several small differences in the Vernaison series suggest that they are the precursors of the earliest rod-tanged swords of Class A. One of the differences is this use of two rivets and two notches in the butt, which becomes a constant feature in Seltz and Monza swords, but rarely occurs on any of the Rosnoen series, and is first seen on these Vernaison weapons. The Saône at Marnay sword (fig.3) illustrates the blade shape and cross-section of these weapons; in it the rounded lozenge cross-section can be seen, with hollow-ground edges, exactly that of the sword from Pontoux (Bonnamour,1967,773, fig. ). The blade is parallel-sided, with a fairly rounded
point; with four rivets in the hilt, this would suggest a cut-and-thrust sword of greater strength at the butt than notched Rosnoën weapons. A sword in the Besançon Museum, of unknown provenance, resembles the Marnay sword in most respects, except for a slightly more tapering blade (Bonnamour, 1966,19,Pl.1,9), and somewhat shorter (50.6cms) as against the latter (55.3cms). The longest of the four, Doubs above Pontoux, is 68.5cms., unusually long for a sword whose blade appears adapted for slashing by the use of a hollow-ground lozenge section (Bonnamour,1967,773,fig.). The Vernaison sword, a fragment, is the only one decorated, with two channels near the blade centre, diverging slightly at the base. The edges appear hollow-ground, and there seem to be traces of the lower edge of the hilt cutout left in the patina, as a simple arched shape, possibly similar to the hilt, from Niffer (Hundt,1962,Abb.2,1). These swords are best seen in relation to the following type; the Vernaison hoard will be discussed after having examined these.

Class A Rod-tanged swords

Seltz swords

All the examples of this group possess a short tang on the end of the rivet plate, and they are less a specific type than an illustration of a process at work: the evolution of a long-rod-tang. It is suggested that the development of the long tang follows as a result of casting tails left on swords of Vernaison type. Naue (1903,40) derived Monza swords from Terremare weapons which show a similar process (Säflund,1939,Tav.49,5). How such a tang would appear on a standard round-butted rapier is seen in an Italian mould for casting such a type (ibid,Tav.49,6) provided with a run-in channel for the bronze in the centre of the butt. If this casting rod was not entirely broken off the result would be that
seen in several Italian rapiers - Cavazzoli, mentioned above, Castione (Naue,1903,Taf.XVII,2), Povegliana (Pigorini,1883, Tav.III,14), Cattagirone (Mosso,1908,56,Tav.IV,8) and Marano (ibid,fig.54) which is, apart from the tang, a standard trapeze-butt 4-rivet rapier. Although these may have come under influence from the Plemmino Thapsos level rapiers with such a short tang, the corresponding technological process in France seems to be perceptible on these Seltz swords.

The actual shape of the swords vary. A true tapering rapier blade can be seen on three examples, from the Cher at Foécy (2 swords, one damaged), and the rapier from the Saone at Macon (de Ferry and Arcevin,1870,Pl.XXXIX,2). Allain's drawings of the two former weapons (1966,487,fig.19,5,6), found recently while dredging, show that the blades are of narrow tapering shape with a large midrib, while the butt contains two pulled-out (probably) rivet holes with two slight constrictions below. With the short tang on the butt end, one of the Foécy swords is virtually identical to the Saone at Mâcon weapon, and corresponds well in length (c.63 cms. as against Coutil's measurement for Mâcon of 61 cms.). There seems to be the same decoration on all three blades - two incised lines on each side of the blade following the midrib and diverging at the shoulders; Coutil's drawing is probably inaccurate in this respect since his cross-section of the sword is wrong (1928,Pl.IV,28). There is an interesting correspondence between these rapiers and the Italian Trana rapier (Gastaldi,1876,Tav.XI,1: the tang is in fact much thinner than he shows). Although the latter has a keeled midrib it is alike in all other respects save for the long tang which seems far too thin to be of any functional use.

The two others in this group are less similar, but both should be classified as swords since the blades are parallel-sided. The Montieres weapon in Amiens Museum appears to have a short tang on the narrow butt (Breuil,1900,fig.3,20), but this is
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not certain since a midrib-like that on some Rosnoen swords braces the butt and upper blade and may have been left projecting after deterioration of the surrounding butt. Two rivet holes originally held the haft; the notches characteristic of the Seltz sword (fig. 5) are missing, and only a slight waisting is perceptible above the shoulders. Little more can be said about this - it must remain a possible Seltz type, but is maybe closely related to Rosnoen swords.

Seltz (fig. 5) has all the features described above, and in addition, a strong tang terminating a heavy rib on the rivet plate. This is separated from the shoulders by two distinct deep notches, possibly for rivets to supplement those still in the rivet plate. Parallels for this sword exist in Geneva Museum; one from L'Ile, no. B. 5926 differs only in the blade cross-section as the midrib continues right down the sword to the point. However, the butt is almost exactly the same on both, with the tang a little shorter on the Geneva specimen. The other Geneva weapon conforms to much the same pattern, but uses a small unpierced plate instead of the Seltz style of butt; in this case pegs or rivets must have been definitely used to hold on the hilt. The blade is long, narrow, and tapering, but not nearly as much as Naue shows (1903, Taf. XVII, 6); he has also omitted to show haft traces on the shoulders, a simple arched shape in the patina colour. Again, an Italian parallel can be quoted for this weapon, Palazzolo Vercellese (Barocelli, 1921, fig. 6) in Torino Museum, indicative of Transalpine contacts within many of these rod-tanged sword groups. These weapons seem to have given rise to specific types, just as the Seltz variety is a slightly different version of Monza swords, with a shorter tang but otherwise identical.

Monza swords

This class of swords has been known for a considerable time,
and the first author to assign them to a definite type was Naue (1903), who included all swords with a thin tang in his Type V. Déchelette accorded them the same separate status (1910, 200) but knew only a few specimens; since then, various authors have used "Monza swords" as an ill-defined class of weapons related to Rixheim swords (e.g. Kraft, 1927). Coutil (1928) collected many of the French weapons of Monza and related types but was unable to set them in their context either geographically or typologically. Sandars (1957) and Müller-Karpe (1959) discussed various specimens or objects associated with the group; but it was only in 1964 that the swords of this general sort were classified as a distinct entity, by Foltiny, and he was more concerned with the Class B rod-tanged swords, particularly in Austria and Italy.

Monza swords are similar in most respects to Seltz swords, except for a long tang on the end of the rivet plate, which must have run the full length of the sword hilt and which was sometimes bent round at an angle to secure the pommel. The sword from the Seine at Paris (fig. 7) combines all the features of these weapons, although it is the least known; in it the characteristic rivet-plate above the shoulder notches is supplemented by a straight tang of circular section. This is a continuation of a midrib running up the centre of the blade, and accentuated by the channel incised into the metal each side, each diverging below the shoulders. The edges are "hollow-ground", but seem to have been cast in this shape, since the badly finished surface includes these areas and is not smooth as one might expect of a hammered or ground surface. This is again a weapon which could be termed either a rapier or a sword, which would probably better suit the former designation as it is quite narrow and light (342 grammes) and only 0.7cm thick. There is no trace of hafting remains on the surface which is smooth and free from carbonates — in fact it almost appears fresh from the mould — but three lines of darker in-
laid metal meeting at the tip of the tang may suggest some form of pin holding the pommel made of pure copper, since the colour of this inlay is a dark green.

The sword from the Saône at Mantoche (Kimmig, 1954, fig. 98, 13; Mouton, 1954, fig. 30, 23) has the same cross-section as the foregoing weapon, but differs slightly at the shoulders which are more sloping. The tang is broken just above the rivet plate, and it again appears to be a continuance of the raised midrib outlined with two channels, which however curve outwards to end at the waisting above the shoulders. Virtually the same form is present in an unprovenanced sword from Epinal Museum, a cast of which is in the Museum at St. Germain-en-Laye (fig. 9). Again the tang is broken, and both rivet holes are pulled out instead of just one on the Mantoche weapon, from which it differs only in having higher shoulders with more distinct notches below the rivet plate, and a different cross-section. The lack of any channels on the lozenge-section blade may be due to the cast, but the edges are hollow-ground like the others in the class, and the blade is parallel-sided for much of its length. Coutuil's drawing (1928, Pl. III, 1) should be discounted as quite inaccurate: this is much more of a sword than the rapier shape he shows.

Two most interesting specimens remain in this group: the first, from probably Upie or Malissard (fig. 8), is quite unlike any other French sword in its blade decoration, but from its general shape is a typical Monza weapon. Blanc, who rediscovered the sword in the drawer of a piece of Renaissance furniture in Valence Museum has discussed its probable provenance (1955, 566-8); other versions of provenance and illustrations of its decoration are given by Goury (1919, 37-40, figs. 1, 2) and Vignard (1961, 43, fig. 6, 30, 31). As the decoration is shown in fig. 8 after a photograph from Valence Museum description is unnecessary; Blanc states that the designs are channelled
lmm. deep. The actual butt of the sword (below the rivet plate) has a decorated lower edge cut out probably to match the shape of the former organic hilt, which was held principally by two rivets or pegs in cast notches in the rivet plate. Further strength is added by the strong tang, a continuation of the midrib which runs the whole length of the blade and butt. The sword is unusually thick, 1 cm., and with a weight of 480 gr. is a much stronger weapon than the Seine at Paris rapier/sword described above, even though both are the same length.

The final sword in this group of characteristic weapons was dredged in 1965 from the river Cher at Bruère (Allain, 1966, 485-7, fig. 19, 4). Since it is such an important find Allain's drawing has been enlarged to approximately full size (fig. 6) and shown next to Hundt's enlarged drawing of the Spandau sword (1962, Abb. 3, 4). The Bruère weapon is a Monza sword with the bottom half of the hilt cast in bronze, and with the blade tang projecting from the top of this. Allain states that the rivets are simulated, but is not explicit about the construction, except that a small bronze wedge holds this lower hilt onto the tang and shoulders. This means, if the rivets are false, that the tang is a simple tapering form like the Thun sword (Müller-Karpe, 1959) with no rivet plate, but it definitely copies the shape of this in the form of the cast hilt. The blade, of which two fragments remain, is the same as the swords above, but the midrib is outlined probably with two channels each side, and with three curving lines meeting these each side, at the butt. The hilt is remarkably like that on the Spandau sword, with exactly the same angle of cutout, the projecting shoulders, and bulge where the rivet plate should be. It can be assumed that as two of the Spandau rivets are functional, they probably sit through a rivet plate inside the sword hilt, but the original weapon is no longer in existence so this
must remain uncertain; however, in other respects the blade inside the hilt is undoubtedly of the Monza type. A midrib flanked by two lines, curving at the shoulders, and a characteristic Monza blade shape (Sprockhoff, 1931, Taf. 6, 3) make this a well-nigh certain attribution to the type, supplemented by the end of a thin tang projecting from the pommel end of the hilt. Hundt's study (1962) also shows that others of the "Westliche Vollgriffskniver" belong to the Monza type - Meissenheim (ibid, Abb. 2, 2-5) and Thun (Müller-Beck, 1959, passim) both have long tangs securing the pommel; the former also has two rivets holding the upper butt of a Monza sword, hidden inside the hilt. No notches are present below the rivet plate, but the rivet pattern shows how these might function in a sword such as Mantoché or Seine at Paris (above). The hilt cutouts on the Meissenheim and Thun swords are of a high scolloped pattern, which would suit the hilt shape cut into the Upie/Malissard sword perfectly, although it is not certain whether the central small arched shape is visible on the sword. A hilt of the same shape as the Bruère or Spandau examples, with a scolloped cutout, would seem the most likely pattern for the original organic haft of the Upie sword, and either this or the Cher at Bruère type probably copy the original organic hilts of the whole group. The other possible cutout shape is the simple arched pattern, which was noted on the swords mentioned above from Geneva: such examples with a cast hilt are those from Niffer (Hundt, 1962, Abb. 2, 1) and "Im Stadeschen" (ibid, Abb. 7, 3-7). Niffer is, however, a rapier, and the other sword is characteristic of Northern tanged weapons. Some connection is suggested here between the two tanged sword areas, especially by a flange-hilted sword from Kastrup, Seeland (Sprockhoff, 1931, Taf. 2, 1). The profile of the hilt is almost exactly that of the Spandau weapon, and in addition the 4-rivet pattern, most uncharacteristic for a flange-hilted sword, copies the Spandau layout. Added to this is a cutout, visible in the patina, identical to
the Spandau/Brüere form, and a typical Monza blade cross-section and decoration, and the sword becomes a close copy of the normal Monza S.E.French/S.German variety.

Thus these Monza swords seem to include examples assigned previously to a quite different group ("Westliche Vollgriffschwerter"; Holste, 1942; Müller-Karpe 1955), with contacts which not only lead to the North, but also into Italy, where four specimens of the group are known. These include Monza, a sword from an Urn cremation (Castelfranco, 1891) with possible fragments of another; Viverone (Gastaldi, 1869, Tav. VIII, 1; Campi, 1888, 29) very like the Seine at Paris sword; Torino (Gastaldi, 1869, Tav. VIII, 3); and Cassano d'Adda (Pigorini, 1908, 142) which has a short pointed tang, longer than that on the Seltz sword, and cast rivet-plate notches like the Uppie sword. One weapon of this type is known from Switzerland, from the bed of the Thielle. It varies by having three rivets in the plate, which is further away from the butt than normal, and a milled ricasso. Coutil's drawing (1928, Pl. IV, 25) is so bad the sword is almost unrecognisable; a cast of the sword was examined in the St. Germain Museum, and was found to have some hilt traces visible in the material at the butt as a possibly simple arched cutout, but even on a photograph from Zurich Museum this is uncertain.

There is no direct dating evidence in France for these swords since none are associated, but as mentioned above the Vernaison sword was found in a hoard. Also, the Italian example from Monza comes from a cremation in an urn, set in a cemetery of 10 to 12 of such vessels. Two swords were found, a dagger with riveted tang, and two pins, one of which has a rounded head with three or four ribs below (Castelfranco, 1891, Tav. III; Montelius, 1895, Pl. 40, l-10). 300 metres away another cremation cemetery was found a year later, and further bronzes came from this, including a ring-handled dagger and swollen-neck onion-headed pin. Some confusion has arisen since both
cemeteries have been illustrated together, and various authors have assumed a direct association of the latter dagger and the more complete Monza sword. The only objects which may be associated with this sword are the tanged dagger, a type current in Bronze D and later, and the pin, which appears to be an example of early 'Binningen' pins (Kraft, 1927), one of which was found in the Pépinville grave (see next chapter). Müller-Karpe (1959, Abb. 21, 25) sets these early Binningen pins in his Thapsos and Peschiera Stufen in Italy, which is parallel to his Bronze D period North of the Alps. Such daggers also occur in these horizons, and do not usually seem to occur after the period shown by Rixheim and Riegsee swords in S. Germany. Müller-Karpe (ibid, Abb. 23), Hachmann (1956, 62) and Gersbach (1962, 16ff) also date ring-handled daggers to the earliest Urnfield phase in S. Germany, whence they were exported from N. Italy (Gersbach, 1962, Map).

The Vemaison hoard has been well illustrated by Chantre (1875, Album, Pls. XXXIII-XXXIX). Among the objects in this large hoard, presumably amassed by a hawker or founder, are waisted flanged axes, palstaves of three varieties, one heavy ribbed with curved profile and rounded step ridge, one low-ribbed of heavy construction, and the third with very broad blade, decorated with a circular pit at the blade top. Various daggers of Late Tumulus type occur, sickles both round and flat knobbed, and some Late Tumulus pins with swollen decorated neck and conical heads. Combier (1963, 284, fig. 11) would see this as an earlier horizon (Bronze D) contrasted with the La Poype Ha A hoard which contains a Hemigkofen sword: and this would seem likely, since there are several parallels to be found among the Rosnoen hoards. The waisted flanged axe seems in an earlier horizon than the axes of median winged type found at Cannes-Ecluse I, which contains two Urnfield knives (Müller-Karpe's Ha Al type), a La Poype bracelet fragment and decorated sickles -
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all, it would appear, later types than the Vernaison hoard. But Vernaison has objects in common with the Rosanoen hoards—the flat-topped disc-headed pins are somewhat similar to those at Cannes Ecluse, a collared pin at Vernaison recalls that at Longueville (q.v.), torsion bracelets in all three, and finally a ribbed bracelet or ingot from Vernaison and Cannes-Ecluse which Gaucher and Robert call a 'burin' (1967, 167ff). Vernaison would thus seem to be a mixture more of Middle Bronze Age Tumulus types with some Urnfield elements included, and should thus probably be paralleled with Monza as earliest Urnfields, Müller-Karpe's Br.D in Southern Germany (see also Sandars,1957,293). Since the Monza sword is somewhat uncharacteristic, and if the Vernaison swords are earlier than the former group, this would place French Monza swords in this horizon and later—a date which seems supported by the Spandau hoard (Sprockhoff,1931,Taf.6). The Erbenheim sword in this hoard would seem the latest object, but not later in Germany than the earlier part of Ha A (Cowen,1955,73-6); Butler's type IB16 and IB26 axes in the hoard are common in the West (1963,57) and reported from France in considerable numbers (see Breuil,1905; Coutil,1921), where they belong almost certainly to the Atlantic rapier horizon or earlier (see Briard,1965,fig.23,fig.30,bottom).

Tirancourt swords

These differ from the last in only one respect, and might well just be considered variants of Monza swords in N.E.France. Instead of a rivet plate with two holes or notches at the base of the tang the swords have a pair of lugs projecting sideways, or what might be considered a lozenge-shaped plate. This fulfils much the same function as a rivet plate, providing two notches within which the rivets or pegs holding the haft must have lodged, and the long tang, bent over at the tip in
three cases, secured the upper part of the hilt. The Tirancourt sword was found with a British spearhead of basallooped type and illustrates the similarity of these weapons to the Monza group (Francqueville, 1905, 371). There is however no midrib on the blade in Francqueville's drawing, although Déchelette shows one (1910, fig. 61, 1). The Ferme de la Colombine sword, otherwise very like Tirancourt, does in fact have one (Hure, 1931, 11), although not shown in this author's drawing. Both swords would appear to have been buried in graves; no trace was recorded at Tirancourt, and the material of the Colombine cemetery is so mixed that no associations are viable (Sandars, 1957, 96ff). The rapier/sword found in the Yonne at Sens recalls the shape and construction of the Seine at Paris Monza sword described above, apart from the 'ears' forming notches at the bottom of the tang (fig. 11). Two rivets would have been positioned in these, and worn, slightly broken hollows in the edge of the butt suggest that two more held the wings of the hilt, as in the almost identical Meissenheim cast-hilt sword (Hundt, 1962, Abb. 2, 4). It is likely with such a close correspondence of the two sword blades, that if not made by the same man, they must have been very closely copied from each other: the Meissenheim sword measures 74.5cms, the Sens sword 74cms. The Trana sword, or more probably rapier might be classed within the same production of a specific workshop, since it is identical morphologically to the Meissenheim blade, 73.5cms. in length (see above). At 359 grammes the Sens sword, and therefore the other two, is likely to be a rapier, since such light construction would hardly suit any strong blow with the edge of hard material.

The final specimen in the group, from the Seine at Ile St. Ouen is shorter than the last sword, and at 60.4 cms. is near the 62 cms. average for Monza swords. The maker has carried on the process of casting lowe rivet notches, seen on the Upie sword (above), so that there are four deep
depressions at each side of the tang base, suitable for holding the haft. There is the usual Monza cross-section and decoration on the blade, supplemented at the butt by two extra diverging lines each side (fig.10), below two small shallow patches. These have been mistaken as rivet holes (Reinach, 1921, fig.117) and look as if drilling may once have been started but stopped before any significant depth was reached; or maybe created in the casting. Two small nicks in the shoulders show where the hilt wings reached; below this is a milled ricasso, shorter one side than the other. Some slight traces are visible in the patina as almost straight lines running upwards from the nicks; this would probably imply a hilt like that on the Cher at Bruere sword, or something similar, with however the faceted tang bent over the pommel, and possibly secured by a small pin (see fig.10).

Some connection seems likely between this N. French Tirancourt group and the Eriswell sword, found near Mildenhall (Briscoe and Furness, 1955); two rapiers of Trump's Lisburn class were lying against the blade before it was found. The hilt pattern of the sword is very like the Ile St. Ouen weapon, apart from the rivet holes in the butt and the lack of a tang. But the two unfinished rivet holes in the French sword are significant since these if completed would compare well with Eriswell; however, the blade shape of the latter is close to the Tirancourt specimen. The Eriswell blade cross-section is ribbed at the top, oval hollow-ground at the bottom, and this calls to mind the format of Trump's Chelsea type (1962) and several French Rosnoen swords. Rod-tanged swords with oval cross-sections are however known in France - it is the predominant type in the next class of weapons - Buková swords. One from the Seine at Villeneuve-St.-Georges has this section, so Eriswell could easily represent a fusion of the two methods, as well as possible influence from Rosnoen swords. It is most probably a French import, since direct British contacts are known for these swords - see Tirancourt, above, associated
with a British basal-looped spearhead. Trump's dating of Lisburn rapiers (1962,91–2) suggest that they were current just before the introduction of leaf-shaped swords into Britain, which would agree with the Br.D/Ha Al evidence for Monza swords, but the rod-tanged series of Bukova type, related to these, are already leaf-shaped. In one case, at Cannes-Ecluse, a Buková sword is associated with a Rosnoen weapon, and in fact the Rosnoen horizon (q.v.) would best suit the date of these rod-tanged Class A swords.

Buková swords

As stated above, these weapons have in common an oval cross-section, hollow ground at the edges, contained in a parallel sided blade with fairly dull point, or in a leaf-shaped blade. The most individual feature of the group is a short tang, in the case of French weapons normally hammered into a neck above the butt, and ending in a small flat plate with a straight end (fig.13). This seems the only method of hafting except for two swords, one of which has two rivets in the butt(probably from the Seine) and the other a long tang, the full length of the hilt (Seine at Villeneuve St.-Georges,fig.12). A sword from the Rhône at Grigny shows the most typical features (Chapotat,1964,6); it is strikingly close to the tang shape of the sword in the M.A.N. at St. Germain (fig.13). The ricasso was probably milled on this last sword, and there is a possible faint cutout shape perceptible, but this is impossible to affirm as I have only seen a plaster cast of the weapon. It is likely that the sword was leaf-shaped since the cast is enlarged towards the break, and the Saone at Pedry sword is definitely slightly leaf-shaped (Millotte, 1958,Pl.VI,71; 1963,332,Pl.L,4). That from Villeneuve-St.-Georges is straight-sided (fig.12) while the M.de l'Homme sword is straight or very slightly leaf-shaped - so little
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that it is difficult to tell, the blade expansion no more than 1 mm, which may be the result of sharpening. The sword also has a milled ricasso, and along with the rivets still in the butt and the small tang above the diamond-shaped plate it seems an unusual hybrid weapon.

This type is well represented in other countries. Two swords are known from Switzerland: one, from 'Auvernier' (in the Laboratoire d'Anthropologie Préhistorique at Rennes) is markedly leaf-shaped, oval in section, with a round section tang and oval tang plate; the other, from Diepoldsau is known to me only by a photograph of a cast in the Landesmuseum, Zurich. Its tang has the 'dimpling' resulting from being hammered and the tang plate is pierced with a rivet hole; these support a straight blade of oval section. One is known from Italy, St. Martin de Corlean (Barocelli, 1921, 49-52, fig. a) which is leaf-shaped, has a lozenge section, outlined blade at the bottom, and a round section, but otherwise typical tang. The Buková sword, from the Czechooslovakian/Austrian border is very like the Diepoldsau weapon, but with an incised line following the blade hollow grinding, which stops before milled ricassì. According to Saldova (1961, 703, obr. 246, 10) it comes from a grave of earliest Urnfield (Bronze D) date. One sword is known, probably from Hungary, and now in the British Museum. It is a most impressive weapon, leaf-shaped, decorated like the Bukova sword—two lines diverging at the milled ricassi, one of which outlines the complete blade—with more decoration by the ricassi of four broad deeply chiselled concentric semi-circles. The tang is flanged by hammering, and the cross-section oval hollow ground, being quite close to the rest of the swords in the group. The only other sword known to me is from Baierdorf in Austria (Pittoni, 1954, Abb. 307, 305, 294; Bayer, 1931, Taf. I-III; Müller-Karpe, 1959, Abb. 22, 10), and this most resembles a Class B rod-tanged sword, but with a Buková type tang. Müller-Karpe's Baierdorfer Stufe is his classic
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Bronze D type, along with Riegsee swords, etc. and this sword, found with a Baierdorf type flange-hilted knife, must be of this date.

The final sword in this group is from France, found in the Cannes-Ecluse Hoard I (Gaucher, Robert, 1967, 169, fig. 241), along with, inter alia, a Rosnoen sword butt. This hoard has been extensively discussed under Rosnoen swords, and a conclusion of a probably Ha Al date was reached. The sword, a broken Buková specimen, has been left to now to discuss because of its similarity to the Baierdorf weapon—both butts have the faceted swelling characteristic of Class B1 and B2 swords, although the tang on the Cannes-Ecluse example seems normal in other respects. The blade is the average oval hollow ground section, and above the milled ricassi the former cutout line of the hilt can be seen in the patina. This is not a high arched shape like Monza swords but is similar to the cutout seen on two Rixheim swords (q.v.), possibly Courtavant and Kressbronn.

These swords are most numerous in France, and in the Seine area are probably related to Tirancourt weapons; both have the diamond shape tang plate. In fact this sort of cross-current can be seen all through rod-tanged swords/rapiers of Class A, and the 'types' set out above are only a guide to the classification of technological features. Much more important to the user would have been the relative weights or balance of the weapon he was handling, and the particular internal construction of its haft only of import to the bronze founder. But by performing such a classification based on a possible typology, it has been possible to date some of these swords relative to each other. The Vernaison-Seltz-Monza-Tirancourt groups, all of which seem to have close links, can, as seen above, be assigned a date within the span of the Late Middle Bronze Age into the early Urnfield period, i.e. Bronze D, Ha Al, under a German chronology.
Possibly there are implications of an earlier date, parallel with oval-section (Class II) Atlantic trapeze-but rapiers, from the Eriswell find and maybe Tirancourt. And perhaps the similarities of the cast-hilt Monza swords (former later "westliche Vollgriffschwerter") with cast-hilt trapeze-but rapiers also suggest this. The Class A rod-tanged swords certainly continued into Ha Al as seen above, in the leaf-shaped Bukova form, which may draw its shape either from imported Urnfield weapons (Erbenheim, etc.) or Class B rod-tanged swords. Certainly, this was an important type of sword in E. France and Italy, reflecting the same sort of narrow-butted tradition of sword manufacture seen in the West in Rixheim and Rosnoen weapons, and paralleling the blade shapes of these. They also point to a considerable movement of trade or contact, from Italy and Hungary, through France; in one case to the British Isles, and in another to Denmark, and their presence in East France and Italy, for long unrecognised, goes far to explain the lack of other characteristic sword types in the area. These swords seem to have been a native French development, with a traceable growth, and a widespread distribution.
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ROD-TANGED SWORDS, CLASS B
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ROD TANGED SWORDS, CLASS "B"

The nomenclature of these weapons, and the division into Class A (Monza and related swords) and B (leaf-shaped) follows the writer's study of these (1965, unpublished); the Class B division into B1 (club-pommel) and B2 (hook-pommel) has also been retained. The swords of this type from France are as follows:

Class B 1

Aime (Savoie) around Annecy (H. - Savoie)
Cannes Ecluse (S.-et-M.) Hoards I and II, blade fragments
Donges (L.-Atl.) (fig.1)
Longueville (S.-et-M.) Hoard - possible blade fragment "Royaumont (S.-et-Q.)" possible specimen
Saône at Chalon (H.-Saône)
Seine at Bligny (fig.2)
Seine at Corbeil (Essonne) (fig.3)
Seine at Paris maybe Seine at Paris (fig.4)
Seine at Villeneuve-St.-Georges M.A.N. (fig.5)
Seine at Villeneuve - St. - Georges 'France' (fig.6)
Provenance unknown, M: Langres (fig.7)

Class B 2

Clans (Alpes-Maritimes)
Pépinville (Moselle) (fig.8)

These swords have been given very little attention, especially in France, but mention was made of them by Dechelette (1910, 201) and Coutil (1928), after Naue's classification of all rod-tanged swords in his Type V (1903). Only one study to
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date has been specifically devoted to Class B swords: these formed the majority of Foltiny's publication of various N. Italian and Austrian specimens (1964). Sandars (1957, passim) has discussed some examples from France, and Muller-Karpe (1959) has made passing mention of a few.

The common features of the B 1 class swords in France are best seen in the specimens from the Seine, from Bligny and Corbeil (figs. 2, 3). All the swords are leaf-shaped, with a lozenge shaped hollow-ground section, and all have, or had originally, a long tang with a thickened pommel above a more or less thickened butt. All the swords except Annecy (Coutil, 1928, 35, Pl. IV, 12 - inaccurate drawing) which is in any case an untypical weapon, have rivet holes in the shoulders, and these seem to represent the main method of securing the hilt, although it is possible that the pommel played some part. This pommel, in all cases examined in the hand, is faceted into an octagonal cross-section, and the tang below has in most cases been hammered into a square section, about 0.5cm. across. The hammering is visible on many as a 'dimple' running up the tang, as seen also on Buková swords (see above). Below this, the butt of many of the swords is formed into a bell-shaped thickening, and again faceted, usually octagonal (fig. 6) although on others the tang thickens gradually to the shoulders.

Some variation exists in the length of the complete specimens, the shortest being 45 cm. and the longest 58.2 cm. (Seine at Villeneuve-St.-Georges M.A.N., fig. 5), which is by no means a long sword - in fact the average length is just under 50 cm. The swords are rarely decorated, apart from the faceting on the pommel, and the only weapon with lines engraved on the blade is the example from Aime (Savoie) with three outlines (Vignard, letter of 10.XI:1964 and full-size drawing). This is however a most uncharacteristic weapon, although with most of the basic features of a B 1 sword. Several of the swords have ricassi, a blunted edge above the area of hollow-grinding
and below the wings of the former hilt; but milling is uncommon (seen only on the Aima sword, above) and the edge has merely been left unsharpened.

One slightly less typical example is at present in the Musée de l'Armée, unprovenanced, but possibly from the Seine (fig. 4). It differs from others of this Seine group by being more parallel-sided in the blade, only slightly leaf-shaped, and by having a hexagonal tang below a narrower pommel than usual. It resembles two swords reported by Poltiny (1964, Abb. 1, 3, Abb. 2, 4) from Austria, but is not greatly dissimilar from others of the Seine area.

