

Some aspects of early medieval copper-alloy technology, as illustrated by a  
study of the Anglian Cruciform Brooch

Volume 2

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Volume 2



## Volume 2

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## Catalogues

## Catalogue of English cruciform brooches used in this work

### Abbreviations

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Ash	Ashmolean Museum	Maid	Maidstone Museum and
Bedf	Bedford Museum		Art Gallery
BM	British Museum	NCM	Norwich Castle Museum
BSE	Moyse's Hall, Bury St Edmunds	North	Northampton Museum
Colc	Colchester Museum	Notts	Castle Museum, Nottingham
Cov	Coventry Museum and Art Gallery	P R	Pitt Rivers Museum, Oxford
CUM	Cambridge University Museum	Pete	Peterborough Museum
Gran	Grantham Museum	Scun	Scunthorpe Museum and Art Gallery
HBMC	Historic Buildings and Monuments Commission	Strat	Shakespeare's Birthplace Trust, Stratford
Ips	Ipswich Museum		
Lin	Lincoln City and Council Museum	Yorks	Yorkshire Museum

#### 2 Brooches and parts of brooches

cb = cruciform brooch	shb = square-headed brooch
kb = knob	WM = white metal
tkb = top knob	rev = reverse
skb = side knob	rhs = right hand side
hpl = headplate	lhs = left hand side
cpl = catchplate	

#### 3 People

RB = Roger Brownsword, Coventry Polytechnic

#### 4 References

Åberg	Åberg (1926)
BB	Baldwin Brown (1912)
Fox	Fox (1923)
Leeds	Leeds (1949)
Leeds and Pocock	Leeds and Pocock (1971)
Reichstein	Reichstein (1975)

Greenwell W 1877. British Barrows (Oxford)

Mortimer J R 1905. Forty Years of Researches in British and Saxon Burial Mounds of East Yorkshire (London)

5 Journal titles

Arch J	Archaeological Journal
Antiq J	Antiquaries Journal
Arch Cant	Archaeologia Cantiana
Bericht RGK	Bericht Römische-Germanische Kommission
Coll Ant	Collectanea Antiqua
EAA	East Anglian Archaeology
Med Arch	Medieval Archaeology
Proc Ca A S	Proceedings, Cambridge Archaeological Society
Soc Antiq	Society of Antiquaries, London
VCH	Victoria County History
YAJ	Yorkshire Archaeological Journal

References are to particular brooches, not to general discussion of the site. Where publications have no photographs or where authors give no museum accession numbers, it is very difficult to link brooches with previous discussions.

Abingdon G122 (1)

Museum: Abingdon                                Accession no:  
Overall length: not determined  
CM Type: Associated B                                Åberg: Reichstein: *Einzelformen*  
Assoc: Cb no 2, 20 beads  
Ref: Leeds E T and Bradford J S P 1942, *Oxoniensia* 7, 102-3, pl VIII,B;  
Reichstein no 765  
Not examined. Rather long bow, broad hpl, long catch, mis-shapen foot.  
No chemical analysis available.

Abingdon G122 (2)

Museum: Abingdon                                Accession no:  
Overall length: not determined  
CM Type: small-long foot                                Åberg: Reichstein: Ferwerd  
Assoc: see above  
Ref: see above, pl VIII,A  
Not examined. Ring and dot decoration. Single point punch marks. Foot  
curves forward. Long catch. Tkb conical rather than rounded.  
No chemical analysis available.

Akenham 1

Museum: Ips                                Accession no: 1920.856  
Overall length: 138.9                                Weight (g) : 61  
CM Type: C 2                                Åberg: III  
Context: None  
Assoc: None  
Ref: Åberg no 74  
Reverse of casting very concave at bow and foot, slightly so at tkb. Large  
ring and dot, appears to be red. Lhs of catch has furrow. Diameter of hole  
in pin lugs = 2mm. Double semi-circular punch marks. Probably somewhat  
worn, but chemically stripped.  
No chemical analysis available

Akenham 2

Museum: Ips                                Accession no: 1920.856  
Overall length: 140.1                                Weight (g) : 62  
CM Type: C 2                                Åberg:III  
Context: none  
Assoc: none  
Ref: Åberg no 74  
Similar to pair (1), but infill of ring and dot looks black and this one  
is not chemically stripped.  
No chemical analysis available

Alveston Manor G70 (1)

Museum: Strat                                Accession no: G70  
Overall length: 87.8                                Weight (g): 16  
CM Type: Small B 2                                Åberg: Reichstein: *Typ Stratford*  
Context: Grave 70, 35 year old female  
Assoc: With (2), buckle (Hawkes and Dunning type IB), toilet set, strap end  
with soldering, 83 amber beads and other glass ones, CA frags  
Ref: Bericht RGK 43-44 1962-63, 210 Abb. 17; Reichstein no 882, fig 90,3  
Tkb flattened at front. Edges of hpl flexed back. Bow cross-section nearly  
solid. Reverse of casting flat throughout. Diameter of pin lug hole =  
2.6mm. Semi-circular punch mark. Possibly some wear on bow.  
No chemical analysis available

Alveston Manor G70 (2)

Museum: Strat                      Accession no: G70  
Overall length: 78.2                      Weight (g): 16  
CM Type: Small B 2                      Åberg:                      Reichstein: *Einzelformen*  
Context: Grave 70  
Assoc: see above  
Refs: Reichstein no 882, fig 90,5  
Flat reverse to casting throughout, including solid bow cross-section. Back of tkb set forward slightly from back of hpl. Worn at animal head.  
No chemical analysis available

Ancaster

Museum: Lin                              Accession no: 239.09  
Overall length: 90.9                      Weight (g) : 40  
CM Type: Small B 2                      Åberg: II                      Reichstein: *Typ Stratford*  
Context: none  
Assoc: none  
Ref: Reichstein no 821, fig 91,1  
Side knobs cast with headplate.  
Probe analysis  
    Zn: 1.15                      Pb: 3.85                      Sn: 10.31  
    Fe: 0.08                      Ni: 0.03                      Ag: 0.19                      Au: 0.00  
    As: 0.14                      Sb: 0.08                      Bi: 0.02                      Co: 0.00

Asgarby 1

Museum: BM                              Accession no: 1811.12.14.1  
Overall length: 124.7  
CM Type: D 4                              Åberg: IV  
Context: Inhumation grave?  
Assoc: With Asgarby 2?  
Ref: Fig 2.41; Arch J XCI 1934, 145; Åberg no 186  
Flat casting at reverse, except slightly at reverse of bow. Sideknobs cast with the headplate. Worn irregularly at sideknobs.  
AA analysis  
    Cu: 87.5                      Zn: 1.91                      Pb: 3.78                      Sn: 9.94  
    Fe: 0.32                      Ni: 0.04                      Ag: 0.79

Asgarby 2

Museum: BM                              Accession no: 1811.12.14.2  
Overall length: 131.7  
CM Type: D 3                              Åberg: IV  
Context: Inhumation Grave ?  
Assoc: With Asgarby 1  
Ref: Åberg no 185  
Sideknobs cast with the headplate. Iron pin. Stepped catch. Probably quite worn.  
AA analysis  
    Cu: 82.5                      Zn: 12.19                      Pb: 3.10                      Sn: 4.76  
    Fe: 0.29                      Ni: 0.03                      Ag: 0.27

Baginton 1

Museum: Cov                              Accession no: A/1013/10  
Overall length: 95.2                      Weight (g) : 32  
CM Type: Small B 2                      Åberg: II                      Reichstein: *Typ Stratford*  
Context: none  
Assoc: none  
Ref: Reichstein no 878  
Topknob set back from hpl. Edges of hpl wings thinned and flexed back.