All the other French swords, as mentioned, are strongly leaf-shaped, with the widest part of the blade quite near the point, and an ogival profile to the blade. The blade profile is quite dissimilar to Urnfield leaf-shaped swords, which tend to have a shallower, more elegant swing to the edges, contrasting with the somewhat 'squat' B 1 shape. This is caused presumably by a desire of the makers to push the heaviest point of the sword as far down the blade as possible; so far in fact, that to attain a sharp point the edges below the widest part are almost straight. Above the widest part they are slightly concave, again almost straight; the format makes a very efficient sword for close fighting, with a good slashing and thrusting blade. This use is manifest in the cross-section, with broad hammered cutting edges widening towards the point, and a ridged mid-section. Several of those from the Seine have blades of 0.95 cms. thick, and it was a practice to make the blade thicker towards the widest part — this is seen in the sword from Langres Museum (fig. 7), which is 0.74 cms. thick at the ricasso, and 0.9 cms. at the broadest part of the blade. This would suit a slashing sword, and is not the practice in Class A rod-tanged weapons which are closer to rapiers. Five swords, varying from 45 cms. to 50 cms., average in weight 445 grammes (lightest
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420 gr., heaviest 455 gr.), just under a pound. With this weight, and the construction of heavy tip, wide sharp cutting edge and wicked point, they must have made fine weapons; they sit well in the hand, even without a hilt, and balance well.

A few of these swords show traces of the former organic hilt, and the shape of the cutout. The best example is that in the Blackmore Museum, Salisbury (fig.6) from France (no closer provenance), which shows a high arched cutout familiar on Class A rod-tanged swords. The top of the cutout reached part of the way up the faceted butt, and the wings would have been held by the rivets in the shoulders. Exactly this shape seems visible on the sword from Bligny (fig.2), and, from further afield, on those from Brugg, Switzerland (Heierli, 1888, Taf. 21, 8) and on most of the B2 swords (see below). There are some possible traces of the hilt on the Corbeil sword (fig. 3), but it is difficult to make out the exact shape. Thus it seems likely that some contemporaneity with Class A swords is likely for these weapons, or at least that they both used similar hilt cutouts.

One sword, from Donges, calls for comment, since it presents some puzzling technological features as well as being the most westerly sword found so far. The tang is broken (fig.1) and the sword covered in a very heavy bottle green layer of carbonates; but despite the damage the cross-section is evident, and one rivet remains in the shoulder. At some time the tang has been drilled across its width just above the bell-shaped butt, and sawn off at an angle across the hole so produced (fig.1, close up of tang); or else the tang was originally cast in this shape. On the angled surface of the tang is a layer of grey metal, which has resisted the heavy green concretions, and it appears to be lead. The whole feature has the appearance of a 'soldered' joint, as if the surface had been prepared, and the tang joined onto it by means of the grey metal. Modern soft solder is composed of lead and tin in varying proportions,
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depending on the use; both metals would probably have been available to the makers of these swords, although lead did not come into general use until after this period. An analysis of the sword from Bligny (communication from M.J. Maréchal) showed that the tin content varied from 10% - 12.5%, but there were only traces of lead. The analysis of the Class A - Monza sword from the Seine at Paris (Brown and Blin-Stoyle, 1959,2, no.9) showed much the same results, but with more lead content -0.23% (tin 9.4%). So there seems no direct evidence for the use of lead in these swords, although it is likely that metallic tin was known. However, in the Pépinville grave (see below), Beaupré (1902,52) reports small plates of 'potin' - Larousse Universel II (1923), explains this as "Nom de divers alliages de cuivre, étain, et plomb: potin jaune; potin gris". Since Beaupré and Keune (1903,476) both make a distinction between these small plates of 'potin' and bronze it is likely that they could be pieces of tin or lead; 'potin' in everyday use means pewter.

Drescher (1958) does mention soldering as a technique, but nowhere in use as early as this, since 'running-on' (Überfangguss) was the normal method of repair: it is seen on many bronze swords, especially in later horizons. So without specialised examination and analysis of the grey metal on this join the possibility of a soldered joint must remain uncertain - in any case there is no guarantee that it is contemporary with the manufacture of the sword, or even modern. Such a join would not be very strong in use, which is presumably why it is not complete at the present day, but still the interesting possibility of this being an example of early soldering remains.

The origins of these weapons appear to lie in Italy, as already discussed (1965, unpublished). The earliest swords typologically are the specimens from Arco and Dimaro (Campi,1888, Tav. III,1,2) with straight blades, plain butts, and apparently turned-over
tang ends: this may have given rise to the thickened pommel. The blade cross-section is already like the later leaf-shaped weapons; there are several swords which would serve as typological intermediaries in Italy and Austria, mostly with the characteristic cross-section and pommel (some in Foltiny, 1964). If the origins are in Italy, the type soon spread, and was transmitted over large distances. Eleven are known from Italy, four from Switzerland, maybe three from Austria, one or two from South Germany, one from Hungary (the Aranyos hoard), one from Britain, and fifteen from France, some of which are untypical weapons. This speaks for a lively trade across the Alps, supported also by the distribution of Class A swords, and mainly between France and Italy. This would in fact lie across the main S. German/E. French (Saône/Rhône valley) distribution seen for many of the late Middle Bronze Age/Early Urnfield bronzes (e.g. anklets, collared and ribbed pins; Sandars, 1957, Map V,VI, etc.). A somewhat similar pattern is seen in the spread of various daggers from Italy (Gersbach, 1962), but directed further east: in two or possibly three cases rod-tanged swords may be associated with the ring-handled variety.

One sword mentioned above is known from Britain, found in the Thames at London, and is now in the Guildhall Museum, no. 59 (information and drawing C. Burgess). It is similar to the French specimens in most respects but is broken at the butt, and unlike most from further south, has a milled ricasso. Both rivets have been pulled out and the blade is nicked towards the point, which is duller than normal with these weapons, suggesting some use, possibly dropped in action as it is obviously not a votive deposit. This single French export compares with the Eriswell Class A sword, and the finds of British spearheads in N. France (Briard, 1953), one with a Class A sword at Tirancourt; these weapons are obviously part of the extensive cross-channel trade all through the Bronze Age.
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Class B2 swords

These are identical to B1 swords except for a pommel in the shape of a large open hook, faceted octagonally (fig. 8). Two examples only are known from France, and only eight overall - two from Italy, three from Switzerland, one from Egypt. An Italian sword shows the best typological antecedent, from Castelleto (Montelius, 1895, I, Pl. 33, 8), a straight-bladed weapon with uniform section tang, bent to form a hook. All the swords except this specimen are leaf-shaped and most appear to have the characteristic Class B cross-section.

Little can be said about the fragments of a B2 sword from Clans, found in a hoard (Guébhard, 1911, 733-9), since only the thin tang and pommel, and three segments of blade remain. Most of the objects in the hoard are broken; these include a heavy ribbed pin with flat cone head, a 4-riveted dagger, a flat-tanged riveted decorated knife, the central part of probably a median-winged axe, and bracelet fragments. These will be discussed later.

The Pépinville sword (fig. 8) was in an inhumation grave (Beaupré, 1902, 52; Keune, 1903, 475-6, Pl. XXX; Sandars, 1957, 127-9, 173-4) and the finds included a flat-tanged 2-rivet knife, an early small-headed Binningen pin, tweezers, a tiny bronze model of a duck, the top of a headless ribbed pin, and various bronze cylindrical beads and small plates, some of grey metal (described above). This sword is a typical B2 weapon, save for the two pairs of 'ears' surrounding the break in the tang; these call to mind the same feature on the Ile St. Ouen Class A weapon (see previous chapter). This is a not uncommon characteristic on Class B swords, as it is seen on two B1 examples from Italy (Naue, 1903, Taf. XVII, 9; Castelfranco, 1913, Tav. VII, 1), both with two ears in the centre of the tang. It will be remembered that Tirancourt swords of Class A have such a diagnostic feature, and Bukova weapons use the same
device to hold on the tang (see previous Chapter). This suggests a contemporaneity for at least some of Class B swords with those of the Tirancourt and Bukova types.

The Pépinville grave has been discussed by Sandars (1957, 127-9, 173-4) and it is just one of a series of associations for Class B swords. She would date it by the knife and the Binningen pin to her Late Bronze I and Late Bronze II transition, that is, the end of Period V, or BR D in S. Germany. It is interesting to note, and also surprising, that both the knife and the pin are typologically earlier than the finds in the Nenzingen grave (Cowen, 1955, Abb. 2) and earlier than Wollmesheim and Erbenheim (ibid, Taf. 19, Abb. 4), containing the earliest type of flange-hilted leaf-shaped sword. This date is certainly at variance with the current view of the spread of leaf-shaped blades on swords, held to have spread from primary areas in S. Germany or further east (Cowen, 1955, 73). But the rest of the dating seems to support this view, considered below.

Relative Date, Class B

The relative date, it seems clear from the above, of the Pépinville sword, is contemporary with some Nenzingen swords: earlier than the Nenzingen grave, but later, Sandars says (1957, 174) than the Riegsee Nenzingen sword with flange-hilted knife. This would equally apply to Memmelsdorf (Cowen, 1955, Abb. 1). Now such flange-hilted knives are a characteristic form of Müller-Karpe's earliest Urnfields, particularly in the E. Alpine/Bavaria area (1959, Abb. 22, 23), and one of these is the Baierdorf type (ibid, 133, 135ff). A tanged sword is known from the Baierdorf cemetery, already referred to as having a Bukova type tang; it was found with a flange-hilted knife of this type (Bayer, 1931, 209-212, Taf. I-III). Apart from its Bukova tang, the sword shows features in common with Class B swords, namely, a similar cross-section, and bell-shaped butt, and thus seems
related. This weapon would therefore date to BrD, and by association, the Class B group likewise. A similar date is probable for a likely Bl sword known from the N. Italian cemetery of Canegrate (Rittatore, 1954, fig. 13, Tav. XII, XIX, 92) found below a broken urn with vertical channelled decoration, along with an engraved torc and a pin reminiscent of Late Tumulus type in Hagenau but with poppy-pin type shaft decoration. This might suggest an early Urnfield date, and there is a ring-handled dagger elsewhere in the cemetery, comparable to that from Monza (Gersbach, 1962, passim). A simple probably Class B sword with broken tang is known from Cremona (Müller-Karpe, 1959, Taf. 89, 19): this too seems to date to his Peschiera level in N. Italy, which parallels Bronze D North and East of the Alps.

Within the specifically French finds, there seem to be three fragments of blades from hoards, two of which are discussed under Rosnoen swords (q.v.). In the Cannes-Ecluse Hoard II (Gaucher, Robert, 1967, 187, fig. 44, 12) is a definite fragment of Class B blade, with a selection of objects representative of those in Hoard I, but in addition there was found a bronze greave. This is the only piece of armour of definite early Urnfield date in France, and it lies in the same horizon as Hoard I, with fragments of Rosnoen, Bukova, and possibly Class B swords. With the certain attribution of a greave to the bronze plate with wire rim and boss decoration, other bronze plate in finds suggests that many more may be body armour, mostly of a later date, e.g. Boutigny (A. de Mortillet, 1908). The horizon of both these hoards should, by comparison, be that of the La Poype hoard, containing fragments of a Hemigkokofen sword: in other words a likely S. German date of Ha Al.

The Longueville hoard, with a possible piece of Class B blade (Lamarre, 1945, fig. 4, 19) included, and a notched Rosnoen sword butt, is discussed under the latter type. It corresponds to much the same horizon, or somewhat earlier than the La Poype
hoard, by the presence of a collared pin, anklet fragments of varying dates, and a flat riveted tang for a knife, of an earlier form than the round tang and rivet variety found in Cannes-Ecluse I (Gaucher, Robert, 1967, fig. 23,1,2).

The only other hoard with a Class B2 sword is that from Clans, described above. It fits into this pattern of hoards, although geographically remote, in Alpes-Maritimes, and is directly comparable with the find from La Poype (Chantre, 1875, Album, Pl. 29-32). The same flat-headed collared pin occurs, and median winged axe, but the bracelets (Guebhard, 1911, figs. 5-14) are best compared with an identical fragment from Windsbach (Müller-Karpa, 1959, Taf. 155, A), a hoard which also contains a Rosnoen sword, mid-winged axes, and heavy palstave. Müller-Karpa equates several similar hoards with his Br. D in Bavaria (ibid, 147) including the Stockheim find (ibid, Taf. 156-8) which contains inter alia early Binningen pins, a collared pin, Publy and mock torsion bracelets, mid-winged axes, anklets both incised and ribbed, a two-rivet flat tanged knife fragment, fragments of probably Rosnoen Class B (ibid, Taf. 156, 77) and Rixheim or Monza swords, and a small bronze model of a duck, as in the Pépinville grave.

Thus a whole horizon of hoards gives a date for these Class B swords of Br. D/Ha Al, both in Italy (Peschiera level) and in E. France/S. Germany. It has emerged that Class A and Class B swords, despite very different constructions for quite different modes of attack, are in large part contemporary; and that both occur alongside Rosnoen and Rixheim swords. Perhaps an even more significant conclusion is that leaf-shaped swords seem to have evolved in the west at an earlier date than the first leaf-shaped sword imports from Germany; in fact it may well be that Italy or France first produced this technological feature which had such a wide vogue. It would go a long way towards explaining the 'sudden' appearance of leaf-shaped swords in Europe, or what has been thought sudden among flange-hilted
swords until the present time. Apart from explaining the lack of swords hitherto in N. Italy of early Urnfield date, these Class B weapons by their distribution pattern (fig. 9) illustrate a somewhat different trade route than usually figures on maps of Br.D/Ha Al bronzes. The co-existence with eastern Atlantic swords (Rosnoen type) is illustrated, apart from the hoards, by the example from the Thames; but that they were also part of a large weapon complex in the Circumalpine / E. French / S. German area is evident by cross-contacts in many associated finds, particularly founders' or tinkers' hoards.
CHAPTER VI

RIXHEIM SWORDS
The following specimens are known from France:

Courtavant (Aube) (fig. 1)
Entzheim (Bas-Rhin) (fig. 2)
Gugney-sous-Vaudémont (M.-et-M.) Grave? (fig. 3)
prob. Gugney-sous-Vaudémont (M.-et-M.) Grave? (fig. 4)
Heidolsheim (Bas-Rhin)
Ile Kley (Yonne)
Pilon at Cheix (I.-All) (fig. 5)
Prépoux (Yonne) Grave? (fig. 6)
Rixheim (H-Rhin) Grave (fig. 7)
Saône at Chaugey (C.-d'Or) (fig. 8)
Saône at Gué d'Apremont - Montrichier (H-Saône) (fig. 9)
Saône at Montoche (H-Saône) (fig. 10)
Saône at Montseugny (H-Saône) (fig. 11)
Saône/Rhône (fig. 12)
Saône around St. Georges (Rhône) (fig. 13)
Saxon-Sion (M.-et-M.) (fig. 14)
Seine (fig. 15)
Vaux et Chantegue (Doubs) (fig. 16)
Vilaine at Rennes (I.-et-V.) (fig. 16)
Wittelsheim (H-Rhin) Grave (fig. 17)
Yonne?
Provenance unknown M. Abbeville
Provenance unknown British Museum (fig. 17)

probably Rixheim swords:

Amiens (Somme)
Saône?
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Find Circumstances: Five swords have been found in graves; the rest are single finds, many as a result of dredging in the rivers.

Form: The normal blade shape is straight-sided or slightly tapering, with a point which appears fairly rounded, not sharply pointed like, say, trapeze-butted rapiers. The hilt would have been fixed by three or occasionally four rivets which are set in triangular pattern in a rounded extension of the blade. Below this, on at least 10 of the 25 swords known from France, is a milled ricasso, presumably to prevent the fingers being cut when handling the sword. There is incised decoration on 17 of these weapons and in 13 cases this takes the form of two parallel lines running alongside the central blade rib or ridge, and diverging at the butt above the ricassi. In most instances this pattern is supplemented by one or two additional curving lines at the butt, forming a chevron pattern.

The cross-section of the blade varies from a plain lozenge shape on undecorated swords (fig.11) and a complex lozenge section on some decorated specimens (figs. 7, 8, 9) to that shown in fig.4, the sword probably from Gugney, which has a strong rounded midrib with thinner edges to the blade. There are various degrees between these shapes, because the incised decoration makes it difficult to delimit one type from another - for example, a lozenge section blade with outlined central ridge appears to have a low central rib (Rixheim, fig.7). A different cross-section entirely is seen on two swords - Prépoux (fig.6) and Seine (fig.13) where a pointed oval configuration with hollow-ground edges is used. This immediately calls to mind Rosnoen swords, some of which are found in the same
area as these two Rixheim weapons; the same applies to the doubtful sword from Amiens (Breuil, 1900, fig. 3, 16). In at least ten cases sharpening is carried out by hammering, forming the hollowed edges seen in the blade sections (referred to above), but this again is often difficult to determine because of heavy concretions of river material on many of the swords. When it does occur its nearest parallel (i.e. in most common use) is found on rod-tanged swords, which share much of the same area of distribution and are of the same date.

The Rixheim swords are longer than most contemporary types of Urnfield weapons, the average of 13 classic examples with decoration and ricassi being 65.8 cm. while an average of 20 IIa flange-hilted swords quoted by Cowen (1955, 64) was 61 cm. It must be remembered also that flange-hilted swords have full-length hilts, while the Rixheim butt could have reached halfway up the organic haft at the most. The other French weapons are normally shorter in length, perhaps because of Roenoen sword influence; in any case the average length, including these, is 61.6 cm., still longer than Renzingen swords, plus the extra length mentioned above. The longest sword is that whose provenance is unknown (presumed France) in the British Museum 72.5 cm.; the shortest, at 46.5 cm. is Prépoux – this can only ever have been a few centimetres longer, even allowing for the break (figs. 17; 6).

Three of the swords show marks of hafting, due to the formation of copper-carbonates around the areas which formerly were covered with organic materials. Courtavant (fig. 1) and Prépoux (fig. 6) show this best, but minor traces are visible on Yonne (fig. 16).
and possibly Saône/Rhône (fig.12). The Prépoux sword shows what appears to be a semicircular cutout, with flat ends on the wings of the haft, like contemporary Riegsee swords in the Eastern part of Europe (Holste, 1953, Taf. 13). It is difficult to make out the exact shape, but the terminals may be angled downwards in the centre, similar to the Riegsee pattern. Parruzot (1951, 195-6) suggests that the trace of the scabbard mouth can also be seen, and in fact a line is visible across the bottom of the semicircle. Equally interesting are the remains on the other side of the sword, lower down the blade, where a strip pattern can be seen which suggests remains of scabbard binding or loops, most probably of leather. The hilt cutout is fainter but still visible on this side as a roughly semicircular pattern, again with straight lower edges. The concretions on the Courtois avant sword (fig.1) are somewhat more difficult to interpret, since there is no clear demarcation of the bottom of the hilt wings. Comparison of fig.1 and Sandars' (1957) Plate V should be made, as the lighting in the two photographs is from different angles. I would suggest that there is equal probability of the hilt cutout being straight-bottomed as the shape shown by Sandars (1957, fig. 20, 1), since examination in the hand did not clarify the matter either. The importance of the hilt cutout shape is that there might be some connection with rod-tanged and Rosnoen swords, if the drawing shown by Sandars is correct. One rod-tanged sword with a cast-hilt from the Cher at Bruère (q.v.) shows an arched cutout, and this shape is known on others of this type, such as the cast-hilt sword from Spandau (Hundt, 1962, Abb. 3, 4).
The only clear indication that at least some Rixheim swords had an arched cutout comes from a sword outside France, in Germany. It was found in a grave at Kressbronn with, inter alia, a cast-hilt dagger whose hilt cutout is arched in the same way as Sandars shows the Courtavant sword, and with a 3-rivet (triangular) configuration (Wocher, 1965, Abb 2, 2). The sword itself shows marks of hafting, and the cutout is arched in an ogival curve with a profile much like the swords from Spandau and Stuttgart-Wangen (Wocher, 1965, Abb 2, 1; Hundt, 1962, Abb 3, 4-8). In this case, therefore, there is some connection between Rixheim and rondel-tanged swords, and correspondingly the French Rixheim weapons may follow this example in sharing hafting features with the other sword type.

Although Sandars (1957, 97) has divided Rixheim swords into 3 main types, it is not proposed to follow this scheme, since only 2 of Type III and possibly 3 of Type I occur in France.

There is such variation within the French swords that some sort of differentiation between the decorated 'classic' Central East French specimens and the scattered simple weapons might be valid. These latter swords might represent local copies as against the more sophisticated Urnfield weapons; Sandars' scheme only includes the latter, but does not allow for a great deal of variation within these, in cross-section and decoration.

Two unusual swords call for mention—Saône at Mantoche (fig. 10) and Pilon at Cheix (fig. 5); both these show features not usually associated with Rixheim swords. The first, Mantoche, has two notches in place of the lower rivet holes, and these
may have held rivets. But similar notched constrictions occur on some rod-tanged swords where they are not necessarily used as seatings for rivets, although in cases demonstrably are so used. There is also a considerable resemblance to the Monza sword from Torino (McArdle, 1965, Pl. I, 2) which, however, has a long narrow tang above the rivet plate pierced with a single rivet. The Pilon sword (fig. 5) is more definitely associated with rod-tanged groups, since it has a short tang above the usual 3-rivet butt. There is a central midrib on the blade, diverging at the butt, but the blade is parallel-sided, nothing like Déchelette's illustration (1910, fig. 6). Swords like this, with a short tang, may give some idea of the evolution of a long rod-tang; and that on the Pilon sword looks like a casting tail left on and finished to a blunt point to strengthen the hafting. A quite similar weapon, with three rivets and a longer rod tang, is known from the Thielle river in Switzerland (McArdle, 1965, Pl. III, 1). This again stresses the connections between these two sword types.

Distribution: The group is confined in general to central East France, with a smaller group in the Yonne/Seine area. There is one from the Somme district, one from the Vilaine in Brittany, and the last from the river Pilon, in Loire-Atlantique (fig. 18). The diminution in numbers further away from the East of France corresponds with their distribution in other countries; the most numerous finds are from Switzerland and Central and Southern Germany (Sprockhoff, 1934(b), Abb 1; Gersbach, Kimmig, 1948/50; Holste, 1953, 53, Taf 18, Karte 5; Hundt, 1958, Abb 2; Kimmig,
1964, Abb 4; Bonnamour, 1966). These maps have been complicated by Kraft's grouping of the Monza and Rixheim swords together (1927, passim), so that many of the finds cannot be included. All of these Monza group finds have been deleted from the French map (fig.18), and this reduces the numbers somewhat, since all the authors cited, even Bonnamour, have followed Kraft's scheme unhesitatingly. In fact, these French swords represent western offshoots from the main areas of production, and are associated with the spread of Urnfield groups in East France. Outside this area the usual pattern of imported swords into the other regions of France can be seen: in the Somme area and in the west, probably spread by sea. The presence of a few Rixheim swords in Britain may imply that the Thames-Seine/Somme route was being used at this time for these weapons, or less likely that they came direct from the Rhine. The former is much more probable since there are strong contemporary contacts shown by Rosnoen swords, and a thinner but convincing pattern occurs in the case of rod-tanged weapons. This cross-channel link is one of the constant features shown by bronze artifacts from the Middle Bronze Age onwards and includes a few Urnfield weapons as well as the more numerous Atlantic/Channel types.

It has already been pointed out by Sandars (1957, 127) that a practical invention like a sword soon passes the frontiers of its inventor; this is why it is so difficult to relate the weapons to any group of people. But there is an exact correspondence of distribution with several of Sandars' First and Second Urnfield groups, such as her Upper Seine Tumulus group, and while precise associations of other bronzes are lacking in most graves known, there is little doubt
that the users of the swords were the people producing the known cemeteries (Sandars, 1957, 125-7, Map VII). It is interesting to compare the distribution with contemporary swords: the flange-hilted IIa type, Rosnoenj, rod-tanged, and early cast-hilt swords (q.v.). In no case is there as good a correspondence with the area of First Urnfield settlement in East France as there is in the case of Rixheim swords, which do seem to have been the normal weapons of the first Urnfield settlers in the area. The closest degree of overlap with any other sword type is the slight correspondence with Monza swords in Yonne and the Upper Saône, and these are in any case the closest swords morphologically to the Rixheim weapons.

Relative Date: Two French swords were found with bronzes (Courtavant and Rixheim); the other three associated finds were with pottery alone. Courtavant (fig. 1; Sandars, 1957, fig. 23, 1-6) is well known, with a ring handled knife and ribbed disc-headed pin. In S.W. Germany Müller-Karpe (1959, 185, Abb. 27) designs such knives to his Bronze D period, and Rixheim swords in Bavaria to the Baierdorf level (Br. D.). The rite used in the burial was inhumation within a stone-walled pit, so there is a perceptible Middle Bronze Age background to the Urnfield finds. The ribbed pin is likewise a Bronze D type, but which persists well into later periods; Sandars (1957, 125) suggests that it should be seen as part of a continuing Tumulus background, perhaps as a reaction to the influx of Urnfield bronzes. This grave, therefore, would seem based on a different background from the Rixheim flat cremation, dealt with recently by Zumstein (1965, 395-6). He would like to see a Ha Al date
for the find because of the connections with the Binningen phase in the other three graves at Rixheim (ibid, Tav. LXXVI). The knife from the burial (fig. 7) is a generalised type, current as Zumstein remarks, in Bavaria in Br. D (Müller-Karpe, 1959 Abb 23, 22), but there are similar knives in the Grossmugl period and in North Tirol in Ha Al (ibid, Abb. 27, 28). Somewhat closer to home, a two-rivet knife occurs in the Pépinville grave with a hook-tanged sword (although it is rather more curved); the grave has both Br D and Ha A types in it (see relevant chapter). Since the pot found in the Rixheim grave has now been lost, there is no more dating evidence for this find, and so it should maybe be assigned to a Ha Al date (Hatt's Bronze Final II) as Zumstein suggests, on the grounds of the bronzes.

The Wittelsheim grave, found in 1951, was also a cremation (Zumstein, 1966, 166-7, fig. 64), in a large cordoned urn, roughened below, standing on two pieces of a Rixheim sword (fig. 16). Other reddish sherds were found, from a globular vase, and a cup, both of which had a roughened surface. The urn has close parallels at Algolsheim and Kronenberg, which Sandars includes in her First Urnfield Poppy-pin group (1957, 120-2). The date of Algolsheim is given by Sandars as BrD/ Ha A transition, similar to Courtavant, which would agree with the single-ribbed prototype Binningen pin found at Algolsheim. The sword is typologically close to the Rixheim weapon, so this date agrees well.

The Prépoux sword was found in a sand-pit accompanied by a pot and a skeleton, whose head faced east; Parruzot mentions an east-west 'fosse' (1951, 195).
Both the pot and the skeleton have not survived their discovery, and the sword, as suggested above, does not appear a typical Rixheim weapon, but a local copy. The sword appears to have outlines incised into the blade, much the same as Courtavant, Gugney and Île Kley (Yonne), where the lines do not curve outwards at the butt. It is interesting that this feature should occur on three swords so closely linked by distance, and the other not very far away at Gugney: it is probably a local form of decoration. The inhumation rite at Prépoux again speaks for a Tumulus background, especially within a 'fosse', but apart from the possible typological links there is no other indication of date for this burial.

The final association of Rixheim swords occurred at Gugney-sous-Vaudémont, a settlement site protected by a defensive bank incorporating drystone walling (Sandars, 1957, 85–8). Two swords were originally found, one with bones; in the course of later trenching around the area of finding (behind the bank) some coarse sherds were found, and cremated bone. The pottery is cordoned, finger-printed and roughened, and must be related to the Wittelsheim pot; this is the only dateable find and since the association is quite unproven, of doubtful use in dating the swords. The sword definitely found in the settlement has the straight line decoration, like Courtavant, while the other, if the British Museum sword is in fact that from Gugney, is of the more usual Urnfield type with chevron-decoration. Although there is no definite date for the swords, their being found in such a fortified settlement site (which also yielded a bronze barbed and tanged arrowhead and sling stones) is interesting, since any such pointers to the
circumstances surrounding the use of bronze swords are very rare.

Thus in France Rixheim swords are to be dated to Bronze D and HaA, in so far as the East is concerned, and they can be assigned to specific groups with Tumulus origins. These were using Urnfield artifacts and rites allied with their own, and on occasions adapting Rixheim swords, under influence from other bronze swords in use by other groups at the same period. There was little penetration into the West of France and the few finds from this area and Britain suggests trade objects from Urnfield S.E. France or Switzerland, their main area of distribution.
CHAPTER VII

NENZINGEN SWORDS
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NENZINGEN SWORDS

The group is defined by Cowen (1955, 63ff.) after Naue's Typ IIa (1903), as the southern counterpart to Sprockhoff's Typ IIa in the North (1931, 13ff.). The following are known from France:

Krautgersbeim (Bas-Rhin)
Larnaud (Jura) Hoard
Mercurol (Drôme)
Penavern (Fin.) Hoard
Saône at Chalon (S.-et-L.)
Scarponne (M.-et-M.)
Verdun (Meuse)

These swords represent the first flange-hilted Urnfield weapons imported into France, which is on the western fringe of their distribution (Cowen, 1955, 69, Karte D). Cowen (ibid., 63ff.) has described the characteristics and date of these weapons, especially in Germany and to the east, and the French examples, of which he cites three, with one variant, seem either imports, or local copies.

Three more can be added to Cowen's list, one of which was taken by him to be an uncertain specimen, from the Penavern hoard (Briard, 1958, Pl. X, 29; 1965, 153-4, 167-33, fig. 49, 9). One of Cowen's features of the Nenzingen hilt is that it curves outwards at the pommel: "Am oberen Ende schwingen die Ränder nach Aussen unde bilden nich selten ganz ausgesprochene "Hörner" " (op. cit, 64), so it is difficult to see why he calls this a Hemigkofen hilt. The Rosnoen group of swords, the main content of this hoard, fall, as seen elsewhere in this study, within a relative horizon parallel to that of some Nenzingen swords in Germany, and in cases later or earlier than others. The blade shape and section of this Nenzingen specimen is standard, but finished off in what seems a Rosnoen manner.
A milled ricasso is an unusual feature on this sword, and the examples of ricassi cited by Cowen, mostly from the western fringe (ibid, 64) are flanged. Most probably the Rosnoen practice of milling the ricasso was carried onto this sword, which makes it even more likely that it was a local copy. However, it is by far the most westerly of these swords, and no prototypes are known from Brittany, so maybe it was made in E. France and traded by sea along the routes used by the makers of the Rosnoen group.

Another sword which appears to be a Nenzingen specimen is that from Mercurol (Vignard, 1961, 34, PI. X, fig. 6, 32-3; Goury, 1919, 57). The hilt is broken above the butt at a rivet hole, with four more in the shoulders; the blade has an oval, hollow-ground section like others of the group. Goury's curious remark about this sword being a re-used Hallstatt weapon, with its ricassi notches filed out, is most unlikely as Vignard points out, and since it is unassociated, the sword should probably be assigned a general date within the group.

The only other sword assimilable to the Nenzingen series, apart from Cowen's list, seems to be a fragment of blade top and butt in the Larnaud hoard (Coutil, 1914, PI. III, 21). The weapon seems to have been partly melted on the upper hilt, and the blade which is broken appears to be of the usual cross-section. The hoard is of varying composition and with too broad a dating horizon to compare with the grave finds or hoards with a narrower dating threshold, but it is interesting to note that various sword types, from Rosnoen to Forel weapons, occur in it.

Apart from the direct association of this variety of swords with Rosnoen weapons in the Penavern hoard the flange-hilted series seems to be the direct counterpart of the others in the west. Both types have a straight blade, with exactly the same cross-section, but with hafting methods drawn from
the earlier sword types in their respective areas. It is not necessary to see Rosnoen swords as derivatives of the Nenzingen group, since the origins of all their features can be found in earlier types; but probably some interchange was in progress at the Br'D/HaAl date since the weapons appear so similar. The large areas of trade would speak for this, possibly through contact with the Class IIa area in the North.
CHAPTER VIII

ERBENHEIM/LETEN SWORDS
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ERBENHEIM/LETTHEN SWORDS

Both types have been defined by Cowen (1955,72ff), and are so closely related that they have been assimilated for the French specimens, of which the following are known:

Léguer at Ploulec'h (C.-du-N.)
Paris, rue Fontaine du Roi (fig.1)
Saône at Anse (Rhône) (fig.2)
Seine at Paris
Seine at Paris
Seine at Rouen (S.-Mar.) (fig.3)
Virey-sous-Bar (Aube)

According to Cowen, these swords represent the first leaf-shaped Urnfield swords, and he cited 5 specimens in France, with the main area of distribution in the Middle Rhine/Switzer-

land (ibid., Karte C). The main difference between the types occurs in the length and curvature of the blade, with Letten swords less elegant in shape than Erbenheim, more leaf-shaped towards the point, and with a straighter central hilt and shoulders. The Erbenheim swords are longer than the Letten group, and of the French specimens Cowen assigned three to the former, and two to the latter series.

Since his study there are three more swords with similar characteristics which fit the two series - one Erbenheim (Saône at Anse; Armand-Calliat, 1957, 129 fig.2,2) and two Letten (Paris, and Ploulec'h: Giot, 1967, fig.6). The first weapon has the pommel tang indicative of all these weapons, a curved centre to the hilt and a long finely shaped leaf blade. Six rivet holes are visible in the butt, while those in the hilt are merged into a long ragged slot, caused by a cooling of the bronze before filling the casting. Such slots are seen on Hemigkofen swords
and other Erbenheim weapons with a large number of rivet holes (e.g. Saône, fig. 2). Armand-Calliat (1957:129) mentions that the blade is outlined towards the point, another common Erbenheim characteristic.

The other two swords mentioned above are much shorter than the Saône sword (73cms), at 59.5 and 50.6 cms. Ploulec'h and Paris; their blades also correspond to a different shape, with the broadest part towards the point, giving it a blunter appearance than the slender Erbenheim blades. The Ploulec'h sword has in common with Paris (fig.1) and Seine at Rouen (fig.3) a straighter hilt, and less exaggerated shoulders than any of the Erbenheim specimens. The Paris sword is a standard weapon apart from the swollen pommel tang, a most unusual feature, but perhaps paralleled by some of the early Urnfield cast-hilt swords from E. France (q.v.) with spherical buttons above the usual plate pommels. Cowen has described all the other weapons in these two groups, but it should be repeated that the Rouen sword (fig.3), a Letten weapon, and another sword shown by Cowen have straight blades (1955, Taf.7,1,7).

The origin of the leaf-shaped blades seen in these weapons is not perceptible within the typology of Erbenheim swords, which Cowen assumes to be the earliest leaf-shaped Urnfield sword type (ibid, 73-6). He sees Letten swords are hybrid forms between Hemigkofen and Erbenheim specimens, and Hemigkofen swords as hybrids between Erbenheim and Nenzingen weapons. This is based on his premise that Erbenheim swords are the primary form, although no ancestral forms are known, except some fairly dissimilar specimens which he notes. But he talks about the elegant forms of the blades (ibid, 73) as against the short and dumpy Letten weapons, all of which are unassociated and therefore undated. On several counts it would seem more sensible to assess the Letten swords as precursors to the
Erbenheim weapons, with two straight swords as the first in the series. The plain straight hilts would confirm this, as the later Urnfield swords all have strongly curved hilts (with the Erbenheim series as the prototype) and elegant, longer blades - again an Erbenheim characteristic. Also some decoration appears on the points of Erbenheim swords, leading on to the more decorated Late Urnfield forms, while the Letten blades are undecorated except for a single outline.

In support of this view it is necessary to consider the arguments submitted in the Class B: rod-tanged swords chapter: in short, that Class B swords are contemporary with Nenzingen swords, and likewise are earlier than Erbenheim/Letten swords. For example the presence of large-headed Binningen pins in the Wollmesheim grave I (Krahe, 1960, Abb. 6), and tanged decorated knife with Spindlersfeld fibula date this find to Muller-Karpe's Ha Al, while it has been shown that the Class B swords occur in the Poschiera/Br D level, the equivalent of his Riegsee - Stufe (1959, Abb. 23). The same applies to the grave of Erbenheim (Cowen, 1955, Abb. 4). Here again the tanged knife occurs, but with bent-round tang, and in combination with the cross-handled razor again dates to the Ha Al horizon. No associations are known for Letten swords, as mentioned above, so they must be considered upon typological grounds only.

In the Class B swords chapter the shape of the rod-tanged sword blade was described, as having its broadest part near the point, and thus with a broader angled point than, say, Erbenheim swords. To enlarge the usual simile, this appears more as the shape of a chestnut leaf than a willow leaf - much heavier towards the point. In Cowen's Taf. 7 (1955) it is evident that this is close to the shape of Letten swords, which in this case, would represent the intermediate form between Class B and Erbenheim swords. The hilts correspond
to this typology. The straighter-sided Letten form would be a fusion of flange-hilted Nenzingen swords and the small Class B weapons. Later it would develop more curved sides, as in Erbenheim weapons, as an intermediate form to the extreme examples of Forel and other later swords. The three figs. illustrate this development. There are two other arguments in favour of this 'western development' view.

First, the average length of the swords, as Cowen notes (ibid, 73, 78) varies by 9 cms between the shorter Letten and longer Erbenheim weapons – 60.5 mm as against 69. If still significantly longer than the Class B average (50 cms), at least the shortest Letten swords approach the length of the longest examples of the former, and would show a lengthening process at work (one of the obvious trends in Late Urnfield swords).

If a truly intermediate group is needed to show this increase in length, Hemigkofen swords (average length 56.5 cms) were present contemporaneously with later Class B and Letten swords. In fact, if the argument for a western leaf-shaped sword development is true, Hemigkofen swords would represent a fusion of Nenzingen and Class B swords. The same arguments as above actually hold good for Hemigkofen weapons – the blade shape, length and hilt shape (apart from the pommel tang) are remarkably similar to Letten swords, and rather than being a mixture of Nenzingen and Erbenheim swords, would probably be a hybrid Class B/Nenzingen weapon.

The pommel tang on Letten weapons could come from two sources. The first is from cast hilt Urnfield 3-ring swords of Ha A, which have a raised centre to the pommel. The other is more directly from the protruding pommel of Class B1 swords. On those specimens which were examined in the hand it was noticeable that the facets of the octagonal pommel were polished and worn at the top but sharp-edged at the bottom. It is suggested that the wear was due to the top half of the pommel protruding above
the end of the hilt; this would give a large pommel as a prototype for Letten swords. It may in fact have copied earlier large-pommel swords; e.g., Achtkantschwerter (Holste, 1953), but the Class B swords would probably give the most direct model for the makers.

The final argument against an eastern origin for leaf-shaped swords is the distribution shown by Cowen for Erbenheim, Letten, and Hemigkofen weapons (1955, Karten C, D). The obvious connections with Central Europe of Nenningen swords, shown in the distribution (ibid, Karte B) have disappeared; now the swords mostly cluster along the Rhine or slightly to the east, in Bavaria and Switzerland, and in East France, that is, on the eastern fringe of, or in the Class B region. The Letten swords are particularly interesting since three of the four French specimens are found in the Seine, where most Class B French swords are known, and three are found in Switzerland, where seven Class B swords are found. The fact that flange-hilted and Class B swords do not precisely correspond in distribution is not surprising, since there was obviously a tradition in Germany of the manufacture of flange-hilted Nenningen weapons, and the same technical process would continue to be used, with the new idea of blade shape altering the general format. It is interesting to note that the characteristic Class B blade section was not taken over at once, since on both Letten and Hemigkofen swords various sections are seen, from the Nenningen elliptical hollow-ground section, with or without an outline curve, to a flat lozenge section (something like Class B, but thinner), which becomes general on Erbenheim swords.

Thus the situation seems to be that Class B rod-tanged swords of Br. D/early Ha A date, and the Nenningen flange-hilted sword, maybe brought from the east by Urnfield peoples, were the forms which, combined to give the advantages of both, appear
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in the shape of Letten (and Hemigkofen) swords. These appear as an intermediate, short-lived type (Cowen, 1955, 132-3, cites 8 examples only), giving rise to Erbenheim swords in virtually the same area. There may have been some other influence from later rod-tanged sword development in S. Germany at the Ha Al horizon (e.g. Essfeld: Müller-Karpe, 1959, Taf. 205; Speyer: Krahe, 1960), but there seems a good case to see Erbenheim swords not as the first leaf-shaped swords but as a product of intrusive Urnfield metal-working taking up largely Middle Bronze Age French and Swiss sword types. Both the dating and the typology support this; the few finds of Erbenheim and Letten swords from France have been explained above, but may represent either local work or imports from the Urnfield smiths in the Rhine/Switzerland area.
CHAPTER IX

HEMIGKOFEN SWORDS
HEMIGKOFEN SWORDS

The following weapons of the type defined by Cowen (1955,79) are known from France:

1. Nr. Amiens (Somme) (fig.1)
2. Nr. Amiens (Somme) (fig.2)
3. Chécy (Loiret) (fig.3)
4. Équisheim (H-Rhin) (fig.4)
5. La Poype (Isere) (fig.5)
6. Loire at Bellevue (L.-Atl) (fig.6)
7. Loire at Bellevue (L.-Atl) (fig.7)
8. Loire at Meung-sur-Loire (Loiret) (fig.8)
9. Loire at Nantes (L.-Atl) (fig.9)
10. Loire at Nantes (L.-Atl) (fig.10)
11. Meienheim (H-Rhin) (fig.11)
12. Monts d'Arrée (Fin.) (fig.12)
13. Ottmarsheim (H-Rhin) (fig.13)
14. Paris, Rue Fontaine du Roi (fig.14)
15. Saône at Auxonne (C.-d'Or) (fig.15)
16. Seine at Bligny (fig.16)
17. Seine at Vernon (Eure)
18. Seine at Villeneuve -St. Georges)
19. Tarn at Lasbordes (Tarn) (fig.17)
20. Provenance unknown, Milangres

Find Circumstances: Only two swords come from closed finds: Équisheim, possibly from a grave, and La Poype, part of a hoard containing broken and whole objects, possibly a founder's hoard. The rest are single finds, mainly from dredging.
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Form: The French swords vary somewhat from the norm, shown by such swords as Meinheim (fig. 11) and Ottmarsheim (fig. 13), which are the classic Hemiagofen shape (Cowen, 1955). The longest sword, no. 9, Loire at Nantes, is 66.6 cm., the shortest, at 50 cm., is from the Seine at Bligny. The average length is just over 58 cm., taken from 14 swords. A leaf-shaped blade is the constant characteristic of these short swords, and a haft whose usual shape comprises a slightly curved butt profile, curved hilt edges and a 'fish-tail' pommel configuration. Rivets vary from 13 to 6 in number, with normally 4 in the hilt (from 2 to 6) and 4 (9 swords) or 6 (5 swords) in the butt (1 sword has 2, and 2 swords have 8 rivet holes in the butt). In some cases the rivets are so numerous that there is not sufficient space between them for efficient casting, and the holes are joined as in the sword from the Loire at Bellvue (no. 6). The hilt shape in Breton swords differs from that described above where sloping straight shoulders are not uncommon, while the pommel 'ears' are always present, but are cast heavier in some cases (e.g. Tarn at Lasbordes and Meung - s - Loire; figs. 17, 8). A ricasso is common at the top of the blade; this is normally milled to form small cross-grooves and prevent the user's fingers getting cut when handling the sword. But like most other features of the group it is not necessarily found on all the weapons. The blade section is normally oval, but a low midridge on a few swords forms a lozenge-shaped profile, with at least one outline groove on most weapons in the type. Sharpening is sometimes carried out by hammering the edges from both sides, and this shows up on the blade as a depression following the cutting edge, but the usual method must have been by grinding on a stone.
The swords from the Loire and Brittany are generally different from those in the East, with a longer butt than is usual, and a more exaggerated haft profile. They appear to be local versions, just as the swords from Paris and the Seine at Bligny (figs. 14, 16) have broader, straight-topped shoulders than the S. and East group. Both these regions, Brittany and the Seine, are in the main areas of later Atlantic swords, and earlier Atlantic rapier. The haft shapes show in their flaring butts the beginnings of native St. Brieuc/St. Nazaire Atlantic swords, especially the weapon from Paris. The two swords from around Amiens (fig. 1, 2) are much closer to those from H.-Rhin, which themselves are similar to the C. German group.

So it would seem that, after the importation of Hemigkofen swords, with a small basis for knowledge of other flange-hilted weapons (IIa and Erbenheim swords), French founders began copying and altering the imports. The development of the type, as suggested above, leads straight on to wide-shouldered Atlantic swords. Thus it is that in the west, the sword from the Loire at Nantes (no. 9, fig. 9) is very similar to the German weapon from Elsenfeld (Cowen, 1955, Abb 7, 1), while others like that from Monts d'Arré (fig. 12) show a distinct typological progression towards the St. Nazaire type.

Relative Date: As mentioned, only two of the French finds are associated. Eguisheim (fig. 4) is a broken weapon of usual shape, probably coming from a grave, as sherds of pottery, pieces of cremated bone and the uncremated skull fragments were found on the spot after discovery of the sword. Zumstein (1966,
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108, fig. 37; 187-90) suggests a cremated body, and subsequent burial, with the other finds, of the uncremated head. The urns are of a type which Zumstein dates to his and Hatt's chronology of Bronze Final IIb. This corresponds to Müller-Karpe's Ha A2 and B1 phases, which according to Zumstein, represent a homogeneous group in Alsace (1966, 39-40). The quotes Cowen's dating for Hemigkofen swords and extends it slightly by this combining of two phases: the group, in Müller-Karpe's chronology (1959), would then stretch from Ha A1 to Ha B1. In any case, a rigid chronology for bronze swords is difficult to establish, as they may be long-lived objects having a high survival value even with constant use.

The hoard from La Poype (fig. 5) is the only other closed find from France, probably a founder's hoard. Button and tanged sickles, decorated with channelling and mid-winged, notch-butted axes are the most numerous broken objects. Several spearheads, a ribbed pin with flat head, a globe-headed channelled pin, and heavy D-section incised bracelets with outturned terminals form the rest of the recognisable objects from the hoard. The ribbed pin, mid-winged axes, and oval-decorated bracelet form a Ha A basis, with a waisted flanged axe of probably earlier date. (Chantret, 1875, II, 95-8; Album Pls. 29-32; Combier, 1963, 284). This, taken with evidence for the date of Hemigkofen swords in other closed finds (Cowen, 1955) and the continuance of the type in West and North France, would give a date throughout Ha A, possibly into Ha B1 as noted above. In the North and West the German or E. French relative chronology is of course not directly applicable and specific
objects which might correspond to the scheme typologically would not necessarily be contemporary with it in terms of absolute dating.

Distribution: The map (fig. 18) shows the two main areas of finds within France, one predominantly North and West, the other largely south-eastern. These of the latter would seem to be connected with Swiss and Bavarian Hemigkofen swords, while the other group may have been spread by sea from C. Germany (Cowen, 1955, Karte D).

It is interesting to compare the North and West series with the distribution of Atlantic trapezoidal rapiers, Rhenen swords and Atlantic flange-hilted swords — their place in the typological history of the Atlantic weapon is well supported by the grouping of finds. The S.East series of weapons is found in the same area as earlier 3-ring swords in France, further signs of considerable activity in bronze-working in the Saône/Rhone valleys and Alsace. But the uneven distribution of numbers of Hemigkofen swords (12 in the North, 6 in the East) reciprocates the preponderance of 3-ring swords in the S.East area and nowhere else in France: different weapons were preferred in different areas. The absence of these swords in Sandars' Champbertrand Urnfield group (1957, 161 ff.), and their presence among Middle Rhenish Urnfields (Cowen, 1955, Karte D) and in the Middle Seine area is inexplicable, except possibly for a transmission via the Rhine and the Channel. But given the ties with the most easterly Urnfields which exist in the Yonne area (Sandars, 1957, 171), the only explanation is that other classes of swords may have been in use in the area, such as the rod-tanged groups (q.v.) and Rixheim swords (q.v.), evidence possibly of a Middle
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Bronze Age tradition. But with so very few associated finds of these swords in France, it is risky to suggest any connections with Urnfield or other groups, as swords would tend to cross cultural barriers anyway, being functional and desirable objects.
CHAPTER X

THREE-RING SWORDS

France lies outside the main distribution of most of these swords, so Müller-Karpe's typological scheme has largely been used in classification (1961).

Riegsee/3-ring type
Saône at Ray-sur-Saône (H-Saône) (fig.1)

Erlach type
Beynost (Ain) (fig.2)

Hörl/Liptau type
Villeneuve (Ain)

Earlier Urnfield 3-ring swords
Chalon-sur-Saône (Saône-et-Loire) (fig.3)
'France' (fig.4)
Rhône at Tarascon (Bouches-du-Rhône) (fig.5)
Saône at Anse (Rhône)

Probably Aldrons or Worschach type
Saône at Tournus (S.-et-Loire) (fig.6)

Stockstadt type
'France' (fig.7)

Moselle at Blénod-les-Pont-à Mousson (Meurthe - et - Mos.) (fig.8)
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Riegsee/3-ring Type

The sword from Ray-sur-Saône (fig.1) is half a Riegsee sword (blade and butt shape), half a 3-ring sword (haft and pommel). The former type is not directly ancestral in typological terms to the 3-ring swords, but precedes them chronologically (Müller-Karpe, 1961,13). Some Riegsee features can however be seen on the earliest 3-ring swords, as in this example, which is not surprising considering the broad distribution of Riegsee weapons (Holste, 1953, Taf.18, Karte 5). The wide butt with narrow 'wings' on the Ray-sur-Saône weapon shows this influence, likewise the toothed ricassi and broad rind rib on the blade (Holste, 1953, Taf.13, 14). The haft, apart from the butt, is of usual 3-ring form, undecorated, so no further parallels can be drawn. Its relative date must be within the earliest Ha A1 phase, when the first 3-ring swords are found, based on a Riegsee Bronze D background (Müller-Karpe, 1961,13; Holste, 1953,29). The sword must represent an import from the main areas of production, scattered across Central Europe, but mainly in W. Hungary/Slovakia and S. Bavaria/Austria (Holste, 1953, Karte 5).

Erlach type

The only sword of this variety known from France, Beynost, may also represent an import, from the main area of production, S. Bavaria/W. Austria (Müller-Karpe, 1961, Kartel) or a close local copy. It has been assigned to this group because of the pattern of decoration on the haft (fig.2), with the rings plain and the spaces between engraved with running spirals, although the butt shape suggests later 3-ring swords. Assuming Mouton's drawing to be reasonably accurate (1954(b), fig. 104; fig.2), there is a most unusual pommel knob, almost spherical; and although he shows the pommel to be elliptical in section, it is probably in fact the usual shape found on these swords - a flat plate, as Coutil shows (1928, Pl. IX, 10).
The butt is decorated with a double S-curve as is usual on the majority of early 3-ring swords. Little more can be said about this sword and, as it was a single find, it can only be assigned to Müller-Karpe's date for the type, Ha Al (1961,12-13).

Högl/Liptau type

The Villeneuve sword approximates in decoration to all the groups of swords with decorated rings and plain background, but to none in particular. Coutil's drawing (1928,Pl.IX,9) is the only one known to me, and he shows the pommel with an unusual knob, almost spherical as in the last sword. This may well be a French feature, but the decoration of toothed ornament on the ribs appears to copy Högl or Liptau decoration. The normal patterns on the rings of these weapons are square or metopic shapes but some are incised with chevron designs (Müller-Karpe,1961,Taf.22). The butt of the Villeneuve sword is left plain or has lost its decoration. On balance the sword would seem to be a local version of the types described above, whose date lies within the A1 and A2. The sword is by far the most westerly outlier of the Högl and Liptau groups (Karte 2;3) and implies transmission of this Urnfield weapon or influence in sword manufacture over some considerable distance. At this date, Urnfield expansion included E. France.

Other Ha A 3-ring swords

Four swords, all largely undecorated, belong to the earlier 3-ring type of weapon, but cannot be assigned to any specific type. Three correspond to the standard pattern of leaf-shaped blade with a central ridge and the normal haft with three rings. The weapon from Tarascon (fig.5) has a large spherical button on its pommel, possibly a French characteristic (see above). The blade comes out of its haft, showing
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the rivet holes for fixing the butt and with a long broad tang reminiscent of flange-hilted swords.

The sword from the Saône at Anse is very similar to that from Ockstadt (Müller-Karpe, 1961, Taf. 28, B), a grave find with spurred arrowheads, of Ha A1 date (ibid, 44), a date that would suit all four swords.

The fourth sword, from Chalon-sur-Saône, is different from usual 3-ring weapons, with four grooves on the haft instead of raised bands (fig. 3). However, in other respects, it is similar to early 3-ring weapons, and the relative date just mentioned for Saône at Anse would seem to suit that from Chalon.

Probably Aldrans or Wörschach type

A 3-ring sword from the Saône at Tournus (fig. 6; Tintant, 1958, fig. 10) has no direct parallels anywhere, but seems closest to Müller-Karpe's Aldrans or Wörschach types (1961). The pommel decoration is close to two swords, one of which is in Müller-Karpe's Aldrans group, the other in his Wörschach type (1961, Taf. 34; 4, 5). The haft decoration is quite dissimilar to these groups but the pommel may give an idea of the date. There are four outlines each side of the blade, engraved, according to Tintant (1958, 74ff), with a four-pointed burin, and the ricassi, which extend a long way down the blade, are blunt. The sword is probably a French-manufactured weapon although the pommel might suggest an import, and the date, from the closer groups mentioned above, is Ha B1.

Stockstadt type

Two French swords fall within this group of characteristic weapons. That from Blénod-les-Pont-à-Mousson is in all respects a Stockstadt sword (Müller-Karpe, 1961, 49-51);
the type differs markedly in its decoration from other cup-pommel weapons. The main motifs of this group are semi-circles and concentric circles; both figure on this sword (fig. 8), particularly on the pommel. There is a lack of ornament on the hilt, where the sword is broken, and damage elsewhere on the hilt has probably removed any engraving. Two groups of concentric circles remain below the pommel, and on the blade there are two sets of outlines, with semi-circles at the ricassai. Poirot (1958, 474) states that the blade has a short tang, inserted into the haft and riveted at the shoulders. He also comments on the different patinas of the blade and pommel, and of the hilt, which suggests to Poirot that the hilt is richer in tin. This difference would imply that the pommel was cast separately from the hilt and fixed onto it afterwards by some means.

The sword from the Musée de Picardie is unprovenanced but probably was found in France, and maybe belongs to the Stockstadt group. Certainly the decoration (fig. 7) is that found on swords of this type, with semi-circles on the pommel (top and bottom), the butt, and blade, down which it reaches further than Müller-Karpe shows (1961, Taf. 49, 2). The shape is uncharacteristic for the date of Stockstadt swords, and is either a close copy of the Mörsigen sword from Vienne (q.v. relevant chapter) or from the same mould. Müller-Karpe's drawings of both are inaccurate, and his positioning of two such similar swords in different chronological periods is surely inaccurate (ibid., Taf. 103), due, no doubt, to his bad illustrations. The date of the 'France' and Vienne swords is puzzling. Both correspond to Mörsigen swords with some Variant I and II features on each, and the date assigned to the Mörsigen group is firmly Ha B3. But Stockstadt swords are dated by Müller-Karpe to Ha B1, mainly by their decoration and closeness to other cup-pommel swords, as no closed finds for the group are known. It would be much more satisfactory
to see the semi-circle decoration as a reflection of Ha B2 and B3 spearhead ornament (Vogt, 1942) as Müller-Karpe admits might be the case (op. cit. 50). Also, the decorated ricassi on Stockstadt swords (again with large semi-circles) recall the blade ornament of the Flörsheim antenna swords (ibid., Taf. 52). Müller-Karpe suggests that the altering of the pommel shape to an oval configuration on two Stockstadt weapons (ibid., 50) might be a Ha B2 feature which would fit the date proposed above. Such a date would thus reduce some of the discrepancy between Stockstadt weapons and Morigen swords, shown by the two French specimens above, and it would involve seeing the Stockstadt type as a peripheral group succeeding the Königsdorf cup-pommel swords. This is borne out by the European distribution (ibid., Karte 5). A certain amount of retardation in a typological scheme outside its main area must also be considered, as for example in East France (Müller-Karpe, 1959, 175 n.1). So it is suggested that a relative date of the latter part of Ha B1, and into Ha B2, is most probably for the French examples of Stockstadt swords, if not the whole group.

Nearly all the swords were found in a narrow distribution pattern, the Saône and Upper Rhône valleys, which seems to have been an area of some importance in the production of swords (fig. 10). Alternatively, it could represent an area of settlement, importing swords from further east, where 3-ring swords were much more common. Probably both these views are correct, with a large amount of evidence for the former in the shape of obvious French copies or versions of E. Urnfield 3-ring swords.
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ATLANTIC LEAF-SHAPED SWORDS
ATLANTIC LEAF-SHAPED SWORDS

The early Urnfield flange-hilted swords, imported into North and West France, had an effect on local weapon production out of proportion to their small numbers. Based on an earlier fabric of bronze-working (Ronnoen swords), the flange-hilted weapon became the major sword type of the French Atlantic and Channel coasts and riverine system, before the advent of the carp's-tongue sword. With the increasing complexity of production and transmission of bronze artifacts in this period, a diversity of end products resulted, and a highly complex typology within the group as a whole. I have attempted to divide the group into several broad typological stages, partly following earlier works; but it must be stressed that the divisions should not be held as fixed or seen in the same light as some other sword types which may fit into a particular area or into a close-knit homogeneous class. The swords are catalogued as a whole (see Volume 2) but the list given hereafter is broken up into several categories, reflected by the sword and hoard typology, explained below.

Class I a

Hemigkofen sword copies or local versions (see Chapter, Hemigkofen swords) plus:
1. Seine at Les Andelys (Eure)
2. Garonne at La Réole (Gironde) (fig.1)
3. Romaine (Somme)
4. Provenance unknown (M. Rheims)

Class I b

Swords with wide rounded shoulders, the undersides of which form an acute angle with the tops; the blade normally has
one outline or none.

1 Garonne at Meilhan-sur-Garonne (Lot-et-Garonne)  
2 'Gironde'  
3 Hénon (C.-du-N.)  
4 Kerguérou (Fin.) Hoard  
5 Camp de Liercourt (Somme)  
6 Loire at St. Nazaire (L.-Atl.)  
7 Longueau /Montières (Somme)  
8 Louviers (Eure)  
9 probably Marne region (British Museum, ML 1205) (fig. 2)  
10 St. Simon (Oise)  
11 Seine at Paris (Ashmolean Museum, 1927-2261a) (fig. 3)  
12 Seine at Paris (1927-2261b) (fig. 4)  
13 Seine at Paris (1927 - 2261c) (fig. 5)  
14 Seine at Paris (1927-2261d) (fig. 6)  
15 Seine at Paris (1927 - 2235) (fig. 7)  
16 Seine at Paris (M・Lyon)  
17 Seine at Vernon (Eure)  
18 Trieux at Plourivo (C.-du-N.)  
19 Provenance unknown, probably West I.-et-V. or East C.-du-N. Hoard.  
20 Provenance unknown (Coutil, 1928, Pl. VIII, 26)

Class Ic

This is closely related to the last group, but does not have such clear-cut characteristics. The shoulders are rounded but not as wide or pointed as in Class Ib; and the blade has one outline or none.

1 Bazacle (Hte.-Garonne)  
2 around Beauvais (Oise)  
3 Dordogne at Condat (Lot)  
4 Jaulzy (Oise)  
5 Loire at Nantes (L.-Atl.)
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6 Longueville (Calv.) Hoard
7 Ouche at Dijon (C.-d'Or) (fig.8)
8 Seine at Charenton (fig.9)
9 Seine at Charenton (fig.10)
10 Seine at Paris (M: Ashmolean, 1888-1384) (fig.11)
11 Seine at Pont de l'Arche (Eure)
12 Vézillon (Eure)
13 Fort-Harrouard (Eure-et-Loir) Settlement
14 Saône at Fontailler (C.-d'Or)

Class I d

Swords in this group resemble the above in decoration and blade-shape, but have V-shaped shoulders. Apart from the fragmentary state of some weapons the dividing line is not always clear between a U-butt and a V-butt; nevertheless, the shape usually approximates to the latter, with straight tops to the shoulders.

1 around Amiens (Somme)
2 Caix (Somme) Hoard
3 Chalons-sur-Marne (Marne) (fig.12)
4 Chalons-sur-Marne (Marne) (fig.13)
5 Kerguérou (Fin) (uncertain) Hoard
6 Loire, Bassin de Penhoët (L.-Atl.)
7 Loire at Nantes (L.-Atl.)
8 Loire at Font de Pirmil (L.-Atl.)
9 Plestin (C.-du-N.) Hoard
10 'le Canal à Reims' (Marne) (fig.14)
11 St. Brieuc-des-Iffs (I.-et-V.) (uncertain) Hoard
12 Seine at Paris (M: Ashmolean, 1927-2236) (fig.15)

Class I e

Three swords only are known, with strongly tapering blades and broad V-shoulders.
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1 probably around Abbeville (Somme)
2 Albert (Somme) (fig.16)
3 Provenance unknown (M.A.N.)

Class II - St. Nazaire swords

Swords with predominantly V-shoulders, deep ricassì, and blades with several incised outlines.