Baginton 1 cont/

Knobs and foot worn.

Chemical analysis from Brownsword et al 1986)

Cu: 85.98	Zn: 0.59	Pb: 5.50	Sn: 7.63	
Fe: 0.10	Ni: 0.03	Ag: 0.04	As: 0.09	Sb: 0.03

Baginton 2

Museum: Cov Accession no: A/1013/9?

Overall length: 97.4 Weight (g): 36

CM Type: Small B 2 Åberg: II Reichstein: Typ Stratford

Context: none

Assoc: none

Ref: see pair, Baginton 1

See Baginton 1. Catch placed slightly to rhs of cpl. Sideknobs originally slotted and pierced throughout.

No chemical analysis available (but samples taken by RB).

Baginton 3

Museum: Cov Accession no: A/1013/11

Overall length: 28.3 Weight (g) : 64

CM Type: C 2 Åberg: III

Context: none

Assoc: none

Ref: none

Stepped catch. Flat reverse to casting, slight concavity behind topknob, bow and foot. Wear evident on nostrils and knobs. Circle in triangle punch marks on wings.

Chemical analysis from Brownsword et al 1986).

Cu: 86.38	Zn: 5.20	Pb: 1.73	Sn: 5.80	
Fe: 0.14	Ni: 0.04	Ag: 0.56	As: 0.04	Sb: 0.12

Baginton 4

Museum: Cov Accession no: A/1013/13

Overall length: broken Weight (g): 104

CM Type: Z 3 Leeds and Pocock: Vj

Context: none

Assoc: none

Ref: Plate 7; Leeds and Pocock, 20 pl III E

Applied strips of WM rivetted onto the sideknobs, using iron rivets. W M on boss, lappet edges, nostrils and fan on animal head. This latter area is probably that which Brownsword (1986, 111) states is silvered, not tinned. Gilding throughout, although rather worn. Segmentation of raised ridges. Knobs rivetted onto hpl, but originally may have been attached using an iron pin and loops on the hpl and knobs. Short catch on a long spine.

X-ray fluorescences analysis, Brownsword et al 1986

Cu: 88.01	Zn: 2.88	Pb: 2.33	Sn: 6.08	
Fe: 0.36	Ni: 0.07	Ag: 0.13	As: 0.04	Sb: 0.010

Barrington\* A 1

Museum: CUM Accession no: Z21326

Overall length: 126.6

CM Type: D 3 Åberg: IV

Context: none

Assoc: none

Ref: Fig 2.41; Wilkinson, Coll Ant, fig XXXII, 1

Barrington A1 cont/

Small semi-circular punch marks.

AA analysis

Cu:	82.0	Zn:	4.62	Pb:	2.89	Sn:	7.84
Fe:	0.16	Ni:	0.04	Ag:	0.31		

Probe analyses

Zn:	4.19	Pb:	2.18	Sn:	5.96		
Fe:	0.13	Ni:	0.05	Ag:	0.31	Au:	0.00
As:	0.02	Sb:	0.07	Bi:	0.00	Co:	0.00

\* Brooches from Barrington are allocated to cemeteries A and B (Meaney 1964), as far as possible. Many brooches are not clearly attributed.

Barrington A 2

Museum: CUM

Accession no: Z21324

Overall length: 110.7

CM Type: D 5b

Åberg: IV

Reichstein: *Typ Holywell Row*  
Variant with zoomorphic lappets

Context: none

Assoc: none

Ref: Fig 2.44; Reichstein no 769, fig 99,5

Pin lug and catch on slight ridges. Edges of wings sharpened.

AA analysis

Cu:	78.5	Zn:	17.90	Pb:	3.63	Sn:	1.58
Fe:	0.16	Ni:	0.03	Ag:	0.09		

Probe analyses

Zn:	17.02	Pb:	2.35	Sn:	1.60		
Fe:	0.12	Ni:	0.03	Ag:	0.10	Au:	0.00
As:	0.00	Sb:	0.09	Bi:	0.00	Co:	0.00

Barrington 3

Museum: CUM

Accession no: Z21328a

Overall length: 97.3

CM Type: Associated with D 2

Åberg: IV

Context: none

Assoc: none

Ref: none

Sideknobs cast with hpl. Solid bow cross-section. Wear on bow. Ring punch marks.

AA analysis

Cu:	87.0	Zn:	1.49	Pb:	3.18	Sn:	7.36
Fe:	0.14	Ni:	0.03	Ag:	0.32		

Probe analyses

Zn:	1.30	Pb:	1.53	Sn:	7.29		
Fe:	0.09	Ni:	0.04	Ag:	0.33	Au:	0.00
As:	0.00	Sb:	0.03	Bi:	0.00	Co:	0.00

Barrington A 4

Museum: CUM

Accession no: Z21328b

Overall length: 91.5

CM Type: Small B 2

Åberg: II

Reichstein: *Typ Stratford*

Context: none

Assoc: none

Ref: Reichstein no 770, fig 91,3

Solid bow cross-section. Two pin lugs. Sideknobs slightly stepped back from the headplate. Single point punch marks.

AA analysis

Cu:	81.0	Zn:	2.48	Pb:	5.04	Sn:	10.16
Fe:	0.14	Ni:	0.04	Ag:	0.17		

Barrington 5

Museum: Ashm                      Accession no: 1909.292  
Overall length: 151.9                      Weight (g): 82  
CM Type: D 4                      Åberg: IV  
Context: None  
Assoc: None  
Ref: BB III, 270 pl XLV 5; Åberg no 148  
W M on knob fans, foot and cpl. Two pin lugs. Single point punch marks.  
AA analysis  
    Cu:     84.0        Zn:     3.22    Pb:     4.44    Sn:     7.96  
    Fe:     0.36        Ni:     0.10    Ag:     0.23

Barrington 6

Museum: Ashm                      Accession no: 1909.297  
Overall length: 119.2                      Weight (g): 61  
CM Type: D 3                      Åberg: IV  
Context: None  
Assoc: None  
Ref: Åberg no 150  
Pin lug replaced, with iron rivets. Sideknobs cast with headplate. Rhs skb worn.  
AA analysis  
    Cu:     85.0        Zn:     4.96    Pb:     2.48    Sn:     5.52  
    Fe:     0.26        Ni:     0.10    Ag:     0.12  
XRF analysis shows mercury gilding on animal head.