1 Aisne at Choisy-au-Bac (Oise)
2 Aisne at Pont de Paisy (Aisne)
3 Amboise (Indre-et-Loire) Hoard
4 around Amiens (Somme)
5 around Amiens (Somme)
6 around Amiens (Somme)
7 Bel-Air en Brélès (Fin.)
8 Boud-Gwen (C.-du-N.) Hoard
9 Combon (Eure) Hoard
10 Conflans (Loiret)
11 probably Épernay (Marne) Hoard?
12 Garonne at La Réole (Gir.)
13 Grotte de Fontanguillère (Dord.)
14 Île des Eaux en Crossac (L.-Atl.)
15 Libourne (Gir.)
16 Loire, Bassin de Penhoût (L.-Atl.)
17 Loire/Chésine (L.-Atl.)
18 Loire/Chésine (L.-Atl.)
19 Loire at Nantes (L.-Atl.)
20 Loire St.Anne at Nantes (L.-Atl.)
21 Loire at St. Ay (Loiret)
22 Loire at St.Nazaire (L.-Atl.)
23 'Graviers de la Marne' (fig.17)
24 Montières (Somme)
25 Montoir (L.-Atl.) (2)
26 Les Morandais (C.-du-N.) Hoard
27 Octon (Hérault) Hoard
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28 Pineuilh (Gir.) Hoard
29 Pirô (I.-et-V.)
30 Pirô (I.-et-V.)
31 St. Brieuc-des-Iffs (I.-et-V.) (blade) Hoard
32 St. Denis - de - Pile (Gir.) (2) Hoard
33 Seine at Paris (M: Ashmolean 1927 - 2233) (fig.18)
34 Seine at Paris (point only)
35 Provenance unknown (Orléans Museum)
36 Provenance unknown (Rennes Museum)

Moulin de la Prade (Gir.) Hoard - see also Class III
Moulin-Neuf (Gir.) Hoard - see also Class III

Class III

Swords with three slots in the haft, rounded midrib or blade section, and usually V-shoulders

1 Caubert (Somme)
2 Loire at Buzay (L.-Atl.)
3 Moulin de la Prade (Gir.)
4 Moulin-Neuf (Gir.)
5 Seine at Poissy (Yvel.) (fig.19)
6 Seine at Pont de l'arche (Eure)
7 Seine at Rouen or Paris (fig.20)
8 Seine region (British Museum)
9 Seine region (British museum)

Class I a - Early Urnfield sword copies or local versions. This group is self-explanatory, and occupies the same position in Atlantic sword development as those described under Hemigkofen swords (q.v.), except that native characteristics are more apparent. For example, the Romaine sword (Breuil, 1900, fig.4,30) has a butt very similar to the classic Hemigkofen shape, the hilt however has a rivet slot instead of holes, and a narrow pommel without 'ears'. The rivet slot
was an early development, probably as a result of casting many rivet holes close together -fig.1, La Réole (see also the Hemigkofen sword from the Loire at Bellevue, and the Erbenheim sword from the Saône, above). Although it would seem unnecessary for such a large number of rivet holes merely to hold on a side plate the practice was common on this early group - the sword from Reims Museum (Coutil, 1928, Pl. IX, 24) has five in the upper hilt and three each in the shoulders. The other weapon included in this group (Coutil, 1928, Pl. IX, 3) has a haft similar to the Hemigkofen group but with marked ricassi, which is a characteristic of Atlantic swords. La Réole, dredged from the Garonne, is a classic example of these terminal Urnfield swords produced by local craftsmen (fig. 1; Coffyn, 1967, fig. 1, 1). The shape is more accentuated, with a more exaggerated leaf-shaped blade, rounded Hemigkofen shoulders, and three slots in the haft. These on close examination prove to be run-together rivet holes, while there is one outline running around the blade edge: both features of the classic Urnfield weapon found to the North and East of this example, which is unusually far South and West.

The relative date of these weapons should be after the arrival of Urnfield swords from East France, and since the Hemigkofen swords were current through all of Ha A and possibly into the earlier part of Ha B, these Atlantic versions might date from the latter part of Ha A or into Ha B. In terms of absolute dating, these stages would be somewhat later than the German date; how much more is uncertain, especially in the extreme South and West. The class is very difficult to define in real terms, as the extent to which a sword may show influence from one side or another can vary greatly. Such a sword is that from the Ouche at Dijon (Class Ic), classified as such because of the fairly wide shoulders; but the pommel of the sword is quite similar to that on the Hemigkofen sword from the Tarn at Lasbordes (q.v.). Obviously, there is a considerable overlap
between all these classes, which are defined on the mean of a group of characteristics.

Class Ib (figs. 2-7)

Form: As stated above, the main feature of these swords is that the shoulders are strongly curved and wide, with the top of the blade also rounded, to meet the point of the shoulders at an acute angle. Ricassi are rarely present, and the blades are decorated with at most one outline. This class corresponds to Burgess' (unpublished) Class III weapons in England, which are from S.E. England, especially the Lower Thames Valley. Nineteen are known from England, and very few from Ireland — many less than Eogan (1965) shows (Burgess, personal communication, 1968); and one only from Scotland (Coles, 1959, 22) from the River Tay. This compares with the twenty classic weapons from France in this group and the closely related Class I c (12 swords), with less extreme shoulder width. It is suggested here that the swords of Class Ib represent a further typological progression on Hemigkofen/Erbenheim weapons, just as is found in Britain.

There is some variation within the group. Blades, where intact, show a strong leaf-shape, and usually have one outline parallel to the edges, ending below the outer rivet holes of the butt. Several are undecorated except for a sharpening groove right at the edge of the blade, and the cross-section is based on the lozenge or rounded lozenge shape found in Hemigkofen and Erbenheim swords. But already the central ridge is more accentuated in some specimens than is ever found in the Urnfield weapons, and on
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the sword from the Marne region (fig.2); it might almost be called a midrib. This surely is a pointer for the technical development of the strong, broad midrib found on carps-tongue swords of later date. In nearly all the swords of this class which have been examined in the hand, the central ridge becomes much more accentuated, almost a rib, in between the shoulders, where it stops either at the level of the hilt or at the first rivet hole in the hilt (fig.3-7). This can be seen on Briard’s drawings of some West coast swords (1965, figs. 63, 64; 1961, 34, 1), but it must be stressed that his manner of drawing these swords is most misleading. The impression is that the swords have large, rounded, sharply delineated midribs, as on carps-tongue swords, but in fact the cross-section is exactly the same as on the Seine/Somme group. This can be seen in Briard’s drawing of the Kerquérout sword (1961, 34, 1), as compared with its section; this sword is a classic example of the Ib variety, with a low rib between the flanges.

Distribution: (Map, fig. 21) The area of finds is unusually localized in the Seine basin, with few outliers in the more usual range of other Atlantic weapons. There are a few from the Somme and Brittany; but the main links of this group obviously lie with the U-shouldered British swords (Burgess’ Class III). Taking the Class Ic swords as close relatives increases the Seine distribution pattern, and implies that the main contact between the makers of these round-shouldered swords was cross-channel, not between Brittany and the Seine/Picardy region. Which area, if either, should be considered ‘ancestral’ is difficult to assess, since in Britain and France the same origins for the round-shouldered swords are postulated
(Burgess, unpublished M.A. thesis, 1960, for British material). But it cannot be doubted that there was very close contact of some sort during the manufacture of these weapons between the Seine and the Thames, even though the Hemigkofen/Erbenheim swords in these regions may have been distributed by sea from the Central Rhine area independently of each other. Clearly sea and river transport was the main means of travel by the disseminators of these bronzes, and both the Channel and Atlantic coasts were their normal routes.

Class Ic (figs. 8-11)
As explained above, this group is separated from the preceding by the narrower shoulders, which also tend to be more sloping. It is not certain whether these swords should be considered transition weapons from Hemigkofen/Erbenheim weapons to the Ib class, or intermediate Ic/Id examples. Possibly both is true, and as such these should merely be taken as variants of the U-shouldered class. This tends to be confirmed by the distribution (see Map) which is the same as Ib swords, and the dating, since they normally occur in the same horizon of hoards. Some at least must stand typologically between the Ib (round-shouldered) and Id(V-shouldered) group. The date of both Ib and Ic classes will be considered later, in terms of the Atlantic leaf-shaped swords as a whole, but it suggests that there is contemporaneity between the groups at least in Brittany, although one might expect the Ib class to be earlier if it is ancestral.

Class Id (figs. 12-15)
These swords share some of the attributes of the preceding two classes. Blades are single-outlined or plain, but the shoulders are straight on the top, and form a narrower angle with the hilt than is common on Class II weapons. This would
seem a minor technological feature, until the distribution is considered, when it is noticeable (see Map) that of the twelve known, six are in Brittany/Loire Atlantique and six in the Seine/Marne/Picardy area. Perhaps twelve is too small a number from which to draw far-reaching conclusions, but two main reasons for the different hilt shape seem plausible. Firstly, there is evidence that these Class I swords are in part contemporay with the Class II weapons (this will be considered later). Given this argument, the V-configuration of the shoulders would stem from the shape of Class II weapons' shoulders - but a wider angle with the hilt would not be carried over (due to the background of a narrower angle on Class Ib swords). Alternatively, the few V-shouldered Urnfield weapons found in the Seine/Marne regions might have affected the Ib and c Classes in the same way, as is suggested below, that they may have caused the V-shoulders on Class II swords.

Whichever argument is true (if either), the result on Class Ib or Ic swords (round, broad-shouldered) would be just that shown in the two swords from Chalons-sur-Marne (figs. 12, 13) and the weapon from the Bassin de Penhouët (Briard, 1965, fig. 63, 3). The other swords in the group with either fragmentary shoulders or sloping butts would (if in fact belonging to this group) represent a general fusion of Class I and II construction methods. Two specimens from the Loire, Pont de Pirmil and Nantes (ibid; fig. 64, 1-2) show just these characteristics, and with Class II and III swords must contribute to the development of carps-tongue swords.

Alternatively, the possibility of a technological development without any outside influence, of the V-shoulders must also be kept in mind. The facts would best fit a development of this feature in the area of West Germany, exported into the Seine area as mentioned above, in the latter part of Ha A (Cowen, 1955, 109); that is, Cowen's Early Decorated Group
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of swords. These would probably pre-date Atlantic swords, and would maybe constitute the best origin for the feature of the V-shoulders, both on Class II and Class Id weapons.

Class Ie (fig. 16)

Two swords and a dagger of very similar shape are known of this type, which is quite distinct. The shoulders are broad, straight-topped, the rivet holes very small, and the strongly tapering blade is oval in section and undecorated. The V-shoulders suggest an offshoot from Class Id, but the rest of the characteristics are unknown among Atlantic swords. The best parallel for the blades would be Atlantic trapezoidal rapiers, except for the different cross-section, or perhaps an even better parallel, but from a quite different area, would be the Scandinavian/N. German tanged swords of Mont. IV/V (Sprockhoff, 1956, 74ff; Baudou, 1960). Few contacts are known between these areas, but one thin-tanged Northern sword is known from the Petit-Villatte hoard of carps-tongue type (Janse, 1924, 303, fig. 7). Little can be said about the relative date of Class Ie swords, since none are associated, and since they are so untypical.

Class II - St. Nazaire swords (figs. 17, 18)

This group has varying characteristics, but V-shoulders sloping strongly from the hilt, a blade decorated with 4 to 6 outlines and deep ricassì constitute the commonest attributes. As in all the groups, exceptions occur, and there are several swords with broad and/or rounded shoulders, and two or three with no ricassì. This might imply some typological development within Class II, just as happens in Class I swords, or influence from Class Ib and Ic weapons (those with rounded shoulders). Briard (1965) has suggested that the development of the ricassì constitutes a pointer to the typological stage of a sword within the group - the deeper and more
square the notch, the later the sword. This seems supported by other features, such as the intricate decoration (assuming this to be a later feature), particularly of the dotted decoration on his St. Nazaire group (Class II swords). Whether this is true or not, the deep, almost square ricasso was common among Class II weapons and must have passed into the carp's tongue group, where the normal technique was to make a flanged ricasso, but this is by no means universal (Briard, 1965, fig. 69; Coutil, 1928, Pl. VIII; Inv. Arch. F6(2)).

The blade shape of Class II varies, but not greatly, from the shape shown by Briard (1965, fig. 62, 6), the sword from Bel Air en Bréles. The eponymous sword for this Class, that from the Loire at St. Nazaire (G. and A. de Kortilet, 1903, Pl. LXXXVII, 1068) has a slightly more accentuated leaf-shape narrower at the top of the blade, but as on most of these weapons the more rectilinear shape noted by Cowen is common (1965, 640). The edges of the blade conform less to an ogival curve than Class Ib and Ic weapons; the broadest part of the blade is nearer the point, and the upper portion is consistently wider, as in one of the swords from Amiens. Even on a sword with such an untypical shoulder profile as the sword from 'Marne' (fig. 23) it can be seen that the upper blade is significantly wider than Class I swords with the same wide, rounded shoulders. Cowen (1956) suggests that it is only a short step from here to the parallel-sided blade, and carp's tongue point, but the transition seems to have taken some time and various forms, since carp's tongue swords occur which have either straight sided blades with no characteristic point or slightly leaf-shaped blades. But this is typical of the fluid borders between one group and another, and there is a clear development in the direction Cowen suggested, even though it did not come about within Class II itself but in the largely succeeding carp's tongue group.
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Two features of these swords remain which seem to deny their straight typological progression into carp's-tongue swords. The first is the blade cross-section which, as in Class I weapons, is of 'concave-lozenge' shape (see Class I illustrations). Where it has been possible to check Briard's drawings (1965, figs. 63, 64), they are again misleading, and what seems to be the characteristic carp's-tongue sword midrib is not in fact so. But at least two of these Class II weapons have higher midribs: Bel-Air and the possible Class II sword from Octon. There is also the possibility that the strongly rounded sections of Class III swords might be an intermediate stage, but here the position is not so clear since their place within the development of Atlantic swords is equivocal (see below). As the technique of fighting seems to have changed from one group to another, with the accent on thrusting probable within the carp's tongue weapons, the midrib may have developed independently as a technological feature. The rib and the hollow-curved point would be suitable for penetration and the rigidity necessary to effect this; likewise, a broad blade is a disadvantage in this form of fighting, which would account for the narrower blades.

The other characteristic of Class II swords which does not correspond to a straight development into carp's-tongue weapons is the decoration on the blade of 4 or 5 outlines. This is often supplemented at the ricassi with rows of dots punched onto the lines, or just dotting which carries on the curve of the outlines, ending below the outer rivet in the butt. Although there are multi-outlined carp's-tongue swords (e.g. Vénat, Inv. Arch. F6(2); Coutil, 1928, Pl. VIII, 31) by far the commonest decoration on these is a single or double outline, or none at all, which suggests there is a connection between them and Class I swords, with similar decoration. Alternatively, Cowen cites the possibility that St. Nazaire swords with decorated ricassi alone and undecorated blades would lead straight onto the carp's-tongue ricassi;
this would support the idea of the undecorated blade as a model for the later carp's-tongue blades (Cowen, 1956). Unfortunately, no such swords are known from France.

**Distribution and Origins:** This last point, dealing with the dotted decoration on the upper blade by the ricassi, leads onto a consideration of the origins of the Class II (or St. Nazaire) swords. Cowen (1956, 640) draws a parallel between the ricassi decoration of later Urnfield swords from further east in France and W. Germany and his St. Nazaire group, but does not attempt to draw any further typological implications. It is possible to extend this parallel between Class II and Urnfield forms - the latter have the V-shaped shoulders and sometimes the multiple outline so commonly met with on Class II weapons (Cowen, 1955, Abb. 12). Cowen contrasts the more richly decorated blades and ricassi of his Early Decorated group (1955, 86) with the plainer earlier swords (Hemigkofen/Erbenheim); and it is just this difference which is so marked between Class I and II swords. There are very few of these Urnfield swords known from the area of Class II finds (see Map ; Cowen, 1955, Karte E), but others which Cowen does not include in his Map must also be taken into consideration - one find in Loiret, two in the Paris region and one in Seine-Maritime bring these weapons into the Class II area (see relevant Chapter). These Urnfield imports are outlined and/or decorated on the ricassi, but since three have the haft destroyed it is impossible to assign them to a specific type. Briard (1965, 190) suggests that the blade decoration of multi-outlines should have derived from the Early and Middle Bronze Age Amorian groups, especially from Tréboul weapons,
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but since he dates the Tréboul group five hundred years before his Atlantic swords the possibility of this would seem small indeed (ibid, 298). So, unless there is radically different evidence for re-dating these groups, and unless the Class II blade decoration is an independent invention, it would seem reasonable to derive these swords from Urnfield counterparts just as Hemigkofen/Erbenheim weapons gave rise to the Class I series.

The distribution of Class II swords is more scattered than Class I, with extensions along the Loire and in Gironde, and one outlier in Hérault (Octon). The Class Id swords, which are related to the Class II series by the straight V-shoulders, show much the same spread, but likewise are very thin in the Seine Basin. The map suggests that particular sword types were popular in certain areas, but that considerable trade or contact was carried on between the Atlantic and Channel coasts. The majority of finds come from the West Coast and Brittany, which shows an interesting correspondence with the finds of carp's-tongue swords (Briard, 1965, fig. 85) and implies that these must be an extension of the same bronze industry, as the typology suggests.

Class III (figs. 19, 20)

There are nine of these swords known from France, and their main characteristic is the use of three slots in the haft in place of rivets and a single slot. Their typological position is not clear, even though there are direct parallels in Britain (Burgess, 1960, Class IIIb; now Class IVb). The British swords show the same features as the French; particularly in the cross-section, which includes a broad rounded
midrib. In the sword from the Seine at Poissy (fig. 9) this stands up from the blade like that on carp's-tongue swords, and in a less extreme form this applies to the rest of the group except Caubert which Breuil shows with a lozenge section (1900, fig. 5, 45). The three-slot pattern is commonest on carp's-tongue swords (although by no means universal) and this taken together with the cross-section might mean that these swords represent an intermediate type between Atlantic and carp's-tongue weapons. Alternatively, they could represent a fusion of carp's-tongue influence and Atlantic swords, especially in the Gironde area where there are no true carp's-tongue swords (Coffyn, 1966, 52-4), and a form of Class I/II sword continues until replaced by Hallstatt weapons. So in this area there would seem to be a fusion of technical features with no succeeding sword types; but it is uncertain whether the same process is at work in the Seine/Somme area, where the largest number of Class III swords are found. Since there are no associations for these Northern weapons the closeness to the area of British IVb 3-slot swords is the only guide to their typological position. Burgess (1960) sees them as a development of Wilburton swords, and suggests that their occurrence in hoards such as Guilsford and Blackmoor may mean that there is a chronological division between them, with the IVb group later. The position of these swords in France must remain equivocal until better dating evidence is found, but their form suggests a typological position between the end of the Atlantic series (decoration on the Gironde group and Loire at Buzay, Briard, 1965; fig. 63, 2), and at the beginning of the carp's-tongue group (cross-section, slotted haft).

Relative dating of Atlantic leaf-shaped swords: Briard (1965, 175ff) has given the fullest account of these swords and the hazards relating to them, up to date. However, his work is written mainly from a Breton point of view so
that some hoards outside Brittany are given relatively less importance. The only associated finds of these swords are from hoards, none from graves. In all the hoards total 18, of which 6 contain Class I and some of these as well as all the rest contain Class II or III weapons. There are in fact only 5 hoards which do not contain Class II swords, and only 2 hoards contain Class III weapons (these last, Moulin de la Prade and Moulin-Neuf, contain swords of 3-slotted (Class III) type, with Class II decoration).

The hoards have been laid out in table form in fig. 22, which shows the main bronze artifacts met with in these assemblages. Briard has already evaluated these for his St. Brieuc-des-Ifs group, i.e. the Breton facies of the type, and which includes some half-dozen certain hoards (1965, 176ff). Apart from swords of the types described above the average contents of the hoards consist of lozenge-section chape spearhead and ferrule, and heavy ribbed palstave. Winged axes also occur in one third of the hoards, and hand tools (possibly for woodworking) in seven of the eighteen, while sickles appear in only four, contrasting with personal ornaments (mostly bracelets) in half of the hoards known. The highest incidence of any artifact other than swords in the hoards belongs to palstaves (12), then spearheads (11) and ferrules (6) — together these are found in 13 hoards — while chapes occur in all cases.

There is a basic chronological framework which can immediately be imposed upon these hoards, based in the first case upon preceding and succeeding groups. This refers to the Rosnoen and carp's-tongue groups, which while overlapping with the Atlantic leaf-shaped
sword group at both ends, would seem to be distinct from it, as even a cursory glance at the relative assemblages will show. But it must be kept in mind the qualifications (discussed at length elsewhere) which apply to relative dating by hoards, largely random associations of objects. Since the hoards considered in this chapter are largely traders' or founders' hoards one cannot assume that the associations were meaningful unless they occur in more specific form than damaged pieces or fragments. So one is continually forced back to a reliance on a system of probability which suggests that among a group of objects (largely contemporary) found in a large enough number of contexts, an average pattern has a higher chance of occurring, all things being equal. Of course, everything is not equal, since the total number of any object is only known from the material one is trying to classify, and numbers of different objects produced may have been widely dissimilar. Even so, a general association of a group of objects emerges from these hoards, but with a very broad and imprecise dating threshold. A group of objects such as these can be dated relatively either on a typological progression of artifacts or by the absence or presence of artifacts - this last being subject to the random pattern referred to above and thus useable only in the most general sense.

With this in mind the hoards fall into something of a discernible pattern. Apart from Atlantic leaf-shaped swords, the other sword types which occur are Rosnoen (4 hoards) and carp's tongue weapons (2 hoards, and maybe 2 others). Since it is known that these occur most frequently in different assemblages or artifacts, the probability is that the
are hoards containing carp's-tongue swords/related in some way to the carp's-tongue metal-working sphere, generally considered later in date than the Atlantic leaf-shaped swords. The Rosnoen sword fragments found in the four hoards (see table) mentioned above do not necessarily imply that Atlantic leaf-shaped swords were in use contemporarily with them, but that bronze was valuable in whatever form it was collected, broken objects or outdated sword fragments. The finds may suggest merely this or they may also suggest that there was a chronological overlap; the likelihood of their occurring in a later hoard does however diminish with time passing, assuming breakage from use and trading of old for 'new' objects. So that, allowing for this, there seems to be an earlier and a later grouping perceptible. Correspondingly, the occurrence of winged axes in the hoards suggests that there was a change from palstaves to this type occurring within the time span of the assemblages; in the Rosnoen group palstaves alone occur. In this group palstaves (11 hoards) and winged axes (6 hoards); and in the carp's tongue series, very few palstaves are found compared with large numbers of winged axes. Either this means that winged axes were made sporadically all through the Atlantic leaf-shaped sword period, or that the hoards which contain these are later than those which do not. Since they are a characteristic carp's-tongue type, and since carp's-tongue sword fragments occur in two hoards, the probability is that they would tend to be later. In fact, the hoards from Amboise and Longueville (Calv.) may not strictly be Atlantic, but merely Atlantic scrap or out of fashion objects in carp's-tongue hoards. It is interesting to note that mainly Rosnoen sword blade fragments occur in the Longueville (S.-et-M.) hoard which
contains also a Class I blade fragment and a piece of a rod-tanged sword. In such cases hoards are sometimes taken to be 'mixed' or even worthless for study, but in fact such a situation is only to be expected when a reasonable conception of a hoard is held.

Following the general scheme above, that the winged axes and carp's-tongue sword fragments probably represent a later series in the hoards, it is interesting to note how the sword typology corresponds to this: Winged axes tend to occur with Class II swords most frequently, and twice with Class Id weapons (although in this latter class it is exceedingly difficult to determine the difference from other Class I weapons if the remains are fragmentary). This suits the idea stated above, that Id swords probably stem from Class II (V-shouldered) influence on later Class I weapons, and are thus late in the hoard groupings. Depending on the doubtful classification of fragments, the Ib/c series of swords do not seem to occur in hoards with winged axes: this may again be an admittedly tenuous pointer to their earlier date, which seems typologically fairly well assured. But the high possibility of any of these swords turning up as scrap objects in hoards of the period makes these suggestions very difficult to sustain especially as they are based on an absence/presence factor.

As already mentioned, hand tools such as chisels and gouges are fairly common in the hoards, presumably an indication of the large amount, among other things, of boat building which must have gone on, attested by the coastal and cross-Channel contacts. Socketed
hammers are few, only two known, but there are four round-socketed axes, three with wing decoration or central constriction. These are very common in Wilburton hoards in S.E. England, and form just one small example of the contacts which must have gone on between these groups. All the characteristic artifacts of these French hoards can be found within the Wilburton group, as Briard has already noted (1965, 195). Burgess (1968) has recently mapped these, and the same pattern of cross-Channel contacts can be seen in this period as in earlier phases, and to some extent in later. There are however some differences in that the average Class II sword, forming the main type of the French hoards, is more often decorated than the British Wilburton swords which correspond to the French Id weapons as well. Burgess' Class IV b type (1960) are however included within the Wilburton group, as transitional weapons to Ewart Park swords; these, as seen above, are not common in France. Six of the nine Class III (Burgess' Class IVb) weapons from France come from the Seine/Somme area, so it is probable that they are British imports. But by and large the French V-shouldered swords (Classes Id,II,III) approximate to the British Wilburton group in its S.E. English sphere (since local variations occur outside this area). Subsequent developments in both groups lead in somewhat different directions, as the carp's-tongue sword was the commonest and most numerous weapon after Atlantic leaf-shaped swords in France, with a few Ewart Park sword imports. In Britain, the development seems to have been in the other direction, towards Ewart Park weapons, via Class IVb, and with carp's tongue swords playing a minor role, in the main area of Continental contacts, S.E. England (Burgess, 1960). So it would
seem that in this Atlantic group Britain and France shared a common bronze industry, with much the same development within both areas, and certainly in the earlier sword types, derivatives of imported Urnfield weapons. It seems fair to call this an industry, since about 140 finds of Class III and IV (Wilburton) swords are known from Britain (i.e., separate find spots) (Burgess, letter of 5 October, 1968), and about 100 separate finds are known from France (see catalogue). Allowing for sales to the bronze foundries in the last century and earlier, and without doubt numerous finds to be made in French private collections, etc., the numbers from France should increase greatly; but even as they stand at the present they are suggestive of a massive bronze working industry based on maritime contacts.

In terms of German relative chronology, these swords must all post-date Hamikofen weapons, being derived from them; this would mean a date of probably later Ha A for the French copies (Cowen, 1955, 109) at the earliest. Cowen's date for his Early Decorated Group, which may have given rise to Class II swords, is later Ha A (1955, 109); while the carp's tongue group has parallels which suggest a tie-in with HaB3 in S.W. Germany (Müller-Karpe, 1959, 170ff). So it is likely that the relative date in terms of Müller-Karpe's chronology would be within the earlier part of HaB, with origins maybe in the later Ha A period. Burgess suggests a date of c.950-800 (1960) for the Wilburton group, which although similar in content to the French Atlantic group (i.e. the classic Class II sword and hoard of Isleham, Britton, 1960), does diverge in its later stages. In any case, a system of calendar years based on relative dating and hypothetical 'ages' of
types, without any independent absolute dating means, is, it seems to me a risky and misleading business. With relative dating, the correlations matter more than the duration (in absolute terms) of a group of objects, and at any time the relative scheme can be lengthened or shortened without altering its overall pattern of comparisons. A 'long' or 'short' period, without other evidence than bronze artifacts (as is the case here) is almost totally a matter for subjective judgement. Probably the best solution in this case is to assign to the St.-Brieuc/St. Nazaire group its own place between the Rosnoen/imported Urnfield swords and the carp's-tongue group as part of the Atlantic facies, and stress its derivation from Urnfield weapons whose place in the German dating scheme is well-known.

Relations with other parts of Europe are not very numerous, with scattered examples from the North Sea area (Cowen,1952)135-8,144-6) and also from the Swiss/S.W. German region (Cowen,1955,152-3). These last lie on a route from the Seine/Somme/Marne area South-East to the N.Swiss surrounding regions, used extensively in the Late Bronze Age, but perhaps most markedly shown by rod-tanged swords (see relevant chapters). Most exchange seems to have been in a N.West direction, but specifically Atlantic types must have been carried along it at periods (e.g. Rosnoen, carp's-tongue). For example, two slotted hilts are known from the Larnaud hoard (Coutil,1914,III), and a banded lozenge section chape, again on this route.

There are also some leaf-shaped Atlantic swords from Iberia (Almagro,1966,fig.55; Savory,1949,fig.4,List
p.153; Savory,1908,fig.74) of very mixed character. About a dozen are known, seven of which would be Class III (three-slotted) in the French scheme, and some of these are quite similar to carp's-tongue weapons. There are two Class Ib or lc swords, one of which, Alhama de Aragon (Almagro,1966,fig.55,4) is still associated with its chape; but apart from these none seem to relate directly with the N.W. French series. It was stated earlier that the Gironde group may have been closely associated with Iberia, and the Moulin de la Prade and Moulin-Neuf swords with three slots in the hilt are almost certainly to be tied in with the Spanish group.

This S.W. expansion seems to have been a late phenomenon, since very few of the earlier varieties of Atlantic swords occur in the Garonne area, and in fact these seem to be the first swords to occur in the area (Coffyn,1967,792). It is likely that these would have been brought by sea (although production of at least some of the example seems to have taken place there) as part of trade routes to and from Spain and maybe the Mediterranean. Certainly in carp's-tongue contexts such routes existed (Hawkes and Smith,1957; Savory,1968,passim) and it is likely that trade in at least swords with Spain was established in the earlier period. There is some little evidence for a route up the Garonne/Ariège river system into the Mediterranean shown by a few swords, and also some evidence from Médoc axes (Savory,1948,fig.4). The possibly British waisted socketed axes in the Gironde may show the other direction of these contacts.

Thus in summary, the swords of Class I and II are
spread from the N. German coast round France into Spain with localised denser distributions in N. France and S. E. England. They are normally found with certain other classes of bronze objects, described above for the French swords, but there is virtually no information on their cultural context, since none are known from graves and only one, Fort-Harrouard, from a settlement site. In a few of the associated bronze types, such as palstaves, there is a differentiation between trident and heavy ribbed types (Savory, 1948, fig. 5), which in distribution corresponds to Class I and II swords respectively. In Britain, round-socketed axes occur in Wilburton hoards, while in Spain the double looped palstave is the commonest associated type of axe: likewise in the Gironde Médoc axes occur with Atlantic swords (Savory, 1948, fig. 4). Some regional differences like these are to be expected over such a large area, but there are many common features, such as the lozenge-section chapes which are uniform or closely related throughout. So before the manufacture of carp's-tongue swords and the whole related series of bronzes there appears to be a large Atlantic industry, with the leaf-shaped sword of Class I and II as its main feature, centred around the English Channel. The carp's-tongue complex had thus a developed bronze industry and trade system existing over the main area of its distribution, and extended and increased the production of artifacts. The Atlantic leaf-shaped sword complex had correspondingly a like basis on which to develop, the Roenoen group. Through all these Atlantic bronze industries the most significant factor seems to be the use of sea and river transport. It would appear that this plays the major part in the dissemination of the bronzes and from this it would seem reasonable to suggest that trade played a major part in the economy of the Atlantic bronze makers.
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LATER URNFIELD FLANGE-HILTED SWORDS
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LATER URNFIELD FLANGE-HILTED SWORDS

Various types of swords are known from the later Urnfield period, connected with Urnfield groups in the East of France. Many of these are imported weapons and so can be identified by reference to their areas of origin, mostly in Western Germany. They have largely been described and dated by Cowen (1955) and so are not dealt with at great length in the following sections. Cowen makes the point that the delineation of one type from another is not at all easy, especially with the Early Decorated Group. Those specimens discovered or collected since his study (1955) confirm this: a possible explanation is that many are found in the overlap area of Urnfield and Atlantic leaf-shaped swords, and may be the result of this interaction of traditions.

Early Decorated Swords

Cowen (1955, 86ff) has defined this group of swords, of which one or possibly two examples are known from France:

- Boutigny (Essonne) Hoard
- Larnaud (Jura)

Cowen's Early Decorated Group (ibid), which he stresses cannot be termed a type, comprises a number of swords with more or less general characteristics, including dotted or incised decoration on the blade by the ricassi. The swords represent a typological development on Erbenheim and Hemigkofen swords, with the prevailing characteristic among all specimens of a hilt with expanded centre. This development of a swollen centre to the haft was traced through Erbenheim swords (q.v.), and the presence or absence of a pommel tang on the later weapons seems to have been a matter of personal choice, based on either of the two prototype sword groups. In this case, none of the
swords have pommel tangs, and of the examples known, only two are found in France.

Cowen has described the Boutigny hoard which contains a decorated fragment of such a sword, and has shown A. de Mortillet's drawings of the entire find (ibid, Abb. 10; A. de Mortillet, 1908, 105ff, figs. 37-45). Cowen would date the hoard to Ha B, and Sandars agrees with this attribution, stating that the hoard has a marked Ha Bl emphasis (1957, 241, n. 7). Included in the finds is a winged axe, a tanged knife common in Ha A2 or Bl, a waisted socketed axe, and fragments of embossed bronze from what may have been a decorated Italian comb helmet, or a cuirass, although the latter is less probable, from the decoration.

The other possible Early Decorated sword is a broken piece of hilt from the Larnaud hoard (Coutil, 1914, Pl. III, 18) which is similar to the hilts of other specimens. The latest date for deposition of Larnaud is Ha B, and most of the Boutigny bronzes are paralleled in it, including a close example of the same sort of pin-head which appears in both, and the axe types. It would appear from Cowen's distribution map (1955, Karte E) that both these swords, and possibly others mentioned in the main catalogue but unidentifiable are imports from Germany, both late specimens, from the date.

Locras type

Cowen (1955, 92-4) has defined this type, of which six only are known, and catalogued two from France:

Pouan (Aube)
Larnaud (Jura) Hoard

These swords seem to represent an evolved form of Erbenheim
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weapons, as all possess a short triangular pommel tang, seen on both these above. Little can be said about either of these, since the Larnaud example is merely a fragment from a hilt, and which could date from BrD to Ha B, the span of the hoard. None of the others of the type are associated with other objects; Pouan (Cowen, 1955, Taf. 10, 3) is a slightly shorter, but unexceptional version of the others, which are found scattered from Holland to Switzerland. All presumably imply a minor use of the later Urnfield swords, probably traded over the area of finds (ibid, Karte E).

Although it is not perceptible on the distribution map, some contact between the makers of these Late Ha A straight shouldered weapons, and those of the Atlantic area seems to have taken place. It has been suggested that the Atlantic leaf-shaped swords (q.v.) of Class I derived from Hemigkofen weapons in the first place, but that the Class II series maybe owe something to Urnfield swords of East France. There seems a direct adoption of multi-outlined blades and square shoulders, with occasionally some ricassi decoration on these Class II swords, but this might relate better to the Ha B Urnfield influence (in Mainz and Forel swords). The Class Id swords however (q.v.) have a plain blade with a single outline, and angled square shoulders: close to the shape and decoration of Early Decorated and Locras swords. There is at least a slight overlap in their distributions, as Class Id swords are most frequent in the middle Marne, the Somme, and a single one from the Seine, in the East; they are the most easterly of these Atlantic types, while the very few Locras and Early Decorated French imports come from Aube and Essonne. There would appear to be some link between the two 'provinces' of metal working in this area; in fact it is not easy to separate plain specimens of both types. This provides an alternative origin for Class Id Atlantic swords, as an alternative to a separate development, which is possible; if this latter view is taken, there is the possibility of the influence
developing the other way, since there are many more Atlantic I d swords in France than the eastern weapons. This would be clarified by some associated finds, and until such are forthcoming, the above must remain hypothetical.

Forel swords

Cowen has described this sword type, of which some six or seven specimens are known (1955,94-6), three or four of these from France.

Larnaud (Jura) Hoard - possibly two fragments
Saône at Chalon (S.-et-L.) possibly two swords
Yonne at Sens (Yonne)
Provenance unknown M:Nîmes

These swords represent the typological culmination of the Erbenheim swords, and their features exaggerate all the characteristics of the earlier weapons. The French examples show this extreme form, especially the sword from Chalon (Cowen,1955, Taf.11,3; better illustration in Millotte,1963,Pl.XX,3), whose hilt centre is cast almost into a complete circle, with broad splaying shoulders below. There is a double row of dots along the milled ricassi, and more punched decoration in the hilt centre, but the blade has only a single outline. The normal Erbenheim/Letten pommel tang is still used on the hilt but the upper part of this is less of a structural feature than formerly – there are no flanges round the edges of the 'horns'. Another sword, from Chalon, may originally have looked somewhat similar to this, but has been reduced in width at the butt at some date, and the hilt is broken (Millotte,1963,Pl. XX,2). The removal of much of the breadth from the upper blade has destroyed most of the shoulders and the lower rivet holes, but from what remains, and the shape, it is clear that
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this is a close relation of the sword.

The Sens sword is virtually identical in size and shape to the first sword described above, but is less well documented since it is in a private collection (Hure, 1931, 26, fig. 64; Cowen, 1955, Taf. 11, 4 (cast)). It is not certain whether any decoration is present on the original - Hure shows none, and the cast examined by Cowen showed none, but the interesting feature of rivet notches at the shoulders is present, instead of a closed hole as on earlier swords.

A piece from the centre of a Forel hilt is in the Musée de Nîmes; undecorated, it is of almost circular shape with a single rivet hole in the centre and one broken at one end. Both top and bottom are broken, and no provenance is recorded for this object, but it probably was found in the Nîmes area, well away from the normal distribution (Cowen, 1955, Karte E).

Cowen lists a Forel hilt, with the top missing and broken at the shoulders, from the Larnaud hoard (ibid, Taf. 11, 8; after Coutil, 1914, Pl. II, 31). This is a somewhat surprising attribution, since the central hilt curvature is not nearly as pronounced as the other Forel weapons, and would probably best suit a classification within the Early Decorated Group as it resembles Seedorf (Cowen, 1955, Taf. 9, 3). A much more characteristic Forel hilt is in the same hoard, shown by Coutil (1914, Pl. II, 17). This is a fragment of lower hilt and upper blade, but enough remains of the hilt centre to ascertain that the edge must have conformed to the circular pattern above the broad, straight shoulders. The usual midrib is present at the hilt, and one of the shoulder rivet notches is visible. Cowen mentions the difficulty of dating anything contained in the Larnaud hoard (1955, 95); he dates it to an advanced phase of Ha B, which is doubtless correct. The hoard seems an amalgamation of hoards from several periods, and among the latest objects are pendants on belt chains, and
flat bronze plate Bourget arrowheads (Coutil, 1914, Pl. III). These, known from the Late Bronze Age Lac du Bourget settlement (used throughout Ha B) are also found in the Camp de Chassey (Dechelette, 1910, 121, fig. 31, 10) Fort-Harrouard (Philippe, 1936-7, fig. 50, 16-17) and various graves and hoards (Baudon, 1912; Soutou, 1958; Sandars, 1957, passim, List XXXIII). The dates vary in HaB up to Ha Q (Soutou, 1958), so there is no help from these in dating the Larneaud hoard.

Cowen (1955, 96, 145) also remarks upon the similarity between the hilt shape of Forel and cast-hilt weapons, mostly from E. France. This has been discussed elsewhere (see Malaucène type, Later Cast-hilt swords), and there would seem to be a definite correspondence between the shape of the flange- and cast-hilt shapes at this time, which would probably best suit a date in Ha B1, or Ha B2, if there is a direct comparison between Forel and Flörsheim swords (Müller-Karpe, 1961, Taf. 52). The Forel and related weapons probably represent the earlier horizon to that typified by the Long Swords, whose hilts draw on Forel prototypes.

Mainz swords

Cowen (1955, 96-7) has defined this sword type, and described in some detail (ibid, 145) the only sword known to him in France. There are two others which should probably be added to the list, which is as follows:

Moselle at Marbache (M.-et-M.)
Saône at Chalon (S.-et-L.)
Seine at La Rochette (S.-et-M.)

The last of these three finds from rivers is best documented. Cowen has described its characteristics and drawn it after Cabrol and Pauron (1937, 4888, fig. 10). Cabrol supplemented
his earlier drawing with a very fine illustration of the hilt, which is somewhat unusual (1939,413,fig.6). The whole sword differs from others in the series by a less leaf-shaped blade and marked rivet notches at the shoulders and it would most closely correspond to the relationship mentioned by Cowen with the Long Swords: "Tatsächlich sind sie nichts anderes als eine Abart der Langschwerter der Klein-Auheimer Gruppe in kleinerem Maßstab .." A strong midrib supports the blade centre, the blade is decorated with many outlines, and the ricassi are surrounded with concentric circles incised into the blade — all Long Sword features.

The other two are more obviously connected with earlier groups. The Marbache weapon (Poirot, 1938,314; Millotte, 1965,97,Pl.II,2) has the same strong leaf-shape and flaring shoulders as Regenstauf (Cowen,1955,Taf.12,5), and probably belongs to this group. The tendency to reduce the numbers of rivet holes in these swords of Ha B date is seen in this example; with these features the sword seems to suit the general pattern of sword manufacture in vogue at the time, which threw up diverse series of weapons.

The sword from the Saône at Chalon (Armand-Calliat,1952, 92,fig.9,151; Millotte,1963,277,Pl.XX,1) conforms generally to this pattern, but with two rivet notches at the shoulders like the Marbache sword. The hilt is strongly curved in the centre, but with flat shoulders and broad pommel plate, which in general correspond to the general practice on Ha B swords. Many of the hilts must have been not only uncomfortable but also inefficient, with a large lump in the middle of the hilt; these Mainz swords would seem to be the typological predecessors of such swords, but with a less extreme shape than contemporary Forel weapons.

It is uncertain whether the hoard from La Grande Pugère, containing sword fragments, should be ranged alongside these
Mainz swords, since typological differences exist (Chauvin, 1956(a), 120; 1956(b) 252ff, fig. 5). There are three sword hilts and various blade fragments, all broken, in the hoard, and one of the hilts, although conforming generally to the above weapons, has a cast pommel. The few rivets in the hilt suggest the pattern seen on Locras swords, but the pommel shape precludes this classification as there is no central knob corresponding to the pommel tang. There is what appears to be the normal Mainz hilt profile, and so the swords certainly seem to conform to the Later Urnfield general pattern. Unfortunately, it has proved impossible to find better documentation than Chavin's notes and photograph (ibid, fig. 5), which is at a very small scale. The contents of the hoard seem to be, apart from the swords described, a winged axe and fragment, an eastern fragment of looped palstave, four Médoc wing-flanged axes, and fragment, one spearhead and fragment, an Urnfield tanged knife with end rivet, about twenty bracelets, circular and flat section, three ribbed bracelets or bindings, a sickle fragment, and a possible anklet, but this is uncertain. The hoard was completed by two chapes, with ribbed decoration and loose rings in staples on one; both taper to a small terminal boss, and are waisted in the centre. Other fragments from the hoard were pieces of heavy wire or pin shafts, two rough ingots and casting lumps.

The date of these objects would appear to cover a wide span, as might be expected. The winged axe is not dated earlier in S.W. Germany than Ha Bl, but its commonest occurrence is in the Möringen/Tachlovice sword horizon (Müller-Karpe's Ha B3, and Millotte's Bronze Final IIIA; 1963, 144-5). The Médoc axes are linked to an Atlantic coast distribution (Savory, 1948, fig. 4) with a number of examples traded to the Saone; these may have come down the river or come along the coast from the west after the possible riverine/overland route via the Garonne and Aude, but their date is too broad.
to be of any use in limiting the span of this hoard. The palstave again suggests Atlantic connections of an earlier date, which is applicable to the knife and sickle. The chapes do not have any direct parallels known to me, of a comparable size and decoration, but much shorter versions, very similar to the ends below the waisting, occur with Mörsigen and Tachlovice swords (q.v.), or with a possible example of a Mainz or Long Sword blade fragment, in the Briod hoard (Millotte, 1963, Pl.XXXVI,15-21). The Grande-Pugère chapes probably represent an earlier form of this, and the later horizon in the hoard, maybe represented by the winged axe, swords and chapes should be around Ha B2.

This would agree with the typological suggestions above that these swords lead onto the long weapons of Ha B2 and Ha B3. The pommel on one of the Grande Pugère fragments suggests connections with the earlier forms of Mörsigen swords found in E. France (e.g. Vienne, q.v.) or weapons which tie in with the Stockstadt type and have a cast hilt (e.g. Malauène). These few Mainz weapons suggest more activity in E. France before the advent of Long Swords than has hitherto been recognised, and suggest indigenous production of Mainz swords in this area.
LONG SWORDS

This group has been identified by Cowen (1955, 97ff), who divides the swords according to their hilt shapes. The common factors linking these weapons are the great length (nearly all over 85 cms), more or less convoluted hilts, and normally rich decoration on the blade and ricassi.

Klein-Auheim type

Brienne (Aube)
Dorset at Longeville (Moselle)
Paars (Aisne)
Seine at Paris

All these swords, apart from the last whose hilt is entirely missing, have been described by Cowen (1955, 100-1, Taf. 13, Abb. 14). Millotte has provided a clearer drawing of the Longeville sword (1965, Pl. IV, 9) and its decoration, if somewhat shaky in outline, but Cowen's drawings of the hilts of Paars and Brienne are accurate, apart from details of decoration on the outside of the flanges on the latter, and a narrower centre to the haft than on the actual sword. The edges of this central swelling are in fact decorated with concentric ovals, a small point, not affecting its classification. All have decorated blades and ricassi ornamented by a line of concentric semicircles, while the feature of rivet notches in the shoulders, noted on Mainz swords, is present on Paars (Cowen, 1955, Abb. 14, 3) and Longeville (Millotte, op. cit.). Their distribution (Cowen, 1955, Karte F) stretches from the Middle Rhine across to the Middle Seine, the same as that shown by Mainz swords, and is situated on the Northern fringe of late cast-hilt sword distribution in France (Mörigen, Tachlovice, Late Antenna swords, q.v.). If the grouping of these cast-hilt groups is considered in Germany (Müller-Karpe, 1961, Karte 7-9), it can be seen that both there and
in France the Klein-Außeim sword distribution and that of
the cast-hilt weapons is mutually exclusive. Presumably
there was a tradition of flange-hilted sword construction in
operation, or a preference for this method, in Urnfield
groups of the period (Kimmig, 1954, fig. 102), which excluded
the import or manufacture of cast-hilt swords in this area.
This would also presumably tie in with carp's tongue swords
in the Seine and Marne, which although dissimilar, belong to
the same technological tradition, and which were preferred
on the Atlantic coasts to cast hilt weapons.

As with all these Long Swords, a date in the latter part of
Ha B is most likely, because of their striking similarity
to the later cast-hilt weapons: in this case, close corres-
dondence with the hilt shape of Tachlovice weapons of Ha B3
(q.v.)

Macon Type

Again identified by Cowen (1955, 104–6) this type is closely
related to the last, differing only in hilt shape which is,
however, individual. Cowen lists three specimens from France;
these should be increased to give, as follows:

Aubepierre (Hte.-Marne)
Chalon-sur-Saône (S.-et-L.)
Le Monétier-Allemont (Hautes-Alpes) probable specimen
'Saône'
Saône at Macon (S.-et-L.)

Four of these swords above, and five out of the six known
have a square projection in the middle of the hilt; otherwise
they are typical Long Swords, although less decorated than
usual in at least two cases. All the swords are straight-
bladed, with midrib, and in this respect they resemble blades
of cast-hilt swords of the types mentioned in the last section.
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The hilts are however less easily identified, although an obvious pointer to connections with other types is seen in the pommel on the Aubepierre sword (Dèchelette, 1913, 61-2, fig. 6, Pl. 19,5), which is of cast bronze. This in fact never filled the entire width of the hilt, so it is likely that some other material, presumably of organic matter, would have completed the hafting of the sword. Perhaps, as Cowen suggests (op. cit. 106) this cast piece acted as part of a pommel, in the manner of Auvernier, or more appositely, Tachlovice swords, sitting inside a bone or horn outer hilt (e.g. Müller-Karpe, 1961, Taf. 68, 4).

Two swords seem to belong to this group, both in Beaune Museum, from the Saône area. At first it was thought that these might be bad drawings of the same sword, but the hilts and the lengths differ so markedly that two separate swords seem to exist. The first, described briefly by Kimmig (1954, 223, fig. 98, ii) has the usual square swelling in the hilt profile, with two notches at the shoulders for the outer pair of rivets. The other, from Chalon-sur-Saône, is over 20cms longer (101.8cms as against 80cms), and shows no rivet notches in Cowen's illustration (1955, Taf. 14, 7); so it is presumed they are two different weapons.

The Saône region also yielded the eponymous weapon, dredged at Mâcon (de Ferry, Arcelin, 1870, Pl. 39, 1), with very little decoration, if the drawing can be trusted, but otherwise identical in features to the above examples. In this respect it is similar to the sword from Le Monêtier-Allemont, which may have been found in a tumulus (Courtois, 1960, 76-7, fig. 29). The weapon is only decorated along the flanged and milled ricasso with a line of short hatchings; its similarity to the Meung-sur-Loire sword in this respect (unclassified; Nouel, 1957 (a) and (b)) caused Courtois to consider it an Early Decorated sword, but its length (79.3cms., c. 87cms. originally), the rivet notches at the shoulders, and the
straight blade make it a certain Long Sword. The lack of a hilt centre makes its exact classification in some doubt; some connection is implied with the Lyngby Briest type sword (Cowen, 1955, Abb. 15.6) by the use of a cap-headed rivet, an uncommon feature on these swords.

This last parallel is more significant when the correspondence of Mâcon swords with other types is sought. The best counterpart to these flange-hilted swords is the closest, a cast-hilt sword from the Saône at Mâcon (de Ferry, Arceilin, 1870, Pl. 39.4: see Later cast-hilt swords), which has a square projection in the centre of the hilt, a large round pommel, and many simulated rivet heads on the haft faces. There are too many rivets for a Mâcon sword (15), but the attempt to imitate a flanged hilt with rivets is obvious, and along with the square hilt centre implies that this weapon was made by a smith who was well acquainted with Mâcon swords. Three other swords with an exact replica of the square hilt centre are known, all antenna swords (q.v.), one of which is from Vendée, at the Gué de Velluire, and the other two are from Denmark. The distribution of Tachlovice, Mörigen and Weltenburg swords (Müller-Karpe, 1961, Taf. 7-9) shows how much contact there was between Jutland via Germany and Switzerland/S.E. France, and the Briest sword connection (see above) confirms this. A sea route is more likely for the Vendée sword but the link with the North seen in square-centre hilts would seem to have been overland, with an intermediary at Hagen (Cowen, 1955, Karte F). As noted for the later cast-hilt swords, the Saône valley was part of a flourishing Ha B 2/3 bronze industry, of which these swords are just one manifestation.

**Port/Nidau type**

This is the final of Cowen's divisions of Long Swords (1955, 106-8) and is mainly found in Switzerland, with a single
example listed by Cowen from France. Another example is known, like the other, broken:

Granges (S.-et-L.) Grave (?)
Provenance unknown M: Langres

Cowen has described this group fully, including the example from Granges, which may have come from a destroyed urn grave with a destroyed metal vessel (Armand-Calliat, 1952, 96-8, fig. 10; Kimmig, 1952, fig. 24, F). The find is a single blade fragment which, if it comes from the same area of a sword like that from Port/Nidau, must have been part of a very large weapon. It shows the blade decoration which is such a feature of these swords, of incised groups of semicircles and outlines following the blade edges, enclosed within dotted lines. Cowen would seem quite correct in calling some of these Long Swords "Prunkwaffen", and the Port/Nidau sword exemplifies this with a length of 101.1cms., and a one-handed hilt, probably too large to use efficiently in action.

Another example of this type is known from France, but unprovenanced, in the M: Langres (Mouton, 1954, 50-1; fig. 31:33). The hilt and the blade are both broken, and the decoration which remains is slightly different from the Port/Nidau and Granges specimens. Four sets of semicircle patterns occur on the extant fragment, which makes for a richer ornament than the above, composed of the same motifs. Open plain semicircles contrast with groups of concentric semicircles while the outlines only start some way down the blade. The weapon could never have been so large as the others, since the width has passed its greatest on the fragment at the break; however, it relates to this type, and conforms to the same sphere of metalworking, characterised particularly in Switzerland/S.E. France by the use of concentric semicircles (Vogt, 1942, passim). As Cowen notes (1955, 108) these swords with
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A short pommel tang, represent the final development of the Letten/Erbenheim/Locras/Forel progression, taken over into the particular idiom of the time. The date should, by the similarity with other types, be within Ha B2 at the earliest, and mainly Ha B3.

All these long, decorated swords seem to represent the final development of Urnfield flange hilted swords, and correspond to many of the features seen on these. However, succeeding bronze swords, those of the Hallstatt type, differ markedly in most characteristics. Cowen (1967) notes this lack of antecedents for the Hallstatt sword, which may have overlapped with the later Long Swords, but which drew from these virtually no structural or decorative features. The Long Swords do in fact seem to be weapons adapting to some specific social development, possibly, as Cowen has suggested for Hallstatt swords as well as these, a use from horseback. But while it is not at all certain that this particular explanation solves the dilemma of very long somewhat unwieldy weapons of bronze, it would seem likely that a specific situation of a kind not seen before by sword users was at the basis of the development. Doubtless one of the factors in the military background was the extensive use of armour in Ha B times, and the necessity for a very heavy long sword to deal with this. But equally there must have been, among the obvious affluence of the Ha B expansion seen in the Swiss and S.E. French settlements, a social background favouring the production of large fancy weapons of sometimes limited military value.
CHAPTER XIII

LATER URNFIELD CAST-HILT SWORDS
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OTHER CAST-HILT SWORDS

Malaucène type

Hérapel, near Forbach (Moselle) (fig. 1)
Malaucène/Vaison (Vaucluse) (fig. 2)
St. Aubin-du-Cormier (I.-et-V.) (fig. 3)

Open-hilt swords

Camp de l’Etoile (Somme) (fig. 4)
Orléans (Loiret) (fig. 5)

Others

Courdemanges (Marne) (fig. 6)
Forges d’Aunis
Loire, aux Salorges en Rezé (L-Aizados)
Trentemoult
Octon (Hér.) (fig. 7)
Petit-Villatte (Cher)
Seine at Vernon (Eure)?
Sâone at Mâcon (S.-et-Loire) (fig. 8)
Sâone at Vellexon (H.-Sâone)
La Grande Pugère (B.-du-Rhône)

The three swords listed under the Malaucène type are so close in shape, if not in decoration, that they must have been cast in the same mould. If not, then they must come at least from the same workshop, as Briard suggests (1965, 233). All three have in common a slightly leaf shaped blade with strong central rib and ricassì, and a hilt whose oval centre plate is placed between two groups of three ribs. The pommel is flat, oval in shape; the butt is similar in all three, with \( V \)-shaped
shoulders and cutout.

Decoration on the three weapons differs. St. Aubin-du-Cormier (fig. 3) seems to have none, while the sword from Malauçène has pointille ornament by the ricassi and outlines on the blade. The Hérapel specimen may be decorated. Coutil (1928, Pl. IX, 14) shows it to have 6 dotted circles on the butt, while Bergthol's drawing (1955, 168-71, 539 fig. 9a) and Bellard's photograph (1955, 538-9, fig. 5) are too bad to decide finally, but there seems to be at least one circle on the sword as shown in the photograph (Bellard's fig. 5).

All three are single finds so their relative date and possible typological similarities must be deduced from comparisons with other swords. The first group, with striking similarity to the Malauçène series, is the Flörshaim type of antenna sword (Müller-Karpe, 1961, Taf. 52). This type has the same central haft swelling and triangular shoulders, but with only a single rib moulding on the haft. Müller-Karpe mentions that similarity (ibid, 54-5) and also notes the resemblance of the Flörshaim type to Auheim swords, with their rounded centre to the haft. This applies equally well to the Malauçène swords, but Cowen (1955, 96) would rather see the group as cast-hilt counterparts to his Forel type. As the lengths of the swords from Malauçène and St. Aubin-du-Cormier are 52 and 52.2 cms. respectively, the Forel group might seem a better parallel as their average lengths are closer than those of the long swords. But the hilts on the Forel weapons are less close to the three Malauçène examples than those on some of the Klein-Auheim group, with smaller oval swellings in the centre. Whichever is the case, the Forel and Klein-Auheim types are close in form and date, and their similarity to the Malauçène group is not in doubt.

The weapon from Courdemanges (fig. 6) offers a possible
correspondence with yet another sword type, in its similarity
to weapons in the Stockstadt group. The sword is decorated
with several motifs, mostly semicircles, and such herring-bone.engraving, concentric circles and dotted ornament can be
paralleled on all swords of the Stockstadt group. Only the
sword's haft form is unusual, and this somewhat resembles
a Forel type weapon. In a general way it also resembles
the 3 Malauçène swords, especially if the Hérapel sword is
decorated with concentric circles, as these are a common
Stockstadt feature and are seen on the butt of the Courdemanges
example. The central part of the haft of this latter sword
is decorated in a way which suggests a partly cast/flanged
hilt, as in the sword from Pfeddersheim, which it resembles
in several respects (Cowen, 1955, Abb 13). As the Courdemanges
sword is so close to classic Stockstadt examples its relative
date must be the same. As discussed in the chapter on 3-ring
swords, the date of Stockstadt in France would best suit a
continuance from HaB1 right into Ha B2. This is confirmed
by the Courdemanges sword, from a Ha B hoard (Dèchelette,
1910, App.1, 540). Thus by these comparisons, the Malauçène
group would reasonably seem to date to the middle part of
Ha B. It would be unwise to try to press further the relative
dating of the group into the S. German scheme as set out by
Müller-Karpe (1959, 1961), since there is such a diversity
of swords in E. France, being frequently unassociated and
not directly comparable to German types. In the case of the
French Stockstadt weapons, as seen above, there seems to be
a definite retardation in date, and it would seem best to
keep a generalised scheme within Ha B in France, except for
objects directly related to the German chronology.

This is evident in the sword from the Saône at Macon (fig.8;
Chantre, 1875, Pl. XV, bis:2), with a square projection in the
centre of the haft, and large hemispherical pommel. The
butt is semicircular, the cutout likewise, with rich decoration
on the blade and haft. Parallels for the blade decoration include Sönder Lynby (Müller-Karpe, 1961, Taf. 50, 6), Podhorany (ibid, Taf. 42) - both flange-hilted swords; Bothenheiligen (ibid, Taf. 57, 3) and Simleul Silvaniei (ibid, Taf. 53, 4). The relative dates vary from Ha B1 (Cowen, 1965, Podhorany) to Ha B3 (Bothenheiligen; Müller-Karpe, 1961); also, three are antenna swords whose dates would be Ha B2 (Bothenheiligen; Simleul Silvaniei; Sönder Lynby). Müller-Karpe (1961, 40-41) suggests that in fact the bird decoration on these is a western feature as well as an eastern one, found as ornament on various objects, including knives in the N. and W. Alpine Area.

The haft is incised with concentric circles (10) as the main decorative motif, supplemented by 5false rivets with cap heads and stroke incision round the hilt-rim. As mentioned above, the circles suggest Stockstadt decoration, which Müller-Karpe would date to Ha B1, while the square hilt centre finds its best parallel on Macon and Klein-Auheim long swords. The Klein-Auheim group seems to include swords copying the hilt shape of Tachlovice swords and vice versa (see relevant chapter), and a date of Ha B3 is normal for these. So here again there is this anomaly of a French sword which does not correspond to the German relative chronology, and it reinforces the argument that France, being a fringe area, carried on its own manufacturing techniques and methods of decoration. These in many cases are taken from C. and W. European models, but fit into a much more fluid and interchangeable array of swords and sword ornament than Müller-Karpe has laid out for the German weapons. So his date of Ha B1 for the Macon sword is unlikely, especially as, even under his own scheme, Rundknaufschwerter (the only likely counterpart for the Macon pommel) do not make their appearance until his Ha B3. A date in the latter part of Ha B is likely.

A further variation of the Late Bronze Age sword with
swollen centre to the haft is known—a sword from the Camp de l'Etoile (Somme) (fig.4). The butt is on much the same pattern as Malautène swords, but with a shallower, curved outline, while the central haft is composed of a 'cage' of bronze ribs. Above and below this were several ribs, now very worn, and the pommel is a broad flat plate, pierced with a ring inserted for a wrist loop. Two outlines seem to be incised at the top of the blade, but as stated the sword is very worn.

The only other similar weapon from France is a find from Orléans (fig.5) published by Nouel (1957(b), 315, Pl. II, 37) and it is probably this which is mentioned by Müller-Karpe as part of a hoard (1961, 42). These objects "ont été brulées et perdus lors d'un incendie pendant la dernière guerre", and as no photographs are extant in the Museum, the exact contents of the hoard are unknown. Besides, Nouel cites the sword as a single find, so there is some confusion over the weapon. The Orléans sword in any case, although quite similar in general shape, does not seem to have had an open-cast haft, but deep channels in it, if Nouel's drawing is accurate. It does seem to be in the same general group however, but until clarification is possible, it must remain just a possible parallel to the Camp de l'Etoile sword.

This latter weapon has an almost identical counterpart in North Germany, Quedlinburg, from a hoard dated to Mont. IV, which Müller-Karpe suggests would be in the early Ha B period. His drawing (1961, Taf. 48, 10) shows the sword to have all the characteristics of the French weapon, but it is in much better state of preservation. Doubtless, like the Somme sword, the haft centre would have been inlaid with some organic material, and both would have resembled the Pfeddersheim sword closely (Müller-Karpe, 1961, Taf. 49, 10), as well as the rest of the
group described above in this chapter. A date within Ha B thus seems certain for the sword from Camp de l'Étoile.

The distribution of all the swords dealt with so far calls for some comment, as all seem part of a loosely knit group produced in France. The three Malaucène swords could scarcely be further apart in France (Map, fig. 10). This gives nothing in the way of evidence to suggest their place of production, although two of these in East France, where most Urnfield cast-hilt swords are found, suggest somewhere in the East. Courdemanges and Sâone at Mâcon also show this easterly distribution and form a western fringe to the Stockstadt sword area (Müller-Karpe, 1961, Karte 5). The two open-hilt swords are more northerly, and since the only other one known is in N. Germany, some sea contact might be suggested with this area.