Barrington 7

Museum: Ashm                      Accession no: 1909.298  
Overall length: 125.9                      Weight (g): 54  
CM Type: Associated with C                      Åberg: II  
Context: none  
Assoc: none  
Ref: Not recorded under this no in the catalogue; Åberg no 41  
Sideknobs cast with hpl. Concavity behind knobs, bow and animal head. Two pin lugs. Ring and dot punch marks, twisted rope design on bow and spine.  
AA analysis  
    Cu:     74.5        Zn:     1.20    Pb:     2.94    Sn:     8.98  
    Fe:     0.17        Ni:     0.10    Ag:     0.24

Barrington 8

Museum: Ashm                      Accession no: 1909.299  
Overall length: 112.3                      Weight (g): 48  
CM Type: Associated with D                      Åberg: IV  
Context: none  
Assoc: none  
Ref: Åberg no 146  
Sideknobs cast with hpl. Small circular punch marks.  
AA analysis  
    Cu:     76.0        Zn:     12.90    Pb:     2.88    Sn:     0.86  
    Fe:     0.19        Ni:     0.10    Ag:     0.16

Barrington 9

Museum: Ashm                      Accession no: 1909.300  
Overall length: 80.5                      Weight (g): 29  
CM Type: D 2                      Åberg: IV  
Context: none  
Assoc: none  
Ref: Åberg no 149

Barrington 9 cont/

Worn throughout. Circular punch marks. No animal head at foot, just a lump.

AA analysis

Cu:	80.0	Zn:	1.72	Pb:	6.84	Sn:	7.40
Fe:	0.14	Ni:	0.10	Ag:	0.25		

Barrington A 10

Museum: BM Accession no: 76,2-12,68

Overall length: 87.6

CM Type: Small B 3 Åberg: III

Context: none

Assoc: See Barrington 12

Ref: Fig 2.13

Notching on ridges.

AA analysis

Cu:	76.5	Zn:	7.77	Pb:	11.11	Sn:	4.34
Fe:	0.12	Ni:	0.03	Ag:	0.08		

Barrington A 11

Museum: Ashm Accession no: 1909.263

Overall length: 97.5 Weight (g): 42

CM Type: A 2 Åberg: I Reichstein: *Typ Midlum*

Context: None

Assoc: None

Ref: Fig 2.5; *Archaeologia* 63,180, fig 16+181; BB III, 263 pl XLI,2; Åberg no 15; Fox p252; Reichstein no 768, pl 84,9

Long catch. Solid bow cross-section. Topknob attached by spike and tab at front. Topknob has petal decoration. Unusual grey surface.

AA analysis

Cu:	77.0	Zn:	2.42	Pb:	3.89	Sn:	10.18
Fe:	0.79	Ni:	0.00	Ag:	0.12		

Barrington A 12

Museum: BM Accession no: 76,2-12,69

Overall length: 110.6

CM Type: Small B 3 Åberg: III

Context: None

Assoc: see Barrington 10

Ref: none

Sideknobs cast with headplate. Semi-circular punch marks. Segmentation of ridges.

AA analysis

Cu:	74.5	Zn:	10.65	Pb:	8.09	Sn:	4.74
Fe:	0.18	Ni:	0.02	Ag:	0.07		

Barrington A 13

Museum: CUM Accession no: Z 16183

Overall length: 84.8

CM Type: C2 Åberg: Reichstein: *Typ Stratford*

Context: Grave

Assoc: beads and cb (14)

Refs: Reichstein no 772, *Taf* 91,6

Rev of casting hollow at bow and foot. Casting lopsided. Semi-circular punch marks. Fairly good condition, pitted at hpl, catch and pin lug broken.

AA Analysis:

Cu:	80.00	Zn:	1.39	Pb:	6.84	Sn:	8.17
Fe:	0.25	Ni:	0.02	Ag:	0.21		

Barrington A 14

Museum: CUM Accession no: Z 16182  
Overall length: 84.1  
CM Type: C2 Åberg: Reichstein: *Typ Stratford*  
Context: Grave  
Assoc: See cb above  
Refs: Reichstein no 772, *Taf* 91, 5  
Rev of casting flat except behind foot. Semi-circular punch mark. Worn and eroded throughout.  
AA analysis:  
Cu: 77.00 Zn: 1.05 Pb: 13.27 Sn: 7.43  
Fe: 0.13 Ni: 0.04 Ag: 0.16  
Probe analysis:  
Zn: 0.26 Pb: 6.57 Sn: 12.90  
Fe: 0.04 Ni: 0.02 Ag: 0.12 Au: 0.03  
As: 0.05 Sb: 0.04 Bi: 0.00 Co: 0.00

Barrington A G15

Museum: CUM Accession no: Z16131  
Overall length: 57.6  
CM Type: D 4  
Context: Grave 15  
Assoc: none  
Ref: Wilkinson, *Coll Ant* 7, 156, fig XXXII,2  
Pin lug placed low on hpl. Single point punch marks.  
AA analysis  
Cu: 84.0 Zn: 3.47 Pb: 2.76 Sn: 8.90  
Fe: 0.17 Ni: 0.04 Ag: 0.32

Barrington B 1

Museum: CUM Accession no: Z21317  
Overall length: 113.9  
CM Type: D 4 Åberg: IV  
Context: none  
Assoc: none  
Ref: Forster 1883, *Pl XII*,2; Griffiths collection  
Flat reverse to casting, slight concavities at rev of topknob and foot. Two pin lugs. Solid bow cross-section. Double semi-circular punch marks throughout.  
AA analysis  
Cu: 85.5 Zn: 1.89 Pb: 5.99 Sn: 6.03  
Fe: 0.11 Ni: 0.03 Ag: 0.17  
Probe analyses  
Zn: 2.12 Pb: 3.28 Sn: 6.38  
Fe: 0.17 Ni: 0.03 Ag: 0.16 Au: 0.06  
As: 0.02 Sb: 0.08 Bi: 0.00 Co: 0.00

Barrington B 2

Museum: Ashm Accession no: 1909.301  
Overall length: 70.2 Weight (g): 17  
CM Type: Small B 3 Reichstein: *Typ Krefeld-Gellep*  
Context: none  
Assoc: none  
Ref: Foster 1883; Åberg no 88; Reichstein no 771, fig 89,8  
Solid bow cross-section.  
AA analysis  
Cu: 84.0 Zn: 1.00 Pb: 5.27 Sn: 6.40  
Fe: 0.19 Ni: 0.00 Ag: 0.16

Barrington B G82

Museum: CUM                      Accession no: Z21294  
Overall length: 132.7  
CM Type: Z 2a                      Åberg: V  
Context: Grave 82  
Assoc: Pair of small-long brooches, beads, Roman key handle, wrist clasp  
Hines type B14b, ring  
Ref: Fig 2.56; Forster 1883, pl 1, fig 1  
Sideknobs cast with headplate. Probably two pin lugs. Solid bow  
cross-section. Triangular punch marks.

AA analysis

Cu:	82.5	Zn:	2.62	Pb:	3.38	Sn:	9.15
Fe:	0.42	Ni:	0.05	Ag:	0.30		

Probe analyses

Zn:	3.14	Pb:	1.94	Sn:	7.94		
Fe:	0.45	Ni:	0.04	Ag:	0.20	Au:	0.00
As:	0.02	Sb:	0.03	Bi:	0.00	Co:	0.00

Barton Seagrave

Museum: BM                      Accession no: 91.2-19,16  
Overall length: 125.0  
CM Type: D 5a                      Åberg: IV  
Context: Grave  
Assoc: 2 small-long brooches, girdle hanger, beads, Wrist clasp Hines B7  
Ref: VCH 244-5; Smith 1923, 22; Åberg no 175  
Sideknobs cast with hpl. Gilding traces. Single point punch marks.

AA analysis

Cu:	84.5	Zn:	4.83	Pb:	2.87	Sn:	5.99
Fe:	0.29	Ni:	0.05	Ag:	0.34		

Benwell

Museum: Private coll.                      Accession no:  
Overall length: not determined  
CM Type: Associated with Z 4                      Leeds and Pocock: Vf  
Context: none  
Assoc: none  
Ref: Jobey G 1957, Arch Aeliana XXXV (4th series), 282-3, pl vi; Leeds and  
Pocock, 32  
Not examined. Two pin lugs. WM and gilding. Good condition. No chemical  
analysis available

Bergh Apton G5

Museum: NCM                      Accession no: BEA 5C  
Overall length: 116.3  
CM Type: Large B 2  
Context: Grave 5  
Assoc: Wrist clasp (Hines type B17a), small-long brooch, bead  
Ref: Fig 2.11; Green and Rogersen 1978, fig 66c  
Edges of hpl sharpened. Flat rev to casting except at foot. Iron coil rems  
in pin lug. Small circular punch marks.

AA analysis

Cu:	83.0	Zn:	3.63	Pb:	3.88	Sn:	7.25
Fe:	0.30	Ni:	0.00	Ag:	0.31		

Bergh Apton G6 (1)

Museum: NCM Accession no: BEA 6B  
Overall length: 115.9  
CM Type: Large B 2  
Context: Grave 6  
Assoc: With G6(2) and (3) and small-long  
Ref: Green and Rogersen 1978, fig 67Bi  
Animal head ends with a loop. Iron pin and loop. Flat reverse to casting except at foot.  
AA analysis  
Cu: 84.0 Zn: 0.78 Pb: 3.17 Sn: 10.80  
Fe: 0.46 Ni: 0.07 Ag: 0.14  
Probe analyses  
Zn: 0.68 Pb: 1.30 Sn: 10.95  
Fe: 0.13 Ni: 0.04 Ag: 0.10 Au: 0.00  
As: 0.18 Sb: 0.06 Bi: 0.01 Co: 0.01

Bergh Apton G6 (2)

Museum: NCM Accession no: BEA 6C  
Overall length: 127.0  
CM Type: Associated with D 2  
Context: Grave 6  
Assoc: See G6(1)  
Ref: Green and Rogersen 1978, fig 67c  
Not identical with it's pair, size of lappets and catch differ. Diameter of hole pierced through pin lug c 2mm. Semi-circular punch marks.  
AA analysis  
Cu: 85.0 Zn: 4.61 Pb: 3.75 Sn: 6.38  
Fe: 0.21 Ni: 0.05 Ag: 0.21

Bergh Apton G6 (3)

Museum: NCM Accession no: BEA 6D  
Overall length: 126.9  
CM Type: Associated with D 2  
Context: Grave 6  
Assoc: See G6 (2)  
Ref: Green and Rogersen 1978, fig 67d  
See G6(2)  
AA analysis  
Cu: 84.0 Zn: 5.64 Pb: 3.53 Sn: 5.58  
Fe: 0.21 Ni: 0.05 Ag: 0.20  
Probe analyses  
Zn: 6.48 Pb: 3.42 Sn: 5.39  
Fe: 0.13 Ni: 0.02 Ag: 0.17 Au: 0.05  
As: 0.14 Sb: 0.05 Bi: 0.00 Co: 0.00

Bergh Apton G18

Museum: NCM Accession no: BEA 18C  
Overall length: 168.5  
CM Type: Z 3 Åberg: V  
Context: Grave 18  
Assoc: 2 annular brooches, beads, 2 copper alloy rings X2, iron ring and knife.  
Ref: Green and Rogersen 1978, Fig 75c

Bergh Apton G18 cont/

WM strips rivetted on with copper alloy rivets. Other WM seems to be applied chemically, not physically. Two pin lugs, with curled copper alloy strip between. Catch small, on long ridge. Flat rev to casting. Small circular and double V punch marks.

AA analysis

Cu:	86.0	Zn:	5.66	Pb:	2.41	Sn:	4.33
Fe:	0.16	Ni:	0.06	Ag:	0.17		

Bergh Apton G37

Museum: NCM Accession no: BEA 37A

Overall length: 104.2

CM Type: Associated with small type B

Context: Grave 37

Assoc: Wrist clasps (Hines type B20), iron ring and brooch

Ref: Green and Rogersen 1978, fig 86a

Sideknobs cast with headplate (project slightly backwards). Two pin lugs. Worn on bow and knobs. Possibly remains of loop at nose, or miscasting.

AA analysis

Cu:	83.0	Zn:	0.00	Pb:	2.15	Sn:	13.09
Fe:	0.00	Ni:	0.00	Ag:	0.13		

Bifrons 1

Museum: Maid Accession no: 629

Overall length: 93.0

CM Type: Small B 2

Reichstein: *Typ* Stratford

Context: None

Assoc: None

Ref: Reichstein no 809

Skbs have circular cross-sections, rather flat and probably slotted. Hpl edges flexed back. Polyhedral kb style. Semi-circular and single point punch marks.

Probe analyses

Zn:	1.45	Pb:	2.51	Sn:	10.35		
Fe:	0.08	Ni:	0.03	Ag:	0.15	Au:	0.00
As:	0.33	Sb:	0.07	Bi:	0.00	Co:	0.00

Bifrons G15 (1)

Museum: Maid Accession no: 578A

Overall length: 71.0 Weight (g): 16

CM Type: Associated A

Reichstein: *Typ* Stoveland

Context: Grave 15

Assoc: With G15(2), beads, buckle plate, pin, iron ring, wrist clasps (Hines Type B7), spindle whorl

Ref: Fig 2.8; Arch. Cant. 10 1876, 305 and figure; Reichstein no 807, *Taf* 102, 1 and 2

Triangular catchplate facets. Semi-circular punchmarks. Hpl edges flexed back and smoothly curving indents on upper and lower edges.

Probe analyses

Zn:	9.33	Pb:	7.95	Sn:	8.29		
Fe:	0.27	Ni:	0.02	Ag:	0.06	Au:	0.03
As:	0.37	Sb:	0.11	Bi:	0.01	Co:	0.00

Bifrons G15 (2)

Museum: Maid Accession no: 578B  
 Overall length: 71.0 Weight (g): 16  
 CM Type: Associated A Reichstein: *Typ Stoveland*  
 Context: Grave 15  
 Assoc: See G15(1)  
 Ref: See G15(1)  
 Pair to above  
 Probe analyses

Zn:	9.92	Pb:	8.85	Sn:	7.81		
Fe:	0.29	Ni:	0.03	Ag:	0.03	Au:	0.03
As:	0.04	Sb:	0.08	Bi:	0.00	Co:	0.10

Bifrons G23

Museum: Maid Accession no: 579  
 Overall length: 77.0 Weight (g): 16  
 CM Type: Associated A 3 Reichstein: *Einzelformen*  
 Context: Grave 23  
 Assoc: Spindle whorl, knife, buckle, 'a plate with classical style figures, representing a dog hunting a hare' (Arch. Cant., 308)  
 Refs: Arch. Cant. 10, 307; Åberg, 29 and Fig 32; BB III Fig 35,10; Reichstein no 808  
 Diameter of hole in pin lug c3mm. Catch cast slightly to rhs of cpl.  
 Probe analyses