Some small evidence to support this is seen in a few swords with northern characteristics. One, from the Seine at Vernon (Coutil, 1921, Pl. 5), appears to have a cast butt with space left for an organic plaque; but the drawing is too small to be certain of the type, and the lack of a hilt makes its identification uncertain. Another more definitely Nordic sword is that from the Petit-Villatte hoard, a carps-tongue assemblage with fragments of decorated Scandinavian hanging-bowl. The sword or dagger has a tang, and a hollow haft fitting over this with a kidney pommel. These pieces are most likely direct Scandinavian imports; their date, within Period V (Sprockhoff, 1956) corresponds well into the Final Bronze Age date (Ha B3) of the hoard (Janse, 1924, 303, fig. 7; Sprockhoff, 1934, 90).

Briard suggests a Scandinavian inspiration for the sword from the Loire at Salorges (1965, 205) fig. 70, 2. It appears that the haft consists of two bronze plates riveted to a flat tang like a flange-hilted weapon, with a hollow-cast pommel of
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cage-like ribs. This may have some connection with the openhaft swords (see above), but the hilt decoration, incised triangles, has no parallel in France. The general shape of the sword is quite similar to Hemigkofen swords, but it is likely to be considerably later than this type as the ricassi are decorated, and the upper part of the outlines, as well as a dot-and-circle in the centre of the butt. Maybe these features again relate to Stockstadt swords: if so, a date in the earlier part of Ha B would be suitable in terms of German chronology. Briard mentions a similar sword, Forges d'Aunis, but gives no details and no illustration (1965,205).

A sword with no close parallels at all comes from the Saone at Vellexon (Garneret,1954,fig.70). The hilt has simple incurving sides, the butt is semicircular, and the pommel is composed of a 'stepped' low cone, with wavy decoration. On the hilt there are three shallow pits each side, square, each with a rivet for holding an organic plaque. Between each is a raised rib which circles the haft. In between these two ribs horizontal lines have been incised, filled in with herringbone ornament on the haft edges, and a similar semicircular pattern etched onto the butt. Most probably identical ornament has been rubbed off the front of the hilt. There are toothed ricassi at the top of a leaf-shaped blade resembling Early Urnfield shapes, as far as can be seen from the only drawing known of the whole sword, at a scale of 1:15 (Garneret,1954,fig.70). Herringbone incision is known from most of the Late Bronze Age, e.g. on Ragaly, Rankweil, and some cup-pommel swords, while on some Liptau swords there is a semicircular herringbone butt decoration (Müller-Karpe,1961,Taf.22). The hilt shape vaguely resembles some early Urnfield flange-hilted swords, while the only similar pommel shape known to me is that on a rod-tanged sword from Annecy, itself an unusual and untypical weapon (see relevant chapter).
A broken sword with a cast hilt found at Octon (Hérault) is somewhat similar to the groups dealt with earlier in this chapter, but is less easily assigned to a particular type (fig. 7, Groupe arch.du Lodévois, 1956). The hilt is decorated with lines of dots and two ribs above and below the central area; the butt, broad with narrow 'wings' resembles that on the open-hilt sword from Camp de l'Etoile. The effect of 'framing' the central area and butt of the dotted lines is paralleled on the sword from Courdemanges, and others of the Stockstadt group, so there may be a connection here. Other objects were found on the same spot, after ploughing in the area; so there is doubt about any definite association. The other finds including a slotted hilt and lozenge chape are all Atlantic types, probably from the St.-Brieuc or St. Nazaire group (after Briard, 1965), which would mean a date late in HA/A or beginning HA/B, if this can be counted as a hoard, which is doubtful. In any case, these objects represent an interesting mixture of E. and W. French types.

One last sword, that from La Grande Pugère, must be included in this general group of cast-hilt, largely E. French, weapons (fig. 9). It is not totally a cast-hilt example, only the pommel is solid, and the rest of the haft is flanged. The pommel is curved, with a moulding below this, and the rest of the haft is shaped somewhat like the Pfeddersheim sword, but with a more oval centre. No decoration is visible on the sword fragments from the Grande Pugère hoard (fig. 9) as Chauvin's photograph is on a very small scale and badly printed (1956, (a) (b), 120, 252 ff.), and it has been impossible to obtain a response from the Musée Scolaire in Trets, where the finds are housed. The sword with cast pommel is probably related to Cowen's Locras type, or at least his later group of Umfield swords from the Early Decorated Group to the Long Swords. The hoard represents a collection of partly scrap-metal, and some finished objects - the most unusual of the
latter are two objects which appear to be scabbard chapes, one with linked rings halfway down two of its sides. Both the chapes are decorated with incised lines, the larger has a raised rib below the rings, and both are provided with button terminals. They resemble a group of chapes found frequently in association with Möriken swords or others of a like date, or for example from Möriken (Vogt, 1942, Taf. 79, 15, 16). But the two from La Grande Pugère are much longer and larger, moulded to fit the end of the scabbard. The rings on the large chape are probably decorated and maybe served as jingles like the tintinnabula known from E. France and Switzerland, such as that from Brégnier-Cordon, probably associated with a Möriken sword (see relevant chapter). Other objects in the hoard include a terminal winged axe, of probably Swiss type (Bocksberger, 1964, fig. 30), a square-flanged palstave, looped, and about four Médoc axes. It is suggested that a date in Ha B, the latter half, would suit the chapes, with the swords included as scrap from an earlier period.

The distribution of all of these swords (except the Atlantic specimens) shows a distinctly E. French bias, and although they form a scattered series in this large region, the similarities noted above suggest that there was a distinct class of French swords produced in Ha B. These swords were probably based on shapes of contemporary flange-hilted swords, but took decorative motifs from the Stockstadt type, resulting in a native French group of Late Bronze Age cast-hilt swords.
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ANTENNA SWORDS
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ANTENNA SWORDS

So few antenna swords have been found from France that all types are considered together. The following are known:

Lipovka Type
Castanet (Tarn - et - Garonne) (fig.1)
Brasles, Chateau-Thierry (Aisne): pommel from flange-hilted sword (fig.2)

Zurich Type
Saverne (Zabern) (Bas-Rhin) (fig.3)

Late Hybrid Antenna Swords
Heilly (Somme)
Loire at Meung-sur-Loire (Loiret) (fig.4)
Rhône at Lyon (fig.5)

Weltenburg Type
Aliès (Cantal) (fig.6)

Others, unclassified
Guê de Velluire (Vendée) (fig.7)
Trairie de Mauves (I-Atl.) Pommel only
Vénat (Charente)

Lipovka Type

This group of swords has been defined by Müller-Karpe (1961, 52ff), who only lists 6 cast-hilt examples and 9 flange-hilted swords with antenna (Lipovka) pommels. The only cast-hilt sword of this variety known from France is badly illustrated (Coutil, 1928, Pl.IX,12;fig.1), but despite the distance from the others of its class (Müller-Karpe, 1961,
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Karte 6) it appears to be a genuine example. The hilt is plain, with heart-shaped pommel, semicircular butt and cut-out, similar to the sword from Silvasul de Campie, near Kluj (Müller-Karpe, 1961, Taf. 50, 5), which also has no ends to the spirals on the pommel. The Gastanet sword was carried over a considerable distance, as the other examples are all in Eastern Europe, with no intermediate finds (Müller-Karpe, 1961, Karte 6), and the similarity in shape to the eastern swords rules out its being a local copy. Since the French example was a single find, the only date which it is possible to assign it is that arrived at by finds from other countries, that is, Ha B2 (ibid, 53).

This presumably also applies to the Lipovka pommel found while dredging at Brasles (Lebel, 1953, fig. 82; fig. 2). But the distribution of separate Lipovka pommels (usually with flange-hilted swords) is much more widespread over Europe (Müller-Karpe, 1961, Karte 6) although again mainly easterly. Thus it is reasonable to see both these Lipovka finds from France as imports.

Zürich Tyne

One example only of the type (Saverne, fig. 3) is known from France, a hilt, with the antenna pommel ends broken (Müller-Karpe, 1961, 57-8, Taf. 53, 6; Halbert, 1954, 423, fig. 4, 3.). There are three groups of ribs, finely decorated with angled incisions, on the hilt and a semicircular butt similar to Lipovka swords, from which they represent a western typological progression (Müller-Karpe, 1961, 57-8, Karte 6). The groups of ribs are interesting as in appearance they recall those on Mörigen Variant II swords, and it is possible that the latter take their form from the Zürich type antenna swords, dated to Ha B2 (ibid, 58). Other possible influences at work at the same
time have been discussed in the Chapter on Mörigen swords. An unusual feature of the Saverne haft is that it is filled with lead (Halbert, 1954, 423 ff), either to balance the sword better or to fill up the space inside a hollow hilt and give more support to the blade top.

**Hybrid Type**

Three swords (nos. 5, 6, 7; figs. 4, 5), similar to each other, show varying characteristics of other antenna sword types, mainly those called Weltenburg and Tarquinia by Müller-Karpe (1961). All three have semicircular butts, with that of the sword from the Rhône at Lyon especially similar to Tarquinia weapons, and long, tightly rolled heavy gauge antennae pommels. This latter characteristic is typical of Weltenburg swords, but the three single broad ribs on the haft of the three French swords is not characteristic of any antenna sword group. This could represent a continuance of the 3-ring pattern of earlier Urnfield Dreiwulstschwerter, and allied with the other characteristics described forms another example of the individuality shown in E. French swords.

The sword from the Rhône at Lyon has several features corresponding to Tarquinia swords (fig. 5): outline ribs running straight to the butt, whose shape is that of the Italian weapons, and hatched decoration on the rib below the pommel. But the tightly curled heavy spirals are a Weltenburg feature; a very similar sword is shown by Müller-Karpe in his Weltenburg group from Holzhauzen (1961, Taf. 57, 4). The decoration of 3 concentric rings on the haft is paralleled on another French sword of the same date, but of very different form, Saône at Mâcon (see 3-ring swords Chapter), and is indicative again of a separate E. French production area of swords but within the general Final Bronze Age sphere.

There are no definite associations for any of this group,
except for tantalising references to the circumstances in which the Heilly sword was found. Breuil, reporting Longez (1900,523) states that it was found under a bog near skeletons of a man and a horse. Coutil, from the same source (1910,7) says that skeletons were found lying in a shipwrecked boat, one of which was armed with the antenna sword and a Bernières type helmet, now melted down. The sword has been lost, but resembles the Lyon sword apart from a lack of decoration, and a short tang-end between the spirals. The Meung-sur-Loire sword is similar but unusually short, and was a single find (Nouel,Dauvois,1959,318-20).

These three weapons illustrate how unwise it is to take sword 'types' as the sole basis for a view of prehistory except in a general way. There is such diversity within any group of swords and such a degree of overlap or intermediacy that a rigid typological view of any objects may ignore the human activity creating them. This does not invalidate the use of comparisons of objects for relative dating and typology, it merely relegates this method to its correct place within archaeological method and shows it to be a convenient system of classification, with all the limitations which a rigid system implies. So the three antenna swords described fit quite well into a fluid view of the Tarquinia and Weltenburg types.

Since the weapons above are not associated we may revert to Müller-Karpe's dating scheme, and suggest Ha B3 as the most probable relative date.

*Weltenburg Type*

One sword is known from France which corresponds to the "hard core" of Weltenburg swords (Müller-Karpe,1961,59) from Aliès (Cantal). Found with two other swords of Mörigen
and Tachlovice type (described elsewhere in relevant chapters), it is much more intricately decorated than either, with fine engraved and pointillé lines on the haft and pommel (fig. 6). The characteristic central lump in the haft is engraved with a hatched open oval, with ribbing above and below. The butt differs from most other swords in the type by being rounded with a semicircular cutout. Like some swords in the group the hilt is held onto the blade by a single rivet (two and three are also used on other weapons) which passes through the long flat tang. The end of this projects from the pommel and is surrounded by four concentric circle groups.

The Aliés sword and the type in general very much resemble some flange-hilted swords of Cowen's Klein-Arnheim type (1955, 100), those with round haft swellings (ibid., Abb. 14; 2, 3) rather than the thistle-shaped hafts which look like Tachlovice or Auvernier sword hilts. Some of these late flange-hilted swords are typologically earlier than Weltenburg weapons, suggested by the Lipovka type pommels on two Briest swords (Cowen, 1955; Sprockhoff, 1934, Taf. 18, 14), but others are undoubtedly contemporary with the Weltenburg group. Parallels outside France for all three swords from the Aliés hoard suggest a Ha B3 date (Müller-Karpe, 1951, 81-2).

Other antenna swords

One antenna sword is known from the Vénat hoard (Inv. Arch. F6(2)19) and is not sufficiently similar to E. French weapons to fit into any definite group. The hilt is narrow and flat with 4 ribs, and small spirals, cast straight on to a blade whose decoration resembles that on a carp's tongue swords in the hoard (ibid, 18). This would seem to be a local version of a more easterly type, like the other cast-hilt sword in the hoard (ibid, 16) which copies the semicircles and ribs of late Urnfield E. French swords. Wing-decorated socketed axes,
terminal winged axes, square-socketed axes, curved socketed knives (31,33), vase headed pins, and two large hollow-cast engraved bracelets with everted terminals (63,69) suggest a correspondence with E. French/S. German period Ha B3 (Vogt, 1942,193ff; Müller-Karpe,1959,fig.62).

A sword of unusual form is known from the Gué de Velluire in Vendée (fig.7), which has a broad arched pommel nearest in shape to an antenna hilt, but with decorative terminals resembling a Tachlovice pommel. A. de Mortillet was the first to describe the sword, and states that the haft is bronze, the blade iron, but shaped like a bronze blade (1913,277). Since that date the only new evidence about the sword is contained in Halbert's work (1954) as a photograph of the hilt and upper blade, but she makes no mention of the blade's metal composition. She presumably assumes the blade to be bronze, as does Müller-Karpe (1961,111;Taf.44,1 = after Halbert's photograph), but in the photograph it appears to be iron, as far as one can tell without examination in the hand (op.cit.,fig.2). A. de Mortillet suggests that the haft was not made for the present blade and as the latter does not fit the whole width of the butt opening there may originally have been a bronze blade on the sword replaced by one of iron (1913,278). The butt and cutout are semicircular, the hilt rectangular in section with two projections in the middle. Above this the pommel is set on a circular band with four ribs (fig.7). Apart from the two rivets in the butt ends, holding the blade, there is another in the centre of the hilt and two others above and below, whether functional or simulated is not certain. The central rivet seems to have had a cap at one time (A. de Mortillet,1913,fig.2) and may have resembled the other two. The pommel decoration (ibid,fig.3) is composed of groups of lines and hatched triangles following the edge of the bronze, and a ring of small circles surrounding the probably simulated tang end.
Halbert draws attention to two more swords which closely resemble the Velluire weapon, both from Scandinavia (Skåne, and Jutland; 1913,416 ff.) The Fuglie sword is very close to the French weapon and must have been made either by the same person or as a copy. It has a bronze blade, with haft shape exactly similar, and pommel decoration very like that on the Velluire sword. The Hundborg sword is slightly different, apart from being fragmentary, but the pommel is again very similar in shape, and the butt likewise, with decoration of concentric circles. Whether the French sword should be seen as a Scandinavian import or vice versa is unsure, but there are several parallels from France, of a slightly different nature but none the less morphologically close to the three swords.

The sword from the Saône at Mâcon dealt with in detail elsewhere, has the characteristic square projections on the hilt sides, large rivets on the broad faces of the hilt, and a butt shape and cut-out reminiscent of Velluire. There are concentric rings decorating the butt (seen also in the sword from Hörapel; Coutil,1928,Pl.IX,14), exactly similar to the sword from Hundborg, and usual on cup-pommel swords of Stockstadt type (Müller-Karpe,1961,Taf.49). And there must surely be some connection between the square projections in the hafts of the antenna swords and flange-hilted swords with identical features ranging through Cowen's Klein-Auheim and Mâcon types. Blade decoration on these latter swords (of both groups) resembles that on the Stockstadt cast-hilt type.

The date of the Gué de Velluire sword must be somewhere within Ha B. If it does have an iron blade this would suggest a late date - Ha B3, or if originally a bronze blade replaced by iron, then the haft is earlier. From the decoration on the Jutland and the Mâcon swords, both close relatives, the date should maybe correspond to that given by Müller-Karpe to the Stockstadt group "Frühzeit von Ha B" (1961,49-50).
But as he says, spearheads with decoration like Stockstadt swords turn up in Ha B2 or B3 (Vogt, 1942). The similarity to the Mâcon flange-hilted group (Cowen, 1955, 104ff.) which seems contemporary with Tachlovice/Auvernier swords (Ha B3), allied with the above dating, would give a relative date of Ha B2/Ha E3 for the Gué de Velluire sword.

There is only one other possible example of an antenna sword from France - a pommel from the Prairie de Mauves hoard in Loire-Atlantique (Briard, 1965, fig. 70:5). This is quite a small object, with a curved pommel plate somewhat similar to the Gué de Velluire sword, but undecorated except for ribbing on the shank. The hoard, apart from other typical carp's tongue material, contains fragments of probably British Ewart Park swords: the date must be around HaB3.
CHAPTER XV

TACHLOVICE SWORDS
TACHLOVICE SWORDS

This group comprises the following swords from France:

1. Alièes (Cantal) (fig. 1)
2. Epineux (Côte d'Or) (fig. 2)
3. Humes (H.-Marne) (fig. 3)
4. Oise at Chauny (Aisne)
5. Rhône at Grigny (Rhône) (fig. 4)
6. Saône at Lyon (fig. 5)
7. around Lyon (fig. 6)

Find circumstances: Alièes and Epineux from hoards, rest single finds.

Form: The hilt shape of these weapons is: straight or depressed short quillons, with U or V cutout at the butt, a swelling at the lower third of the hilt similar to the profile of Klein-Äuheim swords, and a curved pommel with additional riveted plate. The flat faces of the upper two-thirds of the hilt are hollowed to allow plaques of organic material or bronze to be held by three rivets; likewise the pommel must have held a plaque of some organic material.

Blades vary little in shape and decoration; most usual being a straight/slightly leaf shaped form, with two parallel ribs following the edges. The cross section is elliptical, with a slight midrib on the sword from the Saône at Lyon, and in two cases (Rhône at Grigny; around Lyon; figs. 4, 6) there is an additional short V-outline reaching down the blade from the butt. This feature is commoner on Mörligen and Auvernier swords, and it is possible that these
two examples cited could be Auvernier swords (Müller-Karpe, 1961) to which the Tachlovice variety is closely related morphologically, differing only in the pommels. This pommel shape and features of decoration are sufficient to separate the varieties, a typological division supported by the mutually exclusive distribution (Müller-Karpe, 1961, Karte 8, 9). Frequently the top of the blade (nearest the haft) is decorated with incised semicircles and circles, a feature not usually found on other cast-hilt swords of this date. This, along with the shape of the haft, suggests that, as is so often the case, cast-hilt swords are the direct counterparts of flange-hilted weapons of the period (see Cowen, 1955, Abb 14, 1, 5). No doubt a Klein-Aueheim sword with its haft in place would resemble a Tachlovice weapon quite closely, and the riveted plates found in the case-hilt examples probably reflect the influence from the other method of hafting.

The three swords for which lengths are known or can be reliably estimated (nos. 1, 3, 5) vary considerably from c. 62 cm. for Rhône at Grigny, Humes c. 73 cm. and Aliès 91 cm., showing the prevailing tendency in the Final Bronze Age to lengthen swords. A corresponding increase in weight/to be noticed, along with heavier construction which raises the weight per unit length as compared to say, 3-ring swords from France which are of generally lighter construction throughout. Thus at 1270 gr. (2.2 lb) and 90 cm. long the Aliès sword is not just heavier in absolute terms than say the sword from 'France' (Chapter X) (which weighs 821 gr. (1.3 lb) and is 70 cm. long) but is proportionally heavier. This might be explained by the increasing use and efficiency
of armour and defensive armament in the latter part of the Bronze Age, particularly in the Ha B3 when these swords were in current use. Nevertheless, personal preference may have played a large part in determining the size of weapon, as the fragment of sword from around Lyon is much lighter, with narrower blade (even allowing for considerable wear); and possibly prestige also had its effect on size.

Decoration on the hafts varies. Both Epineuse and Alièis have the pommel plate ends incised in chevron patterns (figs.1,2) with incisions or channelling on the sides of the haft. This reaches an extreme form in the sword from Humes (fig.3) and leaves small 'islands' of bronze, improving the grip as well as adding to the decorative effect. The quillons are decorated in two examples from France, Epineuse (horizontal lines) and Grigny (possibly vertical lines, uncertain). This along with the other decorative motifs, occurs on various Tachlovice swords outside France. The elements of decoration described above do not usually occur together on other sword groups of this period and serve to differentiate Tachlovice swords typologically from Auvernier weapons. But their handling in use must have been quite similar to other Final Bronze Age swords, so reasons other than purely military ones must have predominated to cause such an unusual distribution pattern over Europe, commented on below.

Ricassi are found on all the swords except Epineuse and Lyon (too worn to decide finally). On Alièes they are decorated by punch marks at two angles, forming a herring-bone pattern. Various authors have stated that, similar to Mediaeval pattern,
the index finger of the sword hand was hooked round one of the quillons, resting against the ricasso. As a few of the swords from Europe do not have a ricasso this obviously is not the case in some specific instances, apart from the haft size being quite large enough for use; one's hand is compressed into the centre of the hilt giving a firm grip. But the hooked finger grip does change the balance slightly and obviously the method and circumstances of fighting (unfortunately unknown) would affect the way the sword was held.

Distribution: Map, fig. 7. These swords are confined to East France (with one outlier in Cantal), the usual sphere of Late Umfield bronze finds stemming from Central European workshops. But it is uncertain how far the French swords should be considered real imports or native manufactures, as the group varies so much in form and decorative features. Overall, Tachlovice swords have a concentration in Bohemia and Central/East Germany. Müller-Karpe shows 12, with one from Poland and another from the E. Alpine area (1961, Taf. 99, Karte B). There must have been contacts between France and the eastern group to transmit the type, since there is an intervening distance with no finds of these swords, an area in which the related Auvernier swords were current (ibid. Karte 9). Morigen swords also feature in this group of Ha B3 weapons (ibid, Karte 8, variants I and II), and the three varieties combine to show a most impressive distribution of advanced bronze working industry in weapons, of which East France was the western fringe. Tachlovice swords, found in this close proximity to the other groups, must also stem from a common origin
as their typological similarity is most marked, various features of construction and decoration occurring in all three.

**Relative Dating:** Two swords come from hoards, but of very different composition. Aliès was found with two other swords, one of Mörigen, Variant I, the other of Weltenburg type (see relevant Chapters). The hoard was presumably one of finished articles, maybe ready for sale, as all swords are in good condition (Rames, 1872, is incorrect in stating the Tachlovice sword was broken in 3 pieces), affording a more directly reliable association than a founder's scrap hoard. The swords seem to have been pushed into the rock crack where they were found without sheaths or other covering, as the Tachlovice sword is unpatinated where it has rested against one of the others; and the Weltenburg sword likewise, in contact with the rock. This gives an assumed contemporaneity at the time of deposition of Tachlovice - Weltenburg - Mörigen Variant I groups in E. France. The Aliès Tachlovice sword can also be compared with a Mörigen Variant II weapon from Trévoux, which has angled hatched decoration on the outline ribs towards the butt, directly similar to the former (see relevant Chapter).

The Epincée sword was found in a hoard, broken in two pieces (Déchelette, 1910, II, App.I, 24, Kimmig 1954, fig. 93) among other broken and finished articles which suggest a trader's or maybe founder's hoard. The finds include spearheads with ribbed socket, ribbed spear ferrules, engraved-socketed curved dagger, engraved-socketed knife, winged axe with loop, and a tanged arrowhead with a rivet hole in
in the centre of the head. This last somewhat resembles Bourget arrowheads in the use of a rivet, and the date of the type varies from Sandars' Ha BI/II (1957, 196-8) to Soutoul's Ha C or D (1958; 1961). The curved socketed dagger-like object appears to be an import from the Late Bronze Age Atlantic orbit, as these objects are found in carps-tongue hoards, again of a Ha B date, later rather than earlier. The only drawing available makes it uncertain whether in fact this attribution is correct, although stated to be a 'curved socketed knife' by Déchelette (loc. cit.).

The three winged axes and the Late Umfield socketed knife fall into the Ha B3 period (Müller-Karpe, 1959, Abb. 62, 13, 15); the axes are common objects of the period both in Western Europe and on the Atlantic seaboard in carps'-tongue hoards. Likewise the ribbed sockets of the spearheads and ferrules suggest contemporaneity with the S.W. German and Swiss hoards of the Final Bronze Age.

The only other feature of use in the relative dating of French Tachlovice swords is the iron inlay (Eisenteilanschierung) on the sword from Humes (Müller-Karpe, 1961, 82). He does not state where the iron is on the sword, but it must be taken to indicate a late date for the weapon, especially when the remaining evidence from Europe is taken into consideration (Müller-Karpe, 1961, 81-2). The French swords thus form the western fringe of Müller-Karpe's Ha B3 phase (1959, 216 ff), the Final Umfield period; Sandar's Late Bronze III ("Ha B3") characteristic of graphite pottery, concentric circle decoration, tumulus finds with Mörgigen swords (1957, 203 ff).
CHAPTER XVI

MÖRIGEN SWORDS
MÖRIGEN SWORDS

Müller-Karpe's scheme of dividing the type into variant groups (1961,73) has been followed for reasons explained below. Only two of the three variants are found among French swords.

Variant I
1. Brégnier-Cordon (Ain) (fig.1)
2. Montausain (C.-d'Or) (fig.2)

Variant II
3. Aliès (Cantal) (fig.3)
4. Chapelle-St.-Ursin (Cher)
5. Cresancey (H-Saône)
6. Déville-les-Rouen (Seine-Mar)
7,8. Grésine, Lac du Bourget (Savoie)(fig.4)
9. Rolampont (H-Marne) (fig.5)
10. Trévoux (Ain) (fig.6)
11. Vienne (Isère) (fig.7)

Others:
12. Rhine at Ottmarsheim (H-Rhin) (fig.8)
13. Ribeauvillé (H-Rhin) (fig.9)

Possibly a Mörigen sword
14. Blye-sur-l'Ain (Jura)

Find Circumstances: Two swords, possibly three, come from graves (nos.1,9,10), three from hoards (nos.3,6,13), two from a settlement at Grésine, Lac du Bourget (nos.7,8) and the rest are single finds.
CHAPTER XVI

Form: The class as a whole shares common features such as curved pommel-plate, usually undecorated, a haft centre swollen slightly from a straight configuration, usually decorated with three separate bands of ornament, and a butt of varying widths with different cut-out shapes. The blade is normally straight or slightly leaf shaped, rarely tapering, and is decorated with 'outlines' of ribs or grooves. Following Müller-Karpe (1961, 73ff) the French swords of this type are divided into two variant groups I and II, according to different details of decoration on the haft.

Variant I swords have three ribs on the haft left plain, or profiled into two or three mouldings on the actual rib.

Variant II consists of three groups of two or three separate narrow ribs in place of the broad plain rib of Variant I, and there may be decorative bosses in between these or on the pommel plate.

This division, although based solely on apparently insignificant differences of decoration, becomes more meaningful when the distribution of Variants I and II is seen on a European scale (Müller-Karpe, 1961, Karte 8). Variant II appears to be largely a Swiss/E. French design of Morigen sword, with only 3 outliers to the east. Therefore it is proposed to treat the variant groups separately, as products of different 'workshop areas'.

The sword from Montausain (fig. 2) typifies the swords of Variant I group, broad bands on the haft, and high U-shaped cutout in the butt. The butt is not usually as broad as in French Tachlovice swords, where short quillons are formed, but in a few cases it is equally
as long (Ribeauvillé, fig. 9). The Montausain sword has a slightly leaf-shaped blade of fairly light construction, with two outline grooves running nearly parallel to the edges. The grooves are in fact quite badly executed, varying in width from about 0.5 mm to 1 mm, and the curve formed by them is shaky and irregular up most of the blade until they curve outwards at the butt in the usual manner. On Morigen swords the decoration of the blade sometimes includes a short V-outline at the butt, seen on the other Variant I sword, from Brégnier-Cordon (fig. 1), and on many cast-hilt swords of the Final Bronze Age.

A classic Variant II sword is that from Rolampont (fig. 5), combining the 3-rib pattern in place of the haft bands and decorative bosses in between these and on the pommel. The lower haft terminals are so broad in this case as to be termed quillons, and are slightly depressed. It is uncertain whether these terminals did ever fulfil a function as a cross-guard as found in swords of the historical period, but the width of these on the Rolampont sword would suggest this was the case. Allied to this problem is that of ricassoli, which are not present on eight of the French Morigen swords, an unusually high proportion as against other Morigen swords from Europe. The ricasso as a functional feature might be explained by drawing a parallel with the mediaeval practice of hooking a finger round the quillon when using a sword, but its absence obviously precludes this. Besides, these French swords are significantly shorter than the contemporary Tachlovice and flange-hilted long swords (average about 64 cm), so the method described would not be necessary to balance the sword well. Despite statements from various authors of the small size of
hiltts on Late Bronze Age swords and thereby difficulty of use, specimens handled by the author and full-scale drawings show that the hafts on Mörgien swords are quite large enough for the hand of an average person. Montansain, for example (see above), sits very well and comfortably in the hand, and is nicely balanced for use.

Decoration on the swords is restrained, mostly being confined to the blade and taking the form of ribbed or engraved outlines. Two outlines are most common, but Ribeauvillé (fig.9) and Vienne (fig.7) have several lines incised close together, forming a group of decorative grooves running down both sides of the blade. The latter sword is also decorated on the hilt — two lines of punched dots frame each rib-group (fig.7, after Chantre, Müller-Karpe's drawing is inaccurate, 1961, Taf 65,5), and there is a button on top of the pommel which looks like the riveted end of a blade tang. Variant II swords like Rolampont (fig.5) with a non-functional knob on the pommel are probably copying the originally functional feature of a tang reaching up through the hilt, as on many antenna swords.

Trévoux (fig.6) is a Variant II sword with decorative bosses on the hilt (remnant decoration probably copying the rivet placement on flange-hilted swords) and angled herring-bone incisions on the upper part of the blade outlines. This extends down for some 7cm and recalls the decoration on the Tachlovice swords from Aliès, although the Mörgien sword from that hoard seems to have plain, undecorated outlines. The central rib-group has a 2-rib pattern and not 3 as usual — this is fairly common on French Variant II swords,
2 and 3 ribs being interchangeable and sometimes on
the same sword (Trévoux, Chapelle-St.Ursin).