Zn:	21.27	Pb:	2.05	Sn:	0.10		
Fe:	0.10	Ni:	0.07	Ag:	0.01	Au:	0.00
As:	0.18	Sb:	0.06	Bi:	0.04	Co:	0.00

Bottesford

Museum: Linc Accession no: 808GL  
 Overall length: broken Weight (g): 40  
 CM Type: D 5 Åberg: IV  
 Context: None  
 Assoc: None  
 Ref: Åberg no 180  
 Diameter of hole in pin lug = 2.4mm. Catch on ridge, running to foot and slightly into bow. Edges of hpl sharpened on front side.  
 Probe analyses

Zn:	1.62	Pb:	4.21	Sn:	9.25		
Fe:	0.06	Ni:	0.03	Ag:	0.06	Au:	0.05
As:	0.00	Sb:	0.07	Bi:	0.03	Co:	0.00

Bradwell 1

Museum: Colc Accession no:  
 CM Type: Small B1 Åberg: Reichstein: *Typ Midlum*  
 Context: none  
 Assoc: none  
 Ref: Reichstein no 804, fig 85,1; Barford (forth) SF 119  
 Two pin lugs. Solid semi-circular bow cross-section. Skbs cast with headplate. Rather long catch. Iron pin remains.  
 No chemical analyses available

Bradwell 2

Museum: Colc Accession no:  
CM Type: With small-long foot Reichstein: *Typ*  
Bradwell-on-Sea

Context: none

Assoc: none

Ref: Reichstein no 803, fig 98,3; Barford (forth) SF 120

Two pin lugs. Concave behind bow, elsewhere flat reverse to casting. Skbs cast with hpl. Rather long catch. Iron pin remains.  
No chemical analyses available.

Brixworth 1

Museum: North Accession no: D17  
Overall length: 82.9 Weight (g): 26  
CM Type: A 2 Åberg: I Reichstein: *Einzelformen*

Context: none

Assoc: none

Ref: Åberg no 12, Fig 53; Reichstein no 834, fig 118,3

Solid bow cross-section. Pin lug attached to collar of tkb. Worn at tkb.  
No chemical analysis available

Brixworth 2

Museum: North Accession no: D189.1  
Overall length: broken  
CM Type: Z 3 Leeds and Pocock: Vj

Context: none

Assoc: none

Ref: Leeds and Pocock, 20, pl IIID

Poor preservation. Gilding. WM strips rivetted on. Kbs attached using loops. Probably single pin lug. Catch on long ridge. Double V punch marks. Segmentation of ridges. Inlaid rectangular garnets.  
No chemical analysis available

Brixworth 3

Museum: North Accession no: D15  
Overall length: 125.9 Weight (g): 70  
CM Type: Associated with D 5a Åberg: IV

Context: None

Assoc: None

Ref: Åberg no 176

Semi-circular punch marks. Worn at kbs and bow.  
No chemical analysis available

Brixworth 4

Museum: North Accession no: AS189.1  
Overall length: 128.4 Weight (g): 50  
CM Type: D5 Åberg: IV

Context: None

Assoc: None

Ref: As above

Semi-circular punch marks. Worn at bow and kb. Poor preservation.  
No chemical analysis available

Brixworth 5

Museum: priv. coll                      Accession no:  
Overall length: not determined  
CM type: Large B 1                      Åberg: II  
Context: none  
Assoc: none  
Ref: Bruce-Mitford F, Antiq J 19 1939, 325, fig 67  
Not examined. Hollow casting behind tkb.  
No chemical analysis available.

Brizlincote

Museum: Unknown                      Accession no:  
Overall length: Not determined  
CM Type: Z 3                      Leeds and Pocock: Vk  
Context: None  
Assoc: None  
Ref: Leahy 1979, 7 Pl 1b  
Not examined. Poor condition of survival.  
No chemical analysis available

Brooke 1

Museum: BM                      Accession no: 70,11-15,1  
Overall length: Incomplete  
CM Type: Associated with small B                      Åberg: II  
Context: Suggested woman's Grave  
Assoc: Annular brooches (4), beads (8)  
Ref: VCH 339; Norfolk Archaeology XXVII 1939, 188,216; Smith 1923, 83-4;  
Kennett, D, Proc Ca AS LXVI-LXVII 1976, Cb (1), fig 1  
High bow profile, high catch, strange drooping eyes. Semi-circular punch  
marks. Poorly preserved.  
AA analysis  
    Cu:       89.0        Zn:       1.52   Pb:       3.05   Sn:       10.14  
    Fe:       0.09       Ni:       0.04   Ag:       0.26

Brooke 2

Museum: BM                      Accession no: 70,11-15,5  
Overall length: Incomplete  
CM Type: D 3                      Åberg: IV  
Context: None  
Assoc: None  
Ref: Åberg, no 121, fig 80; Kennett op cit, cb no (5), fig 2  
Thin-waisted, flat, fan-like knobs. Slightly enlarged at rev of each knob.  
Hollow at rev of bow. Traces of fabric on hpl. Mend at cpl attempted using  
iron rivets. Poor condition.  
AA analysis  
    Cu:       86.5        Zn:       0.76   Pb:       2.21   Sn:       6.56  
    Fe:       0.22       Ni:       0.04   Ag:       0.27

Brooke 3

Museum: BM                      Accession no: 70,11-15,10  
Overall length: 127.0                      Åberg: V  
CM Type: Z 3  
Context: None  
Assoc: None  
Ref: Åberg no 213; Kennett op cit, cb no (10), pl I  
Gilding. WM foil. Skbs rivetted onto hpl, using large round headed rivets.

Brooke 3 cont/

Mend using iron rivets at foot. Worn but stable condition.

AA analysis

Cu:	92.5	Zn:	1.06	Pb:	3.25	Sn:	3.36
Fe:	0.10	Ni:	0.05	Ag:	0.19		

Brooke 4

Museum: BM                      Accession no: 70,11-15,12

Overall length: 139.0

CM Type: C 2                      Åberg: IV

Context: None

Assoc: None

Ref: Kennett op cit, cb no (12), fig 3

Iron skb axis through single pin lug. Semi-circular and double semi-circular punch marks.

AA analysis

Cu:	84.5	Zn:	5.61	Pb:	4.83	Sn:	5.73
Fe:	0.36	Ni:	0.06	Ag:	0.38		

Brooke 5

Museum: BM                      Accession no: 70,11-15,13

Overall length: 117.7

CM Type: Large B 1                      Åberg: IV

Context: None

Assoc: None

Ref: Probably Åberg no 29; Kennett op cit, cb no (13), fig 3

Iron pin and loop extant. Large ring and dot decoration d=5mm.

AA analysis

Cu:	83.5	Zn:	0.90	Pb:	5.05	Sn:	9.41
Fe:	0.32	Ni:	0.04	Ag:	0.50		

Brooke 6

Museum: BM                      Accession no: 70,11-15,14

Overall length: Incomplete

CM Type: D 3                      Åberg: IV

Context: None

Assoc: None

Ref: Fig 2.33; Åberg no 122, fig 74; Kennett op cit no (14), fig 4

Slotted skbs with iron remains inside. Poor condition.

AA analysis

Cu:	85.5	Zn:	7.89	Pb:	2.06	Sn:	7.09
Fe:	0.19	Ni:	0.02	Ag:	0.09		

Brooke 7

Museum: BM                      Accession no: 70,11-15,15

Overall length: Incomplete

CM Type: Associated with D 2                      Åberg: IV

Context: None

Assoc: None

Ref: Åberg no 123, fig 73; Kennett op cit, cb no (15), fig 4

Iron pin and loop. Poor condition.

AA analysis

Cu:	81.5	Zn:	1.26	Pb:	9.61	Sn:	8.23
Fe:	0.14	Ni:	0.02	Ag:	0.10		

Bulmer 1

Museum: BM                      Accession no: WG1977  
Overall length: 126.1  
CM Type: Associated with D 2      Åberg: IV  
Context: None  
Assoc: None  
Ref: Åberg no 198  
Solid and chunky piece. Single point punch marks.  
AA analysis  
    Cu:      85.5      Zn:      0.56    Pb:      3.21    Sn:      11.63  
    Fe:      0.22      Ni:      0.02    Ag:      0.14

Bulmer 2

Museum: BM                      Accession no: WG1978  
Overall length: 114.8  
CM Type: D 3                      Åberg: IV  
Context: None  
Assoc: None  
Ref: Fig 2.34; Åberg no 197  
Diameter of hole in pin lug = 3.6mm. Worn at foot.  
AA analysis  
    Cu:      82.0      Zn:      2.70    Pb:      1.95    Sn:      10.12  
    Fe:      0.28      Ni:      0.03    Ag:      0.22

Bury St Edmunds

Museum: Ashm                      Accession no: 1909.436  
Overall length: 142.5              Weight (g): 64  
CM Type: C 2                      Åberg: III  
Context: None  
Assoc: None  
Ref: Fig 2.19; Åberg no 81  
Semi-circular punch marks on wings of hpl stop in skb area. Ring and dot decoration with possible (white) inlay. Possible traces of gilding.  
AA analysis  
    Cu:      74.5      Zn:      17.00    Pb:      4.23    Sn:      1.54  
    Fe:      0.16      Ni:      0.00    Ag:      0.19  
Also sampled by RB.

Caistor-by-Norwich

Museum: NCM                      Accession no: M 33  
Overall length: Not determined  
CM Type: Associated with type Z    Leeds and Pocock: Vai  
Context: None  
Assoc: None  
Ref: Leeds and Pocock 1971, 30  
Not examined.  
No chemical analysis available

Carlton Scroop 1

Museum: Lin                      Accession no: AS 11  
Overall length: 81.3              Weight (g): 20  
CM Type: Small B 3              Åberg: II  
Context: None  
Assoc: None  
Ref: Grantham Public Library and Museum Annual Report 1929-30, Plate on page 14

Carlton Scroop 1 cont/

Edges of hpl sharpened. Worn at tkb, bow and foot

Probe analyses

Zn:	12.51	Pb:	3.76	Sn:	2.78		
Fe:	0.19	Ni:	0.04	Ag:	0.34	Au:	0.00
As:	0.34	Sb:	0.07	Bi:	0.01	Co:	0.01

Carlton Scroop 2

Museum: Gran Accession no: AS 30

Overall length: 118.6 Weight (g): 56

CM Type: D 6a Åberg: III

Context: None

Assoc: None

Ref: Fig 2.49; See Carlton Scroop 1

High bow, concave at reverse. Semi-circular punch marks. Tiny single point punchmarks. Crossed scratches on catch. Textile remains on pin lug. Worn at kbs and foot, especially lower edge of rhs skb.

Probe analyses

Zn:	3.51	Pb:	2.61	Sn:	8.14		
Fe:	0.24	Ni:	0.04	Ag:	0.23	Au:	0.04
As:	0.00	Sb:	0.08	Bi:	0.01	Co:	0.00

Carlton Scroop 3

Museum: Lin Accession no: AS 31

Overall length: 127.5 Weight (g): 78

CM Type: C 1 Åberg: IV

Context: None

Assoc: None

Ref: See Carlton Scroop 1

Reverse of hpl and catch show 'smoothing' marks. Edges of hpl thin. Worn at front.

Probe analyses

Zn:	0.27	Pb:	2.52	Sn:	12.26		
Fe:	0.10	Ni:	0.02	Ag:	0.09	Au:	0.03
As:	0.11	Sb:	0.03	Bi:	0.00	Co:	0.00

Catterick 1

Museum: Yorks Accession no: Not known

Overall length: Not determined

CM Type: Z 1b Leeds and Pocock: Vaiv

Context: None

Assoc: None

Ref: YAJ XLII 1970, 407-9; Leeds and Pocock, fig 4c

Not examined.

No chemical analysis available

Catterick 2

Museum: Yorks Accession no: Not known  
Overall length: Not determined  
CM Type: Associated with Z 4 Leeds and Pocock: Vf  
Context: None  
Assoc: None  
Ref: YAJ XXXVIII 1953, 241-5; Leeds and Pocock, 32  
Not examined.  
No chemical analysis available

Churchover

Museum: Ashm Accession no: 1935.619  
Overall length: 130.4 Weight (g): 104.3  
CM Type: Associated Z 2b Leeds and Pocock: Vd  
Context: none  
Assoc: none  
Refs: Leeds and Pocock, 18, pl IE  
Skbs cast with hpl. Two pin lugs. Catch set low. Catch bent to rhs. Small circular and double V punch marks. Worn.  
AA Analysis:  
Cu: 85.50 Zn: 4.52 Pb: 3.03 Sn: 6.71  
Fe: 0.25 Ni: 0.00 Ag: 0.26

Cleatham G9

Museum: Scun Accession no: CLEA G9  
Overall length: 66.9  
CM Type: with small-long foot  
Context: Grave 9  
Assoc: Not known  
Ref: Not known  
Solid casting.  
Probe analyses  
Zn: 2.71 Pb: 9.26 Sn: 9.96  
Fe: 0.15 Ni: 0.04 Ag: 0.06 Au: 0.00  
As: 0.07 Sb: 0.09 Bi: 0.01 Co: 0.01

Cleatham G30 (1)

Museum: Scun Accession no: CLEA G30/7  
Overall length: 139.1 Weight (g): 72  
CM Type: D 5  
Context: Grave 30  
Assoc: with G30 (2), (3), (4), (5), other associations not noted  
Ref: See Cleatham 1  
Textile remains. Worn at bow. Repair to lhs hpl. Skbs hollow with iron remains in hollow. Double V, single point and ring punch marks.  
Probe analyses  
Zn: 4.56 Pb: 3.33 Sn: 5.36  
Fe: 0.20 Ni: 0.04 Ag: 0.39 Au: 0.00  
As: 0.05 Sb: 0.09 Bi: 0.01 Co: 0.01

Cleatham G30 (2)

Museum: Scun Accession no: CLEA G30/9  
Overall length: 139.7 Weight (g): 74  
CM Type: D 5  
Context: Grave 30  
Assoc: See G30(1)  
Ref: See Cleatham 1

Cleatham G30 (2)

Pair to G30(1), but not quite identical, both in casting and decoration.