Two swords have no decoration at all on the haft
(Rhine at Ottmarsheim; Ribeauvillé; figs.8,9). The
former appears worn overall in Zumstein's drawing
(1966,fig.51), so it may have been completely ab-
raded, but Ribeauvillé was obviously designed as such
as the blade still retains sharp outlines. The sword
is unusual in its short length and hollow-cast hilt
with very thin walls, compared with other Mörigen
swords. Normally the Mörigen hilt is a solid affair
as can be deduced from handling and seen in the mould
for casting massive hilts from Erlinshofen (Müller-
Karpe, 1961,75ff; Drescher,1958,78). The hilt on
the Ribeauvillé sword is completely hollow, undecorated,
and with very broad quillons; all of which suggest
that it stems from a founder unused to the usual con-
struction of hilts for Mörigen swords. Since the pom-
mel is broken off the hilt, the light construction
would seem too weak for the strain it had to stand.

Among French Mörigen swords the riveting of the hilt
to the blade seems to have been less common than the
run-on method of fusing the weapon together. Only
5 swords have rivets in the butt, one of which,
Cresancey, may even be a modern copy. So the solid-
cast method seems to have been much more popular in
the manufacture of French swords. Wyss (1967,Pl.13)
shows an Auvernier sword from Switzerland manufactured
in this method, with the resultant air pockets along
the zone of contact showing up in the X-ray photograph.

The sword from Déville-les-Rouen (Goutil,1921,Pl.V)
lying outside the main area of distribution might be
a local copy, as it differs in butt width, pommel
shape and haft cutout. It is perhaps an Atlantic version of Mörigen swords, just as a local variety of an antenna sword is known from the large carp's tongue hoard of Vénat (Inv. Arch. F.6(2)19). Chapelle-St. Ursin (Coutil,1928,Pl. IX,18) shows influence from other Ha B3 swords in the horizontal engraving along the butt. Although common on other cast-hilt weapons of this period it is unusual on Mörigen swords (Sprockhoff,1934,passim; Müller-Karpe,1961, passim).

Distribution: Central/East France with one outlier in the north (Map,fig.10;cp.Müller-Karpe,1961,Karte 8). The two Variant I swords represent an extension of the general range of these weapons to the west, but are insignificant beside the number of Variant II swords from France. They presumably represent either imported weapons from the main area of finds (C/S Germany) or local copies after the style of manufacture of this area.

With the increase in numbers of Mörigen Variant II swords known from France since Müller-Karpe's map was published (op.cit.), the westerly distribution of this type is even more marked than before. The production of the type must have been within a localised region of West Switzerland and S.E. France, particularly around the upper Rhône, with variations in form caused by local copying. The distribution of the two Variant types supports the typological separation, as it would seem that the two different styles were produced, or at least used, in two virtually exclusive areas.

Relative Dating: Of three possible grave finds, two (Rolampont
fig. 5; Brégnier-Cordon fig. 1) are associated with other objects, the former with pottery, the latter with bronzes. Both finds come from tumuli, as may have been the case with Trévoux, said to have been found among a heap of stones (Chantre, 1875, Pl. XV). At Brégnier-Cordon remains of an inhumed skeleton were found among a heap of stones, along with two large hollow-cast decorated bracelets and a cylindrical jangle (tintinnabulum). Two years later in further diggings on the same spot a Mörigen sword was found. At Rolampont the burial rite was cremation, under a tumulus, with grave goods of 3 pots, and a Mörigen sword 4 m. away from these (Kimmig, 1952, 164-7, figs. 32, 33; Millotte, 1963, 275). Sandars (1957, 217) draws parallels to this pottery at Singen and Gündlingen, and the graphite and concentric circle-stamped ware is characteristically late HaB as are the bronzes from Brégnier-Cordon (Kimmig, 1952, 166-7). These two tumuli are characteristic of the resurgence of tumulus burial, different pottery styles, bronzework, etc., which mark a cultural change from the earlier part of the Ha B period. The latter part of this period sees a multiplication of bronze hoards, weapons, and other remains which suggest a prosperity and expansion of population in the areas where the later Hallstatt culture is found (Sandars, 1957, 190ff).

The small hoard from Ribeauvillé is another manifestation of this pre-Hallstatt C prosperity and efficiency in weapon production. The Mörigen sword described above was found with a blade fragment of similar appearance, and a terminal winged axe (fig. 9). This axe type is characteristic of the Ha B3 period (Müller-Karpe, 1959, Abb 62) all over S. Germany and
France, including the Atlantic coast in carp's tongue hoards.

The hoard of three swords from Alieè, including one of Möřigen type Variant II (fig.3) is interesting and important because of the direct association of this group with a Tachlovice and a Weltenburg (antenna) sword. The swords have unfortunately been dispersed. One is in the British Museum, the others' whereabouts are unknown, but all are usually dated to the Ha B3 period. A correspondingly late date is suggested by the presence of iron inlay on other Möřigen swords from Europe (Müller-Karpe, 1961,72ff).

Two swords appear to have been found at Grésine, Lac du Bourget (Chantre, 1875, Pl. LVIII, 2; Perrin, 1874, Pl. XIX, 7), although it may only be one, drawn differently. If two, both are Variant II, broken, one with ribs on the blade and one with plain blade. This is the only French Ha B3 settlement site (lakeside) which has yielded a Möřigen sword, and it corresponds to the swords found in tumuli (above). Some idea of the spread of late Ha B activity can be seen in Sandars' Map XII (1957,371). There are also close relations with Central and South Germany and Switzerland, as seen above in respect of Variant I distribution.

Although it is likely that East France was closely linked with Switzerland (Sandard,1957,293), a number of unusual weapons are known which look like French versions of Möřigen swords. Two of these are the swords from Vienne (Fig.7) and 'France' (a 3-ring sword), the latter being almost an exact decorated copy of the former. The Vienne sword has most of the features of a Variant II Möřigen weapon, but with a butt and cutout more typical of Urnfield
swords of Ha B1 or earlier ( Müller-Karpe, 1961, passim). The rib-group outline on the blade is also unusual for Möri gen swords. Both these characteristics are present on the weapon from 'France', including the dots each side of the haft rib-groups. This sword has been included in the Stockstadt type by Müller-Karpe (1961, 49ff) because of the characteristic decoration; he dates the group to Ha B2. This implies either some sort of remnant influence on the Möri gen group in France from earlier Stockstadt swords, or that these two swords are an early form of the Möri gen type. The former appears the most plausible explanation, assuming a retarded Late Urnfield style of manufacture in France.

The Déville-les-Rouen hoard (Coutil, 1921, 804) includes fragments of the haft and blade of a Möri gen Variant II sword with flat pommel (ibid., Pl. 5). The hoard contains fragments of a bronze helmet or bowl in fine embossed style (Coutil, 1927, Pl. 7, 19), a chape with ribbed decoration (ibid., Pl. 5), 3 sickles, 2 buttons, 4 amulets, a mould for a wing-decorated socketed axe (ibid., Pl. 7), 3 gouges, and a variety of rings, bracelets, and a torc. There is also at least one bugle-shaped object from the hoard, and razor fragments, both significantly carps-tongue types, as might be expected from a find in Seine-Maritime. The chape is characteristic, with some direct parallels. An object from the Lötzen hoard in N. Germany (Sprockhoff 1934, Taf. 32, 3) with an iron core, associated with a Möri gen sword might be a chape of this type, while the best parallel known to me is from Möri gen (Vogt, 1942, Taf 79, 15) along with another, not quite so similar, both of which must probably date to the latest period of Bronze Age occupation, Ha B3.
Another German Mörligen hoard, Nachstenbach (Sprockhoff, 1934, Taf33/5) contains a conical chape with knob end, and some ribbing at the narrowest part, and also a wing-decorated socketed axe similar to that at Déville. An exactly similar chape comes from the Kerzers hoard in Switzerland, which also contains a large hollow-cast engraved bracelet with outturned terminals and a wing-decorated socketed axe (both found in the Deville hoard (Vogt, 1942, Taf81, 20-23). Other similar chapes known come from the Croydon hoard (containing inter alia a Tachlovice or Auvernier sword fragment — Inv. Arch. GB39:1, 2), the Lulworth and Wilburton hoards (where they may not in fact be chapes but shaft ferrules) and Epineuse (Kimmig, 1954, fig. 93).

The large hollow-cast bracelet from Déville (Coutil, 1921, Pl. 7, 1) is a characteristic form of S.E. French and Swiss Ha B3 ornament, in Vogt's incised style (1942, 201). Such bracelets are occasionally found in carps-tongue contexts (Briard, 1965, fig. 82); Inv. Arch. F6(3)63, 69-Venat) and must represent actual imports.

It thus seems that the Déville-les Rouen hoard contains mixed Atlantic and S.E. French elements, with a relative date, like the rest of the Mörligen group of Ha B3.
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CARP'S-TONGUE SWORDS
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CARP'S TONGUE SWORDS

The Carp's Tongue complex is named after the sword type most commonly found in the Atlantic hoards of this group. Of all the Atlantic bronze swords (see earlier Chapters) this is the type which has been most fully identified and debated on a European scale. Many of the bronzes, including the swords, have been discussed by Briard (1965, 199ff.) who has summed up the present state of information of this group in France: a situation conspicuously lacking for many sword types. Briard has also consolidated much factual knowledge of the contents of various of the Breton hoards (see Bibliography). Since a full survey of the background to the swords found in carp's-tongue hoards would inevitably involve repetition of many of Briard's statements and conclusions, it is proposed to deal only with specific points of interest and typological connections of these weapons. For a catalogue of Breton hoards and their contents, the reader is referred to Briard's Appendix I (1965, 303ff.) which repeats many hoards contained in Déchelette's list (1910, III, Appendix I), covering the whole of France.

The carp's tongue sword represents the final typological development of the Atlantic leaf-shaped swords of Classes I and II (see above), into a plain, well-designed weapon. Various shapes of the hilt and blade are common, but the most common characteristics are a broad and high midrib set in a straight-sided blade which often tapers to a concave-edged point, hence the name. The hilt is normally either straight-sided or slightly swollen in the centre, and the butt extended sideways into narrow pointed shoulders with a concave upper edge, above deep square ricassi. It is a variable factor whether these are flanged or not, but the square profile is nearly always present, with the bottom of the shoulders at a right angle to the axis of the blade. Slots or holes are used interchangeably to secure the hilt plates, and frequently a combination of both is seen.
where the rivet holes, particularly those in the butt, are
set in a channel, possibly to make the punching or drilling
of holes easier. One of the more constant characteristics
is an almost total lack of decoration on the blade, save for
a single line etched each side of the midrib, ending at the
butt where the lines curve outwards to the shoulders.

One of the main differences from preceding swords is in the
use of a flat or very slightly flanged hilt plate, although
this feature is again variable in its occurrence. Some im-
pedence to the sideways movement of the hilt plates would be
created by the thinning of the hilt towards the centre where
the rivet holes or slots are situated, although obviously
not as efficient as an H-section hilt in this respect. This
is just one of the indications of a more generalised weapon
than earlier swords, which bear the marks of much more careful
work and appear less "mass produced" than the carp's-tongue
sword. The hilt of a carp's-tongue sword fragment from
Chédigny (Indre-et-Loire) (Cordier et al., 1960, fig.6,3) ex-
emplifies this, with a plain unflanged edge but very efficient-
ly cast channel with three rivet holes. This simplification
may of course be explained by the larger amount of bronze
artefacts and hoards, and presumably a larger market for which
bronze founders would cater. There is certainly no falling
off in the quality of casting, since many of these carp's-
tongue swords are fine regular weapons, and also efficient:
the high midrib is juxtaposed with a distinct edge on the
blade to produce a cutting and thrusting sword. The edge is
however ground at a broader angle than the preceding Atlantic
leaf-shaped specimens, and in a few cases is backed with a
low rib so as to prevent the edge turning when meeting a hard
surface (Inv.Arch. F6(2)18). It is possible that this may
have arisen from the arris produced when the edge was sharpened,
but it is also interesting that the feature is far more common
on bronze Hallstatt swords to the East (Cowen, 1967, passim).
The larger features of the swords, for example length and blade shape are much more difficult to determine, for, as Briard points out (1965,203) most of the swords from hoards are broken fragments, of which there are unusually few points. The longest sword quoted by Briard is 79cm, somewhat longer than the largest Atlantic leaf-shaped weapon, the average being some 10cms. longer than these. Thus all carp's tongue swords are significantly shorter than contemporary Long Swords in the East, but they are closer to late cast-hilt weapons, and succeeding Gundlinglen type Hallstatt swords (Cowen,1967,394). Unlike any of these they seem largely designed for use in action as both a heavy-sla.shing sword, and with a thrusting stroke: the point would seem to have been developed especially for this purpose. The concave-edged point noted by many authors is sharpened round to the level of the midrib on both sides so as to give better penetration, supplemented by the thinness of the cross-section for the 10cms or so between the point and the midrib end.

The pommel ends of the hilts vary markedly from the flat-topped narrow variety which seems to be carried on from leaf-shaped swords, to those with a V- or T-configuration: in a very general way, somewhat similar to Cowen's three main classes of pommels on Gundlinglen Hallstatt swords (1967,402,fig.10:a1-b,c,d). The distribution of Cowen's class c and d (ibid,Map E), entirely confined to Britain and Ireland, save for one specimen, is interesting in the light of trade connections with the Atlantic coast in V-notched shields (Coles,1962,Map 1) and bronze cauldrons (Hawkes,Smith,1957,fig.10); other influences may have included the pommel shape. It seems likely that in any case the V- and T-pommels would have developed later than the plain narrow variety, which like the leaf-shaped blade was taken from earlier types and marks some intermediate forms. Good examples of these typologically early swords are shown by Briard (1965,figs. 64,3; 69,1), and in fact Atlantic leaf-shaped swords of Class III
(see above) are morphologically very close to the carp's-tongue weapons of early type.

But while one may talk of a typical weapon of the group, and typological characteristics, matters are very different when the swords are studied individually. There would seem to have been an astonishingly varied use of all sorts of different features on swords from different areas, speaking for greatly increased trade and contacts between larger and more remote regions. Many of the swords have typologically early and late characteristics side by side, and frequently these occur in the same hoard. Two swords shown by Coffyn (1967, 1, 4, 5) from the Lower Garonne area, illustrate this: one has a carp's-tongue point on a sword typical in all respects save for an angled ricasso, like that found commonly on Class Id leaf-shaped weapons, that is, a typologically early feature. The other is an entirely average weapon apart from a straight blade with a rounded tapering point; again this might be considered a transitional specimen. Examples of a plain point on the blade are known (Coutil, 1928, Pl. VIII; Müller-Karpe, 1959, Abb. 62, 8; Sprockhoff, 1931, Taf. 18, 2, 25, 12) from all over the range of distribution, and there seems to have been considerable variation in the form of the point. Thus even if Cowen's suggestions about the origins of these carp's-tongue swords, deriving them from St. Nazaire weapons, is accepted (1956, 639-642), it is certain that the leaf-shaped or straight blade and curved point continued in use alongside the new carp's-tongue shape.

Likewise many forms of hilt seem to have been in use contemporarily: Three varieties at least occur in the hoards of Notre-Dame d'Or (Millotte, Riquet, 1959, Pl. 5, 38, 40-2) and Vénat (Inv. Arch. F6(2)). The first contains examples of V- and T-pommels, and a variant with a cast pommel. This last form is seen in two examples in Vénat (nos. 17, 18), and Briard cites other similar specimens (1965, 205, fig. 70), while another from the Azay-le-Rideau
hoard appears broken along the cast line dividing the hilt bottom from the blade (Cordier et al., 1959, Pl.3,22). This small cast pommel would be best paralleled in Ha A Urnfield swords in the east of France, implying however a far too early date; it is more likely that Ha B flange hilted swords such as the Forel type, with a short pommel tang might have provided the model. Or it is just possible that the cast pommel copies the far larger features on Hallstatt swords (Cowen,1967,Pl.XLVI,6;XLVII,3,6) suitably scaled down. They are perfectly functional features and serve to give some indication of some of the hilt patterns; but in at least one case take on an almost unusably exaggerated form (Fabre,1947, fig.3,2) with a long cross-pommel on a sword evidently influenced by Sardinian weapons (Hencken,1956,137). Other pommel shapes, such as those with V- or T-profiles, may have supported hilts that resemble those on the cast-hilt swords from the Huelva find ('hoard' seems a misnomer for a find while dredging: Inv.Arch. E.1,1-39).

The shape of the lower part of the hilt is evident on some of these swords, as a result of casting the hilt plate thicker than the upper blade, and shaping this to correspond with the organic facings. Briard (1965,205,fig.69,5) comments on one example from Nantes, but there are others from Vénat (Inv.Arch. F6(2),16), Caumont (Eure) (Coutil,1921,Pl.5) and Azay-le-Rideau (Cordier et al.,1959,Pl.3,22-specimen with cast pommel). The intention would be probably to strengthen the hilt in use. This cutout is also seen on cast-hilt weapons: those cited above from Huelva, but also two from France - one in the Vénat hoard (op.cit.,19) and the sword from Uzès (Gard (see fig.1), found with its scabbard of beaten bronze. This is a considerably more decorated weapon than most carp's-tongue swords, with copper inlay on the pommel framed with punched dots, a strip of incision on the hilt, and the scabbard with boss-and-circle decoration, dated by Sandars to her Late Bronze III(1957,241).
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But the blade is a standard developed carp’s-tongue shape, with fine point and high midrib, and no ricassi, as is the case on the Huelva cast-hilt swords.

The cast-hilt antenna sword from the Vénat hoard is mentioned elsewhere (Antenna swords) but it seems to have little in common with eastern weapons of this type (Inv. Arch. F.6(2)19) and is obviously a local copy. Five ribs decorate the narrow flattened hilt, which is provided with a pommel inrolled at both ends, while there are low ricassi on the blade, decorated with six incised lines. It appears that a founder unused to the late antenna swords of the east, has copied possibly a Tarquinia weapon, and has used a decoration like that seen on late Class II leaf-shaped swords (St. Nazaire type), and on Morigen weapons in E. France. Another sword from the Vénat hoard (no.18) with a cast pommel has eight such incised lines on the blade, with decorative punching in the tops of these. This is more likely to be a straight copy from such Morigen swords as Trévoux (q.v.) with punched-rib outlines on the blade, as this exact pattern occurs on another sword with flat cast hilt in Venat (no.16). This has a rib either side of the square section midrib, and in the spaces between these can be seen the remains of incised decoration – five longitudinal outlines each side, with a row of semicircles below the cutout. Precisely this pattern is current on flange-hilted Long Swords (Cowen, 1955, Abb. 14, 15), Tachlovice and other late Ha B cast-hilt swords (Müller-Karpe, 1961, Taf. 69; 52).

It therefore seems likely that several of these carp’s-tongue weapons were modelled on Ha B swords, either in hilt or pommel shape, or in decoration, but in cases of incised outlines this could refer to a remnant St. Nazaire tradition (e.g. Plounevezel; Cabrol, 1938, 415, fig. 9). But other contacts are present in sword types, shown by numerous finds of British Ewart Park sword fragments in various of the Loire Breton and Channel
coast hoards. Briard mentions some of these (1965,205-8), but there are more in Picardy, in the hoards of Marlers, Le Plainseau, and an unprovenanced hoard from around Amiens (Breuil,1900,figs.4,5). Two possible fragments are known from the Chamery hoard, in Marne (Doize,1959,533,Pl.I,3,4), and an almost complete specimen from St.-Pierre-à-Couy(Somme) (Breuil,1900,fig.5,48), while a Gundlingen Hallstatt sword of Thames Type (Briard,1965,208,fig.71,3;Cowen,1967,Pl.LXII,7) is known from Plourivo, in Cotes-du-Nord. These Ewart Park swords imply a general post-Wilburton date, exactly that of carp's-tongue swords in France, post-Classes I and II leaf-shaped swords, with a considerable length of use of both types. There would seem to have been trade in scrap objects in both directions between Britain and France.

Trade with other areas is less evident, at least in so far as it affects the swords. To the south the characteristic French carp's-tongue swords largely give way after the Gironde area to the Spanish variety. Most specimens of these show features different from the French weapons; the casting is in many cases less efficient, and they represent hybridisation between later Atlantic leaf-shaped swords and carp's tongue weapons. This is very evident in the shape of the point, and the ricassi (Inv.Arch. E 1 1-10; Almagro,1966,fig.56; Savory,1949,passim; 1966,216ff.). Other articles were carried in trade along the Atlantic coast to Spain (Savory,1949;1966,216ff.) but there seems to have been a distinct style of sword manufacture, linked to the Mediterranean (Hencken,1956,passim). One definite route, by-passing the Iberian peninsula, is illustrated by triangular scrapers and their distribution up the Garonne to Narbonne, and through to the Mediterranean Coast. It appears that this may have been linked with the tin trade (Gaudron, Souto,1961,583ff.,fig.1) along the 'couloir languedocien', but how far it is to be seen as an activity of the Late Urnfields in this area and the Hallstatt C expansion in the
"Tumulus causenards" is not known (Soutou, 1958; 1961). There was certainly a large expansion in the South of France, and westwards along the South coast (Sandars, 1957, 296ff, Maps XII, XIII) with the establishment of most important settlements; and the impetus of the Greek trade to spur on private enterprise from the Garonne area. This may be the route along which, in the other direction from the scrapers and possibly tin, the Late Bronze III sword decoration and hilt shape arrived at the Vénat hoard. And possibly the Vénat fibula came along the same route (Hencken, 1956, fig. 6), maybe from Italy (ibid, 132).

Briard comments upon the difficulty of precise dating within these large hoards of the Final Bronze Age (1905, 239), but at least the general correlations between France and surrounding countries seem clear (for Germany see Müller-Karpe, 1959, Abb. 2). What is not so certain is the duration of the carp's-tongue sword, but certain finds, such as the wheel and double duck-headed boat pendant from Charroux (Abauzit, 1962, fig. 1, 8) and several objects quoted by Briard, suggest a continuance into Ha C. There are no Hallstatt bronze swords, save two from the West coast of France, and few on the channel coast; the furthest west they occur is as far as Haute-Garonne, Lot, and Indre (Cowen, 1967). If there were no other evidence it would be reasonable to assume that the presence of the last French bronze swords, the carp's tongue group, caused this lack of Hallstatt swords in the Atlantic province, and this seems to be supported by the dating. The carp's tongue sword does not appear to be succeeded by any other weapon of bronze and so it seems to have continued until replacement by Hallstatt antenna daggers or iron weapons. It seems unusual that no finds of Gundlingen swords have been made in the west, since there was trade in Ewart Park/Hallstatt swords with Britain. There is a possibility that the shorter British Hallstatt swords were more suited to the likes of the Atlantic users,
especially as the British weapons also tend to have a finer point. It would not seem too unreasonable to see the heavy Hallstatt sword of East France as the weapon of a heavily armed warrior or as Cowen (1967,391) suggests of a mounted warrior, and the carp's tongue sword of the Atlantic province a lighter cut-and-thrust weapon, possibly of greater use on board ship. All through the Atlantic Bronze Age extensive use must have been made of boats or ships, especially in the massive trade of the Final Bronze Age, and a long Hallstatt sword would not be a suitable weapon in close fighting of this kind. It is possible that the British Hallstatt swords, many of which have V- or T-pommels, acquired this feature from the existing carp's-tongue varieties when they were carried into the sphere of influence of the latter, that is, South-East England. Certainly there was much trade between the British Isles and France, as seen above, with further connections between the carp's tongue sword and eastern Urnfield weapons via the 'couloir languedocien'.

Thus despite some Urnfield encroachment into the west, with mainly pottery as evidence of this (Sandars, 1957, 246ff), the Atlantic and Channel coasts seem to have a continuous history of bronze working, particularly in swords, and during most of this era appear to have been large-scale entrepreneurs. This pattern continues and expands into a considerable industry in the carp's tongue group, dealing inter alia with Mediterranean trade, and supporting what seems to be a separate identity from bronze-working areas in E. and S.E. France throughout the Final Bronze Age into Ha C times.
CHAPTER XVIII

HOARDS AND METALLURGY
With a lack of any good cultural contexts within which to study French Bronze Age swords, it is necessary to use associated artifacts as a means of assigning a relative date and sometimes a cultural context to these weapons. This would most conveniently be done by using material assigned to graves, in which it is assumed that the possessions of the occupier would be deposited; but graves containing swords are very rare in French, and unknown on the Atlantic and Channel coasts. So one is thrown back onto bronze hoards for any indication of the background in which a sword was used.

Various assumptions about bronze hoards have been made over the years: the basic definition of a bronze hoard has been a group or collection of bronze objects deposited together in the past. Hodges (1957,51) has questioned even this basic definition, but only in pointing out the more evident misuse of the concept, such as taking finds from a river ford, or from different places in the same area, as closed finds. He states that only when the find place has been thoroughly examined can the hoard be accepted as such. But here again, this embodies an unproved or unlikely assumption, in some cases; there seems no reason why the same spot should not have been used on successive occasions for hiding other objects when all, some or none of the former objects had been lifted. This is especially so when the recipient hole in the ground has been prepared in some way, such as a wooden box inserted (Penavern hoard; Briard,1965, 53), or a wooden chamber with a stone floor (Menec-Tosta; Briard,1958,2); or even the common practice of using a pot would provide a permanent hiding place, closed by a stone. De Lisle (1883,64) describes his examination of the Prairie de Mauves hoard,
found in a clay pit, below a large stone, and situated right on the bank of the Loire. He comments on the situation of the find, and its accessibility to anyone using water transport: such hiding places might be passed on over some considerable time and used over an extended period. This idea is not put forward as a possibility only, as a counter to too uncritical an acceptance of a hoard as a contemporaneously deposited group of artifacts. In fact most hoards, especially before the carp's tongue horizon, seem to have been put straight into a hole in the ground, possibly in a bag (e.g. Tréboul, in a linen bag), and probably represent single assemblies: but definite information on circumstances of find is conspicuously lacking in very many cases. So to re-define a hoard: a group of objects found together, and assumed in most cases to have been deposited at the same time.

Different sorts of hoards have been recognised for some time. Evans (1881, 457-9) divided the hoards into three types, depending on their contents: personal traders', and founders' hoards. The first category is self-evident: an individual would bury valuable in troublesome times, or just for general security. Traders' hoards in Evans' scheme contain finished objects ready for trading, and founders' hoards broken, worn out objects, casting waste, rough metal and moulds. Hodges (1957, 51ff) has followed this scheme in his studies in the Late Bronze Age in Ireland, adding one category, that of hoards of metal-workers' tools, and dividing the rest of the known hoards along Evans' types. Given the unusual lack of founders' hoards in Ireland, this leaves the vast majority personal hoards - 39 in all, from which Hodges draws various social conclusions, via a simple statistical study of the contents. I do not intend to follow this scheme for two reasons: first there is a totally different accent on the various sorts of hoards in France, and, secondly, I feel that Hodges' concept of a personal hoard is untenable. Under very few conceivable circumstances would anyone bury his weapons in time of trouble,
and likewise in normal untroubled times, yet "rather less than a quarter" of Hodges' personal hoards are weapons only, in which the sword is the more common arm. A quarter of the personal hoards contain both tools and weapons, and here I feel that the same criticism would surely apply; but the rest of the hoards would suit an attribution to an individual, with tools and personal ornaments only. There seems little point in any individual having such an expensive weapon as a sword or a spear, unless he intended to use it in combat, and if he fled his home at the approach of a hostile band he would certainly not leave it behind buried in a hole in the ground. Concepts of prehistoric society or usage cannot be susceptible to proof in the final sense but they ought at least to be plausible. So, in the vast majority of cases, I would limit personal hoards to valuables (tools or ornaments) difficult to carry or susceptible to theft, at least in so far as the French material is concerned.

Likewise, the concept of a trader's or merchant's hoard would seem to be perfectly valid in a general sense, but I feel that Hodges' definition is far too restricted, confined as it is to assemblages of artifacts ready for trade and in considerable numbers. He admits the difficulty of separating small merchant's and large personal hoards and yet goes on to draw social conclusions from the latter. The definitions of founders' and merchants' hoards should probably in part be amalgamated, as suggested below, since many of the finds could well be covered by both.

Chantre in 1875 divided the French hoards into three classes - Trésors, Fonderies and Stations, which broadly correspond to Evan's last two categories, with the Stations comprising various sorts of finds grouped under their similar provenance, that is, from settlements (largely lakeside). Déchelette reduced Chantre's number of categories to two (1910, lII, 163-7)
founders' and simple hoards, but limited the concept of a founder's hoard to those finds containing ingots, casting waste, and whole moulds. He makes the point that hoards of whole objects, unused, could represent monetary assets, buried for safety, and not necessarily outgoing traders' stock. He also assigns hoards with metal working tools to artisans, and quotes the gold torc, hammer and anvil from Fresn é-la-Mère as a jeweller's kit. But his 'simple' hoards are those which show no evidence for connection with someone specifically engaged in the bronze industry, leaving very varied material under the same heading. Since Déchelette, the position has remained much as he left it, with work based upon his list of hoards (1910, II, I, Appendix I) and his dating and hoard classification in use until comparatively recently. Very little discussion as to the limitation of the use of hoards for dating has gone on, or varieties of hoards which might be discernible through their contents; so before consideration of the French sword hoards, some ideas for classification and suggestions on the possible background of these is set out below.

1 Possible depositors of the hoard, either in time of trouble or for general security:
   A  private person
   B  someone in metal working trade, which might include:
      i  founder
      ii smith, or travelling smith
      iii hawker, pedlar
      iv tinker

2 State and composition of the hoard:
   A  Composition:
      i  weapons, armour
      ii tools (agricultural, wood, metal-working, etc.)
      iii ornaments
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iv ingots, casting waste
v vehicle components
vi other objects

D State of objects:
i complete (a) fresh cast
   (b) finished, unused
   (c) used, worn

ii broken (a) accidentally
   (b) deliberately

iii (i) and (ii) above in combination

3 Possible reasons for object's deposition in hoard:
A fashioned, social conformity
B replacement by more efficient artefact
C accidentally broken
D wear on artefact

In Section I suggestions have been made about various people who might deal in the metal trade, and at the base of this is the bronze founder, casting the basic artifacts. It is felt that the establishment of a foundry, with a furnace, supply of charcoal, and numerous moulds of all sorts some of bronze, stone, or clay, would lead to a static bronze founder, at least in the context of a flourishing highly developed metal industry such as that in the Final Bronze Age (carp's-tongue group) on the Atlantic coast. This has already been pointed out by de Lisle (1883,68-9), and seems generally accepted. The concept of a smith (defined as one who works metal with a hammer) receiving rough goods from a founder, finishing and decorating them is also no new concept: this would also comply with the idea of a travelling artisan which has been mooted from time to time. It is possible also that such a person might be a coppersmith, that is, working in sheet metal as against cast wares, and possibly moving from place to place effecting repairs on metal vessels.
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The tinker is a minor version of this concept, doing small mending jobs, selling small articles, but also, to take a modern parallel, collecting scrap metal from households as exchange, for return to the founder or smith. There could easily be various degrees of these ideas; a large smithy, with clamps and benches set up would obviously be a static feature, while the smaller smith would perform much of the functions of a tinker. Likewise, small casting jobs might be carried out by any of the travelling artisans, such as bronze running-on repairs onto a broken sword hilt or a bronze bowl (e.g. Drescher, 1958, Taf.33). All these people would want bronze scrap, especially the founder, who would probably get it via a hawk or pedlar. These may also have supplied ingots or smelted metal to founders and smiths from mining centres, or from workers of alluvial mineral deposits (Briard, 1965, figs.2,3).