Probe analyses

Zn:	0.60	Pb:	1.52	Sn:	9.71		
Fe:	0.21	Ni:	0.04	Ag:	0.15	Au:	0.03
As:	0.20	Sb:	0.06	Bi:	0.00	Co:	0.00

Cleatham G30 (3)

Museum: Scun

Accession no: CLEA G30/8

Overall length: 119.3

Weight (g): 58

CM Type: D 5

Context: Grave 30

Assoc: See G30 (1)

Ref: See Cleatham 1

Ring and dot decoration. Semi-circular punch marks. Segmentation down foot. Catch replaced and decorated with pairs of lines.

Probe analyses

Zn:	6.56	Pb:	2.22	Sn:	9.06		
Fe:	0.22	Ni:	0.04	Ag:	0.49	Au:	0.04
As:	0.07	Sb:	0.06	Bi:	0.01	Co:	0.00

Cleatham G30 (4)

Museum: Scun

Accession no: CLEA G30/10

Overall length: 103.1

Weight (g): 38

CM Type: Large B 2

Context: Grave 30

Assoc: See G30(1)

Ref: See Cleatham 1

Conical knobs, circular in cross-section. Skbs slotted. Iron pin and coil. Worn at tkb, foot and bow

Probe analyses

Zn:	2.29	Pb:	6.29	Sn:	8.75		
Fe:	0.16	Ni:	0.03	Ag:	0.17	Au:	0.00
As:	0.49	Sb:	0.08	Bi:	0.04	Co:	0.00

Cleatham G30 (5)

Museum: Scun

Accession no: CLEA G30/11

Overall length: 102.1

Weight (g): 38

CM Type: Large B 2

Context: Grave 30

Assoc: See G30(1)

Ref: See Cleatham 1

See G30(4)

Probe analyses

Zn:	0.08	Pb:	2.07	Sn:	12.60		
Fe:	0.05	Ni:	0.04	Ag:	0.07	Au:	0.00
As:	0.06	Sb:	0.04	Bi:	0.01	Co:	0.00

Cleatham G34 (1)

Museum: Scun

Accession no: CLEA G34/6

Overall length: 129.5

Weight (g): 70

CM Type: D 5

Context: Grave 34

Assoc: With G34 (2) and (3)

Ref: See Cleatham 1

Iron coil and pin. Edges of hpl sharpened. Lopsided casting at foot.

Cleatham G34 (1) cont/

Probe analyses

Zn:	2.38	Pb:	4.33	Sn:	8.91		
Fe:	0.27	Ni:	0.03	Ag:	0.16	Au:	0.00
As:	0.18	Sb:	0.07	Bi:	0.00	Co:	0.00

Cleatham G34 (2)

Museum: Scun Accession no: CLEA G34/8

Overall length: 129.6 Weight (g): 72

CM Type: D 5

Context: Grave 34

Assoc: See G34(1)

Ref: See Cleatham 1

Pair to G34(1), slightly worn at tkb.

Probe analyses

Zn:	2.34	Pb:	3.08	Sn:	8.78		
Fe:	0.25	Ni:	0.03	Ag:	0.15	Au:	0.04
As:	0.12	Sb:	0.06	Bi:	0.02	Co:	0.00

Cleatham G34 (3)

Museum: Scun Accession no: CLEA G34/7

Overall length: 115.8 Weight (g): 52

CM Type: Type B or C

Context: Grave 34

Assoc: See G34(1)

Ref: See Cleatham 1

Loop at end of animal head, with copper alloy tab originally pendant. Edges of headplate sharpened. Short upright catch. Iron rems in catch. Segmentation on ridges. Double diamond and double V punch marks. Worn at bow and tkb.

Probe analyses

Zn:	1.37	Pb:	3.69	Sn:	9.03		
Fe:	0.07	Ni:	0.01	Ag:	0.08	Au:	0.03
As:	0.02	Sb:	0.04	Bi:	0.00	Co:	0.00

Cleatham 1

Museum: Scun Accession no: CLEA U/S

Overall length: 150.0 Weight (g): 66

CM Type: Associated with Z

Context: Unstratified

Assoc: None

Ref: Forthcoming monograph by Leahy

Flat reverse to casting. Small pin lug with iron pin. Double V punch mark.

No gilding evident. Possibly burnt.

Probe analyses

Zn:	2.35	Pb:	2.11	Sn:	7.31		
Fe:	0.18	Ni:	0.03	Ag:	0.17	Au:	0.05
As:	0.08	Sb:	0.06	Bi:	0.02	Co:	0.00

Coddenham

Museum: Ips Accession no: 1962.143

Overall length: 122.9 Weight (g): 50

CM Type: Associated D 5

Context: none

Assoc: none

Ref: none

Circular and semi-circular punch marks. Segmentation. Worn smooth at bow and tkb. No chemical analysis available.

### Colchester 1

Museum: BM                      Accession no: OA 270

Overall length:            Incomplete

CM Type: Z 2b                      Leeds and Pocock: Vb

Context: none

Assoc: none

Ref: Hawkes 1981, fig 12; Leeds and Pocock, 17

Flat reverse to casting except slight hollows behind eyes. Two pin lugs. Iron pin rems. Small upright catch. Front of brooch probably chemically cleaned.

AA analysis

Cu:	90.0	Zn:	3.81	Pb:	2.95	Sn:	4.97
-----	------	-----	------	-----	------	-----	------

Fe:	0.35	Ni:	0.06	Ag:	0.43		
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Probe analyses

Zn:	2.42	Pb:	5.10	Sn:	7.93		
-----	------	-----	------	-----	------	--	--

Fe:	0.12	Ni:	0.04	Ag:	0.44	Au:	0.07
-----	------	-----	------	-----	------	-----	------

As:	0.21	Sb:	0.07	Bi:	0.02	Co:	0.00
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### Colchester 2

Museum: Colc                      Accession no: 181.1977/1

Overall length:    65.4                      Weight (g): 16

CM Type: A 2

Context: Metal detector find, probably a grave

Assoc: Probably with 2 rings, brooch spring.

Ref: Fig 2.3; Hawkes 1981, Fig 13,4

Knobs all have circular cross-section. Bow with diamond shaped cross-section. Pin lug attached to tkb collar. Possible semi-circular punch marks, incised zig-zag on lhs of cpl facet. Probably quite worn, although now heavily lacquered. Iron pin and skb axis. Upper edge of catch ?worn into a curve.

No chemical analysis available

### Colchester 3

Museum: Colc                      Accession no: 181.1977/1

Overall length:    64.6                      Weight (g): 11

CM Type: A 3

Context: Metal detector find, probably a grave

Assoc: Probably with 7 beads, silver ring, siliqua of Valens (367-78), pierced for suspension.

Ref: Hawkes 1981, Fig 13,5

Iron skb axis but copper alloy pin. Tkb set back from the line of hpl, attached to pin lug. Diameter of pin c2mm. Catch worn as Colchester 2. Small ring and dot punch marks.

No chemical analysis available

### Cranwich

Museum: BM                      Accession no: 1982,1-1,1

Overall length:    106.1

CM Type: Large B 2                      Åberg: II/III

Context: none

Assoc: none

Ref: Bought at Sothebys, 14 December 1981 No 213

Flat reverse of casting. Catch stepped and decorated with two pairs of incised lines. Semi-circular punch marks. Good condition.