Hawkers and pedlars may have been the intermediate traders between the public and the founders and/or smiths, and must have operated on various scales. Much of the bronze material of the Atlantic coast seems to have been transmitted by sea, and a great deal overland, especially in the east of France along the Saône – Seine – S. Germany routes, seen by the distribution of the Urnfield and to some extent, imported Atlantic material. This brings to mind various reference in the mediaeval Icelandic sagas, of traders' boats plying between Norway and Iceland in the summer months, and also of hawkers often with a companion, and pack horse, trading various wares at homesteads. Section 2B above is particularly applicable to the idea of hawkers trading bronzes, since no-one would wish to carry large amounts of broken or old bronze artefacts on an entire trading excursion and might hide these for future collection. It has been assumed by various authors that a trader's hoard would contain only fresh objects ready for trade, and such would doubtless be the case at the beginning of the journey,
but at any point from then on the proportion of old bronzes would increase until the whole trader's stock would be composed of old pieces being taken to the founder. Section 3 contains suggestions as to why people might exchange their bronzes to a hawker, and in cases A and B the object might appear to be fairly unworn, or in circumstances of a rapid development of different bronze types, almost new. So it cannot even be assumed that since complete bronzes are found in a hoard, it represents an outgoing trader's stock. However, the situations suggested in C and D of Section 3 would seem more likely to be the prevailing factors upon the trading in of objects, especially so with weapons and tools, less so with ornaments. Theoretically, it ought to be possible to divide hoards by their contents into various specialised or general smiths or hawkers; in some cases this can be done with the sword hoards, to which this study is limited, and can also be shown in other cases in E. France. One assumption, embodied in Section 2 B is, I feel, justified on the present knowledge: it is that when objects are found in a hoard broken into short lengths, this represents the work of someone in the metal trade, and not a private person. It may be that it has been done for convenience in carrying, or as a preliminary to being melted down, but it is difficult to see what circumstances would make an individual do this apart from these reasons. It is not always possible to tell whether an object has been broken accidentally or deliberately, indeed both may have been done; and if the object was of fairly small size, a single, possible accidental break would reduce it to a portable size for a hawker.

Thus a situation merges where many possible explanations may be possible for a single hoard, and to take a single one and draw conclusions may be highly misleading. Others seem to be more susceptible to speculative classification, particularly where other evidence is possible, but until much more is known of the structure of the society, and of the organisation of the metal trade, most of the French hoards containing swords will
be susceptible to a broad range of explanation. Some of the more likely explanations for some of the sword hoards will be considered below.

**Personal hoards:** As stated above, this would seem a likely category, especially if weapons are excluded, only it will be in most cases impossible to distinguish a large personal from a small trader's hoard, as Hodges noted.

**Founders' hoards:** These should ideally include casting waste, ill-cast and therefore useless objects, mould fragments and possibly ingots. If founders and smiths are not treated as separate artisans, then metal-working tools should be included, as well as bronze scrap. A good example of this would seem to be the Larnaud hoard (Coutil, 1914, Pls. I–VI) which includes all the above, a socketed hammer, saws, a die for punching sheet metal (ibid., Pl. III, 27) narrow-edged chisels, and a punch or burin for engraving four parallel lines on bronze, most likely onto a sword blade (Pl. III, 30, 30A). There are few early hoards containing swords which can definitely be assigned to this type: two Tréboul hoards have ingots (Chapelle-Glain and Chatillon-sur-Seiche), but none show other likely indications. The Rosnoen group is however significantly different, and of these the best example is the hoard from Condé-sur-Noireau (q.v.). It contained several finished swords, several deliberately broken swords, ingots, and a bronze axe mould. Four out of thirteen hoards include socketed hammers, while the Ru-Caoudal hoard also includes two burins. This last hoard might well have been deposited by some smith, but it is not known whether socketed hammers represent purely metal-working tools or were in use in other trades. So one likely founder's and one likely smith's hoard are all that can be confident—
ly claimed for this group, although the possibility of a coppersmith's tool in three others must be kept in mind. In the two succeeding Atlantic groups the incidence of casting waste and particularly ingots (Briard, 1965, 225) rises to its peak in the carp's-tongue hoards: no less than nine out of eighteen of the leaf-shaped sword hoards contain ingots or casting waste. Briard suggests that the piano-convex ingot represents the stock of the founder, and while this is no doubt true in many cases, it seems that it could apply in some cases to traders' melting down scrap. Such a case is seen in the Longueville hoard (Lamarre, 1945) where a scrap hoard with a largely tin bronze content in the artefacts is accompanied by an ingot, seemingly cast in the pot the hoard was found in. An analysis of this shows a low tin and high lead content: it would seem that the trader had melted some of the objects with high lead content and had lost the tin through overheating.

It would thus seem that by the carp's-tongue horizon the metal industry was in a much greater state of organisation, and either more ingots were being imported from mining areas, or founders kept their stock standardised into specific alloys or pure metals in ingot form. There seems in any case to have been a great increase in the amount of bronze in use.

Traders' hoards: The majority of sword hoards might fall into this type. The Tréboul hoards show a pattern of four hoards out of eight containing deliberately broken objects, the others with some objects broken, possibly accidentally. The Rosnoen hoards show nine out of thirteen containing smashed objects as against four with broken objects (i.e. presumably accidentally broken). The hoards
of Atlantic leaf-shaped swords show a proportion of fourteen finds with smashed objects, as against two with broken contents. This culminates in the scrap hoards of carp's-tongue times in which there are very few complete objects, most of the complete swords having come from single finds. It is to be presumed that this systematic breakage became necessary as the volume and distance of trade along the Atlantic coasts and overland increased, and perhaps it was more acceptable to the bronze founder in this form. Certainly it must have involved a great deal of trouble to break, say, a palstave across the flanged butt just to reduce it in volume from what in some cases must have been a relatively small axe. Perhaps more of these hoards are pre-melting founders' hoards than is recognised because of the lack of casting waste, etc., included before burial. Such cases may be the two Cannes-Ecluses hoards (Gaucher, Robert, 1967) found around a settlement of some twenty houses, among which were areas of very burnt earth, suggested by the authors to have been the site of a foundry. The hoards being so close to a village and composed of deliberately broken pieces might in this case suggest a founder's hoard more than a trader's. But evidence even as imprecise as this is rarely met with. Most of the finds assumed to be traders' hoards contain both weapons and tools, but some specifically sword hoards are known. Since this study is confined to swords, no attempt has been made to differentiate the hoards containing swords in respect of other contents, since an artificial division has already been taken (only with swords considered) and an unbalanced conclusion would result.

Sword traders' hoards: A few of these only are known, from various periods. Le Castello (Briard, 1965, 29ff) is
perhaps best known, containing seven swords and a dagger, while Duault, another Tréboul hoard, contained mainly weapons and possibly a razor, although the hoard has been lost. The find from Le Cheylounet of two swords (q.v.) is not well documented, but might be the stock of someone executing a particular commission. Better known is the hoard from Penboat (Briard, 1961, 26ff), composed of two whole and several broken and fragmentary Rosnoen swords buried under a stone in an alignment. The two complete weapons seem serviceable, one has had the butt repaired, and leaving aside possible votive explanations, these two may be finished swords for sale, mixed with acquired scrap. The Boud-Gwen and Octon hoards, although containing scrap weapons only, may just be general traders' hoards with a chance exclusion of other material, but the only other find of this type, from Aliés (Rames, 1872, Pl. XXV) seems a certain sword trader's deposit. Three swords, all complete, very fine cast-hilt specimens of different types were found together in a rock crack, pushed in there without scabbards, it would appear, since the contact points between them show un-patinated bronze. This seems to be one of the very few (less than half a dozen) 'outgoing' traders' hoards of finished bronze swords known in France; and it is the only one of the Urnfield period.

Thus from the above it is evident that no rigid classification can be imposed upon hoards. For the reasons explained shortly above no attempt has been made to analyse different hoard types statistically, since 'sword hoards' are an arbitrary division anyway. That they must be random in content is seen in the concept of the trader's hoard - a man collecting out-of-fashion, inefficient or broken objects in various states of disrepair will obviously be offered in particular cases arte-
facts of greatly different dates. The chances are that his trade will be largely concerned with objects of a fairly recent nature, but as we have seen they may be mixed with new or old pieces as the circumstances dictate. In some cases it would appear, however, that other factors were at work, that the trader may have been trying to sell or acquire particular tools or weapons. The best indications of this come from East France, with hoards such as Briod (Coutil, 1914; Millotte, 1963, Pl. XXXVI, 15-21; 1966, Pl. XXIII), where some 250 sickles were found, broken and whole, a dozen pieces of other scrap (knives, etc.) and casting waste. Here it appears a founder was specialising in a particular form of tool, possibly, as Coutil suggests (1914, 15) for a specialised market, such as vineyards or other specific occupations. There is also the possibility that a specific form of scrap might be collected because of its metal content: some sickles, for example, are high in tin; but in the present state of metallurgical knowledge in France it is impossible to draw any conclusions of a far-reaching nature like this. Finally there is a likelihood that scrap metal itself would be traded, especially to those areas without their own metal resources, or cut off from normal supply by political factors. If hawkers were collecting scrap from a founder or smith (or from scrap dealers, to draw a modern parallel) such things as casting waste and broken moulds might be included, thus further confusing the picture, leading to an attribution as a founder’s hoard. So in this study it has been assumed that hoards are only useful in dating if they show a specific ‘horizon’ of bronze – several different types occurring more or less regularly together in an area – for example, mid-winged axes, button sickles, late anklets, collared pins in the E. French and S. German Bronze D hoards. This combination of types as a criterion for a specific horizon may at least help to explain some of the larger anomalies – or at least, taken with the conception of a hoard laid out above, may stop
false conclusions being read into finds like St. Genouph (part carp's-tongue, part Atlantic rapier group), by offering a number of suggestions for any one hoard. More has been said about this in the chapter on Atlantic leaf-shaped swords, but by taking a number of common types in various hoards it should be possible to establish a 'dating threshold' which is either broad or narrow, depending on how far the contents of a find vary from the common pattern. Most of the sword hoards in France have a broad dating threshold, but an overall study of all French hoards would probably show a clearer pattern, within the inevitable limitation of finds found in unnoted circumstances, divided or amalgamated hoards, and whole bronze assemblages either sold, melted down, or lost.

Metallurgy

Various metal analyses of bronze artefacts have been executed in France up to the present, but until recently it has been of only passing interest to most. Since the time of Déchelette (1910,II,i,178) it has been known that a tin bronze was in use through his periods I-III, and that in period IVa a tin bronze with more or less high lead content came into being. Recently the work of Maréchal, and the Laboratoire of Anthropologie Préhistorique in Rennes has provided ever-growing evidence of metallurgical compositions and working techniques, especially in the west of France. Giot et al. (1966) have clarified the composition of various of the Breton and other hoards, from the Early Bronze Age to the Final Bronze Age, with special emphasis on the latter, and although this book is the most valuable work on this topic in France and records over four hundred analyses, this is comparatively little in the light of the material yet to be covered. The other large source, recorded in this book, is the succession of analyses conducted by Maréchal (Briard,Maréchal,1958).
The results are not and probably will not be as spectacular as analyses for the Early Bronze Age alone, with possible identification of the sources of the metal. The prevailing custom of re-using earlier artefacts as sources of casting metal was prevalent throughout the Middle and Late Bronze Ages, with a resulting amalgamation of the trace elements which might have permitted identification. Thus the position at the present is much more detailed than in Déchelette's time, but the broad development of tin bronze appears much the same, with the introduction of a lead content in the Late Bronze Age. Swords have had no specific studies executed upon them, so it is only occasionally that a metal analysis is known for a specific weapon, but they seem to follow much the same trend.

Maréchal (Briard, Maréchal, 1958) has analysed various objects from the Tréboul hoard, including sword blade fragments (nos. 32,33). These have been discussed and tabulated by Giot et al. (1966,17ff,99), who note the surprising amount of lead — 5% — in one of the blade fragments, much higher than the normal, below 1%. Tin in the sword blades is between 10-11%, normal for this date. A rapier from Thouaré (G.60,61 = Giot et al., 1966, nos.60,61) shows a slightly lower tin content, with a rivet from its butt containing 10.5% tin for hardness. Lead, while negligible in this weapon, contrasts with another Tréboul sword from Plourivo (G.51) with 0.35% lead content, 9.35% tin, showing the variability of lead in these swords.

The Penaveira hoard, characteristic of a Middle/Late Bronze Age phase, has been analysed (G.101-131), including many of the swords. Tin is more important, with a mean value of 13%, giving hardness to the blades. These values are considerably higher than those for three contemporary swords, given below, which all show less tin.
A is the Buková sword from Auvernier (G.262, see p.46), B the Monza sword from the Seine at Paris (analysis Brown, Blin-Stoyle,1959, no.9: their Group I), and C1 and C2 two analyses of the rod-tanged sword from the Seine at Bligny by M. Maréchal, who has allowed me to use them for comparison. All three show a 'Middle Bronze Age' composition, in Brown and Blin-Stoyle's classification, indicative perhaps of the early date assigned them on typological grounds. The Rosnoen sword from Longueville (Seine - et - Marne; Lamarre, 1945) has not been analysed, but a mid-winged axe and sickle fragment show a low lead content, 8.57% and 10.18% of tin, so the sword may have been much the same. The ingot in the hoard contained only 2.92% tin, but 3.01% lead, the former lost Lamarre suggests through overheating, the latter maybe comes from Atlantic leaf-shaped sword fragments of which possibly one occurs in the hoard.

Only two Hemigkofen swords have been analysed both by Bourhis (G.132, 133). They seem to be local copies from their appearance, so the 8% to 10% tin and 0.7% lead content resembles that in use in native leaf-shaped swords. The fragments of a sword blade analysed from the St. Brieuc-des-Iffs hoard (G.Ma142) shows a very similar composition, but a sword fragment from Dinan (G.134) has 1.5% of lead, which becomes more common among the Atlantic leaf-shaped swords, but is always variable.
Two hoards in the Gironde, of this type, corresponding to Classes II and III contain analysed sword fragments. Pineuilh (Coffyn, 1967, 795-6) contains swords with very different tin and lead contents - 22.0% tin, 0.4% lead in the blade fragment, 12.0% tin, 2.0% lead in the hilt fragment; also, the trace elements differ markedly in concentration. St. Denis-de-Pile (ibid.) includes various sword fragments, of which one has 13.0% tin, 14.8% lead. With such variation in two similar hoards in the same area, little can be concluded from the analyses except that these three weapons must have differed markedly in efficiency: the high tin content would make a hard cutting edge, but the high lead content would surely render this sword into a very poor cutting weapon.

Few carp's-tongue swords have been analysed for metal content; Giot et al cite one fragment from La Ville-Eon (G.Mal 51) with almost 10% tin, and only 0.12% lead, which might suggest that the inefficiency of a lead alloy for a sword had become evident by this time. The Ewart Park/Hallstatt sword from Plourivo shows a similar small lead content and 9.35% tin (Briard, 1965, 96). The great efficiency in metallurgy in the carp's-tongue horizon shows in the large number of plano-convex ingots of various metals found in scrap hoards and in hoards by themselves (Giot et al, 1966, 27ff). These have been discussed, listed and analysed in the work cited, and seem to represent either stock for casting (bronze ingots) or fresh-mined copper ingots. On the face of it, this last explanation would seem most likely, as Giot et al states, mentioning the great purity of the copper ingots (1966, 38); but Drescher (1958, 12) quotes an eleventh century text on the method of removing lead from bronze by the simplest of methods - scattering ashes on the surface. He also quotes from Pliny (ibid, 13) on a method of extracting impurities from copper by sieving it into water, and comments that this method is efficient. So if all lead could be removed by the method above, this would be at least part way to re-melting old objects into pure metal. It is not known if a simple method of
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extracting tin from bronze was known to Late Bronze Age founders, so it might be better to see the ingots as trade objects from mining areas. These, as Briard suggests (1965, 15ff) may have been either on the Atlantic coast (Ireland, Cornwall, Iberia) or may have come from the east with Alpine bronzes. The deposits of lead, tin and copper in Brittany are possibilities, especially in the later Bronze Age, but working at this date is as yet unproven, despite Marechal's suggestion that some iron-bearing slag found may in fact be from copper smelting (1963, 42).

Virtually nothing has been published in France about the actual production of swords; most information is by inference from studies of swords in other countries. Thus, Hundt (1962; 1965) has contributed a good deal to the understanding of the manufacture of cast-hilt swords, and Drescher (1958) to the study of repairs on bronze. Both require a considerable measure of technical knowledge, and apart from noting the presence of repairs on some swords it is not possible to define the actual technique used. A possible example of soldering has been noted under Rod-tanged swords, Class B, but again, this will need investigation by a metallurgist to decide on the date of this most unusual piece of metal working. On occasions the picture is confused by a modern repair, with attempts to conceal this: such is the sword in the British Museum, ML1206, an Atlantic leaf-shaped weapon which has had the blade riveted together, and copper or bronze run onto the joint. File marks and a visibly modern patina give this away, likewise another sword in the Morel collection with a decorated blade soft soldered onto a plain butt, almost certainly a modern repair. Various specific examples are discussed in the relevant chapters.
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CONCLUSIONS
This work has shown that the sword was current throughout the French Middle and Late Bronze Age as it is known today, and that it was in extensive use over much of the area under consideration. Present numbers although a rough guide to the amount of any type in use in the past, have, for most of the earlier groups, undergone depletion as a result of re-melting. But sufficient evidence remains to show that the bronze sword was an important weapon in its surrounding society.

Hoardsof bronze objects, which form the main basis for dating these swords and relating them to their former social environment, have been discussed, and evaluated. They are not the ideal associations for dating, but it is suggested that within a broad threshold they may well represent a sample of the objects in use or those recently taken out of use, within a society; or at least there seems a reasonable probability of this, especially if the same combinations of objects occur in an area. Some suggestions of the circumstances of their deposition have been made, and of the people who may have laid down the hoards; it is felt that with so many explanations of most finds, a definite as-signation to a type, with social implications, should be avoided until more evidence is gained. But on the premise that systematically broken objects represent the work of someone in the metal trade, most of the hoards can at least be placed within this broad class. It is also felt that in no likely circumstances would an individual bury his weapons, particularly a sword, least of all in time of trouble, and so this class of hoard should be limited to tools and personal ornaments, whole or broken accidentally.

Within the metal trade, the rise in an efficient hard
bronze alloy has been noted throughout the Middle and earlier Late Bronze Age, with an addition of lead for easier casting in some cases in the latter part of the period. At least one sword would seem to have had a low efficiency with too high a lead content, but normally the practice of adding tin up to a level of c.15%, and hammering the edges for sharpening would give an excellent cutting or thrusting weapon as the case may be. In the Final Bronze Age the normal addition of c.5% of lead or lower would improve casting, and the blade construction of carp's tongue swords would in any case compensate for lack of tensile strength. Repairs are known on bronze swords, but it would appear to have been a much more common practice to melt the weapon down completely and cast another. Several repairs noted are evidently modern joinings, using both hard and soft solder and run-on metal over rivets; but one most interesting possible soft soldering repair of maybe Bronze Age date has been noted.

The overall growth and development of the sword is now clear, over the area of finds in France; from the basis of dagger and dirk types the gradual lengthening of the blade produced the earliest swords of the Middle Bronze Age with constructions based on the dagger. Nowhere is this better seen than in Brittany, where the Armorican series of long daggers seems to have given rise to Tréboul rapiers or swords. These are enlarged ogival daggers, frequently with cast hilts, which appear to have continued as a specialised weapon form in Brittany like the long-lived cast hilt triangular daggers in the S. East of France. Other areas developed the ogival dagger towards a more slender, longer weapon, with noticeable minor differences which allow various groups to be demarcated. In East France these Atlantic rapiers appear as imports, impinging upon the Late Tumulus form of weapon, and continuing in use alongside these. Rapiers of one form or another, most with trapeze-shaped butts were current over much of Western and Northern Europe, and show a specialised form of fighting,
doubtless deriving with the format from their dagger ancestry. France and Britain were in close contact at this time, and many of these rapiers, some identical in shape, are known from the Thames, Seine and Somme Rivers. Brittany was largely bypassed in the development of these weapons, conserving the Tréboul rapier as the main type. Later evolution of the Atlantic rapier was towards a blade with oval-cross-section, and in the east a narrowing of the butt is noticeable. Both these features constitute the basis of the Rosnoen sword, the ensuing type with a broad distribution. How far the Late Tumulus rapiers of the Alsace/Lorraine/Upper Saône region with oval sections and rounded butts played a part in this is uncertain but they also underwent a change at about the same time as the intrusive Rosnoen swords.

A series of typological changes gave rise to a weapon with straight blade; 'butt-plate' and thin-rod-tang, at the same time as Rixheim swords appear in the Saône Valley and the Upper Seine/Yonne region. The appearance of these types, and the copies of imported Rosnoen swords, constitute a generally similar method of sword construction using a 'butt-plate'. All examples of these are largely grouped in the British Isles, France, Switzerland and Upper Italy, so it could conveniently be called a 'western' format of sword. The exact development of the 'western' pattern is obscure, but it has been possible to show convincing ancestry for both the Rosnoen and rod-tanged swords, while Rixheim swords appear to be intrusive weapons. All these rely on much the same blade and butt form and must have been used in combat in a similar way. The distributions are generally different, but mix in the Upper Seine/Marne/Oise area, and further south as scattered examples in the Saône Valley. The Rosnoen swords are markedly coastal and riverine in distribution, the others are generally to the South and East of these. In this latter area there seems to be direct connection with Urnfield
settlement and burials for Rixheim swords, and some evidence for this in respect of Monza weapons. At the same period further Urnfield evidence is to be noted in the spread of a few Nenningen flange-hilted swords up to and into the area of the butt-plate series, which they resemble in blade shape, and the introduction from the south of short leaf-shaped rod-tanged swords of Class B from Italy. It has been possible through these weapons to show the growth of the leaf-shaped blade in the west, and the effect of these on flange-hilted swords in Western Germany and Switzerland.

As a result of these cross-currents and influences the leaf-shaped flange-hilted swords came into being in the area just described, and was shortly afterwards taken up as the principal sword type throughout France. In the Atlantic coastal areas Urnfield sword exports gave rise to a series of leaf-shaped weapons, developed in large numbers by the flourishing Atlantic bronze industry. In the East of France a somewhat similar trend was in progress, but with more diversification of types, due no doubt to the more varied bronze traditions continually arriving from further East. There is a gradual lengthening all through the Later Bronze Age, and an increase in decoration on these swords, until the very long and highly ornamented baroque weapons of the Ha B2 and Ha B3 periods. The hilts underwent various changes in this time, identifiable as typological progressions along two main series. None of these types are very numerous, and all together do not equal the numbers of flange-hilted weapons of the Atlantic coast, where, by the final stage of the Bronze Age, the carp's-tongue sword was current. This latter type's unusual form, degree of standardisation and simplicity of ornament are mostly perceptible in the earlier series, out of which it grew. Some contact with the Urnfield swords is evident however, in the decoration on St. Nazair (Class II), and some of the very few ornamented
carp's-tongue weapons; while it is likely that the East again gave the impetus to the development of the whole Class II leaf-shaped (St. Nazaire) series.

From Early Urnfield times a somewhat different series of sword types is present in South-East France, and these occur thinly in the North-East as well. They are swords with hilts cast entirely of bronze, mostly either imported from Bavaria or further East, or copying swords of these areas. Such weapons are well documented in Central Europe, and when identifiable it has been possible to assess their date and place of origin. Quite different from these, and slightly earlier, another small group of cast-hilt swords has been identified as belonging to the rod-tanged weapon series, thus elucidating a previously anomalous classification, since they have been considered in the past along with rapier and Treboul hilts.

Although in general the French cast-hilt swords follow the German pattern, some small groups have been identified which reproduce the same shape as some flanged hilts in the round. Others show traces of decoration and shape which imply close association with a W. German/E. French type, known as Stockstadt swords, and carry these features onto later weapons of the area. These latter, coming into use contemporarily with the Long Swords mentioned above, are large weapons, normally well cast, and in the first instance probably imported from Central and East Germany. Native versions appeared, related to those produced in Switzerland; many are exact counterparts of late flange-hilted weapons (Long Swords) and in this they follow a practice also common outside France.

All these different sword types disappear quite suddenly, giving way to the Hallstatt sword of Ha C, in many ways a very different weapon, and manifestly not in the sword tradition which had emerged in the Final Bronze Age. It has
been noted that the swords of Ha B, especially the later weapons, are sometimes too ungainly to be other than paradeprecis; others by contrast are excellent hand weapons, and must have been powerful and efficient in use.

From the distribution maps prepared for these different sword types, areas of contact and possible routes of trade can be determined. A surprising feature to emerge from this study is the extent of contact between S.Britain and the Atlantic coast of France, already noted in part by Briard and Savory, but stretching through the whole of the Bronze Age. South-East England and France were much more closely in contact than East and West France during the period, although bronze types are not wholly identical, as might be expected. Thus the British Isles were part of the 'butt-plate' tradition in sword manufacture, in a very similar manner to France, before the advent of the leaf-shaped sword. The most marked contacts seem to have occurred between the Thames and the Seine/Somme area, largely in Atlantic types but in other bronzes also, such as rod-tanged swords, Picardy pins, spearheads, etc. This route is the start of the main contact between the Atlantic and Urnfield areas, which must have continued up the Seine and across to the East or down the Saône. There is a continual overlap between the Atlantic and Urnfield types in the Upper Seine, and frequently in the Upper Saone area. Contrasting Rixheim with Rosnoen swords it is seen that the latter expanded in a South-East, and the former in a North-West direction, and both must have been used at the same time by the same groups of people. At the same date rod-tanged swords were being transmitted along this very route in a Northern direction after being carried over the Alpine passes, and all three types were impinging on Nenningen Urnfield swords issuing from the Middle Rhine area.

Although exact correspondence with most Urnfield groups in
impossible, seen against the background of the Urnfield movements studied by Kimmig and Sandars these sword transmissions and influences become much more understandable. As trade objects of considerable use they were quickly carried over the boundaries implied by background material; this is why, for example, a Rixheim sword is known from Rennes and a Rosnoen sword from S. Germany. Apart from these ill-defined routes of transmission between different areas, the division of France into an Atlantic and an eastern province continues right through the Bronze Age, and is marked by more than just sword distribution. It might seem reasonable to talk in terms of different peoples in the West and East, with different preferences and traditions in the form of their main hand weapon, the sword.

One of the conclusions of this study has been the impossibility of inferring cultural changes or 'invasions' from typological changes alone. The East/West division in France through most of the Bronze Age is evident, as just mentioned, in the sword distributions, but it is confirmed by other evidence. The spread of Urnfield customs or settlement, often linked with folk movements, occurs only sporadically in the West of France, and rarely in the North-West. But it cannot be assumed that the changes in weapon form which mark these Bronze Age swords are anything else than the influence of better weapons in other areas on the makers, or the importation of new ideas via actual swords. The speed of change from one type to another would depend on various factors, such as the intensity of trade between individuals and founders or smiths, fashion, or efficiency of the new weapon. Some developments appear to have taken place quite speedily, such as the adoption of the leaf-shaped flange-hilted format in the West and North, with very few intermediate weapons between the butt-plate Rosnoen swords and the new type. Others show a progressive development from one type into another; but where intrusive weapons appear it is not possible without supporting evidence to
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whether it implies 'invasion'.

It has also emerged from this work that there is little evidence in France to suggest the place of the sword in society. Graves with swords are too few in France to be able to confirm or reject the idea that as expensive weapons (containing much bronze) they would be owned only by the wealthy. It would seem probable from the German Bronze Age that this would be the case, with the more numerous and less costly spear used by the average person, and rarely included in graves. What seems certain is that combat, or the possibility of warfare, was common, and swords represented a large part of metal workers' output. Again no circumstances are certain for the sort of warfare carried out, but in two cases, at Gugney and Fort-Harrouard, swords were found inside defensive hilltop fortifications. There are various finds of bronzes from such sites, but virtually no examination of Bronze Age fortified settlements has been carried out (or where executed, then badly), so again the background is scanty. But it would seem possible that defended enclosures in the style of Ha D times and later were in use in the Late Bronze Age in France.

Different situations must have prevailed in which swords were used at this time, the most evident being the contrast between the Atlantic and Urnfield provinces. Sea and river transport was certainly in use, and carried objects over very long distances along the Atlantic and Channel seabords; and this doubtless involved raids and fighting. The correspondence between most of the distribution maps of Atlantic sword types and Viking raids on France (The Viking (1966) 129) suggests the ease with which raiders or traders could penetrate large distances inland, never leaving their boats. Contrasted with the possible image of shipboard fighting is the Urnfield swordsman to the East and South, on foot or in later times possibly on horseback. A gradual increase in size of the
sword types of the Urnfield province into the very large weapons of Ha B suggests the growing use and efficiency of armour, the great importance of fighting and the prestige of being a warrior. The style of swordplay must have differed a great deal between East and West/North France, dictated largely by the circumstances of combat.

A chronological table has been made to clarify the various sword developments in East and West, and this is included with the illustrations. As this study has shown, there is no indication to suggest the date of bronze swords in statute years B.C., so this has been avoided, and the layout is based on a relative system. These relative dates have been arrived at largely by the use of typology, and the association of various objects in bronze hoards. Discussion of these has shown the largely random nature of their contents and imprecise conclusions to be drawn from them. For this reason the idea of 'time-lag' for the development or transmission of an object from one area to another must remain speculative. Obviously the recipient area will begin its production of an object after the parent area, but with no indication of the passage of time, 'long' or 'short' periods in terms of production of an object are meaningless, based as they are on quantities of objects. Although typological factors help to some extent in assessing changes in a sword, there is no means of knowing how long this process takes. So although a period of delay is likely in peripheral areas in taking up a new sword type, the chronological table has been arranged in horizontal divisions, as the parallelism between sword groups is the most important feature, except where direct association with a different group has been found. This shows one of the more striking differences between East and West France in the Bronze Age: the homogeneity of the sword types in the West, and the different types and variants produced in the East. It is also illustrated by the crossing and interaction of trade routes in the East, where there must have been many
more workshops producing swords based on different traditions than in the West. Perhaps this ties in with the greater ease of transport in the Atlantic coast, leading to a standardisation of types, and greater difficulty of movement overland in East France, allied with the continual impetus of new types from Urnfield groups in Germany and Switzerland.