AA analysis

Cu:	80.0	Zn:	13.45	Pb:	3.62	Sn:	2.73
-----	------	-----	-------	-----	------	-----	------

Fe:	0.28	Ni:	0.04	Ag:	0.26		
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Greenbanks, Darlington

Museum: Ashm                      Accession no: 1909.367  
Overall length: 128.5                      Weight (g): 86  
CM Type: D 5                      Åberg: IV  
Context: none  
Assoc: none  
Ref: Fig 2.45; JT Abbotts Sale, Sotheby's July 20, 1888;  
BB IV, 810 pl CLVIII,8; Åberg no 201 fig 76  
Sideknobs cast with headplate. Flat reverse except behind knobs, bow and  
foot. Pin lug placed low on hpl. Double row of single points, ring and dot  
and V punch marks.  
AA analysis  
    Cu:      80.0              Zn:      1.44      Pb:      3.36      Sn:      10.60  
    Fe:      0.37              Ni:      0.10      Ag:      0.13

Darlington 1

Museum: Not known                      Accession no:  
Overall length: not determined  
CM Type: Z 4b                      Leeds: C2  
Context: none  
Assoc: none  
Ref: Leeds 1949, no 135  
Not examined.  
No chemical analysis available

Darlington 2

Museum: Not known                      Accession no:  
Overall length: not determined  
CM Type: Associated Z 4b                      Leeds: C2  
Context: none  
Assoc: none  
Ref: Leeds 1949, no 134  
Not examined.  
No chemical analysis available

Dorchester G2

Museum: Ashm                      Accession no: 1886.1448  
Overall length: 67.5  
CM Type: A 1                      Åberg: early                      Reichstein: *Typ Dorchester*  
Context: Woman's Grave 2  
Assoc: Back of applied disc brooch, animal style buckle (Hawkes and  
Dunning, type 1b)  
Ref: Fig 2.1; Åberg fig 12; Reichstein, 153 no 846, *Taf* 7  
6,2 and references therein  
Pin lug attached to topknob collar. Catch runs the entire length of the  
foot. No animal head details. Iron corrosion from pin. Miscast hole in side  
of catch.  
AA analysis  
    Cu:      90.5              Zn:      0.88      Pb:      3.33      Sn:      8.52  
    Fe:      0.16              Ni:      0.00      Ag:      0.75

Drayton

Museum: NCM                      Accession no: 499.980  
Overall length: 80.6  
CM Type: Associated C 2  
Context: None  
Assoc: None  
Ref: None known  
Flat reverse to casting. Small circular punch marks continue along edges of hpl, even on sideknob areas. Cleaned in some areas.  
AA analysis  
    Cu: 85.0      Zn: 0.04    Pb: 2.81    Sn: 9.87  
    Fe: 0.00      Ni: 0.00    Ag: 0.22

Driffield 1

Museum: Yorks                      Accession no:  
Overall length: not determined  
CM Type: Associated with A 2    Åberg: I  
Context: None  
Assoc: None  
Ref: Åberg 1926, fig 50  
Not examined. Plain form with notches at lower edge of hpl.  
No chemical analysis available

Driffield 2

Museum: Yorks                      Accession no: 272.47  
Overall length: not determined  
CM Type: Associated with Z    Leeds and Pocock: Vaiiii  
Context: None  
Assoc: None  
Ref: Leeds and Pocock, 31  
Not examined.  
No chemical analysis available

Driffield 3

Museum:                              Accession no:  
Overall length: not determined  
CM type: Z4a  
Context: Grave  
Assoc: not known  
Ref: Mortimer J R 1905, fig 829  
Not examined. Circular punch marks.  
No chemical analysis available.

Driffield 4

Museum:                              Accession no:  
Overall length: not determined  
CM type: D2  
Context: Grave  
Assoc: Annular brooch, ? CA strap end, ox-bone  
Ref: Mortimer J R 1905, 278, fig 768  
Not examined. Circular punch marks.  
No chemical analysis available.

Driffield 5

Museum: Accession no:  
Overall length: not determined  
CM type: D2  
Context: "Grave no 4, near Cheesecake Hill"  
Assoc: Pair to this brooch (see Driffield 6), disc brooch ?with gilded applied front, beads, 'clasps'  
Ref: Mortimer J R 1905, fig 843  
Not examined. Not clear whether the illustrations are front and rev of one brooch from the pair, or front of one, rev of the other. Single point punch marks. Side knobs cast separately.  
No chemical analysis available.

Driffield 6

Museum: Accession no:  
Overall length: not determined  
CM type: D2  
Context: see Driffield 5  
Assoc: see Driffield 5  
Ref: see Driffield 5  
Pair to above.  
No chemical analysis available.

Driffield 7

Museum: Accession no:  
Overall length: not determined  
CM type: D2  
Context: "Grave no 5"  
Assoc: Annular brooch, iron knife and buckle, CA ring  
Ref: Mortimer 1905, fig 869  
Not examined. Poor condition. Small ring-and-dot punch marks.  
No chemical analysis available.

Driffield 8

Museum: Accession no:  
Overall length: not determined  
CM type: C2  
Context: "Grave no 8"  
Assoc: 7 beads, CA fragments  
Ref: Mortimer 1905, fig 874  
Not examined. Double semi-circular punch marks.  
No chemical analysis available.

Duston

Museum: Accession no:  
Overall length: not determined  
CM Type: Z 3 Leeds and Pocock: Vj/Vk  
Context: not known  
Assoc: not known  
Ref: Leahy 1979, pl IIa  
Not examined. Separately cast knobs, rivetted on.  
No chemical analysis available

East Anglia?

Museum: BM?                      Accession no:  
Overall length: not determined  
CM Type: Associated with A 2      Åberg: I  
Context: None  
Assoc: None  
Ref: Åberg 1926, fig 49  
Not examined. Long catch, attached to foot, forming a pocket. Ring and dot  
decoration. Single point punch mark.  
No chemical analysis available

East Shefford G10 (1)

Museum: Newbury                      Accession no:  
Overall length: not determined  
CM Type: A 2                      Åberg: I                      Reichstein: *Typ Midlum*  
Context: Grave 10  
Assoc: With (2), toilet set and ceramic vessel  
Ref: Åberg 1926, fig 52, Reichstein no 766 fig 85,2 and references therein  
Not examined. Simple form. Separate skbs.  
No chemical analysis available

East Shefford G10 (2)

Museum: Newbury                      Accession no:  
Overall length: not determined  
CM Type: B 3                      Åberg: II                      Reichstein: Not identified  
Context: Grave 10  
Assoc: With East Shefford G10(1)  
Ref: Reichstein no 766, fig 85,3  
Not examined. Poor condition.  
No chemical analysis available

Little Eriswell G9

Museum: BSE                              Accession no:  
Overall length: 142                      Åberg: IV  
CM Type: D 5  
Context: Grave 9  
Assoc: Small-long brooches, pair of wrist clasps  
Ref: Hutchinson 1966, 6, pl Ia (1)  
Not examined. Separate skbs, edges of hpl sharpened. Ring and dot  
decoration.  
No chemical analysis available

Little Eriswell G22

Museum: B St E                              Accession no:  
Overall length: 141                      Åberg: IV  
CM Type: D 5  
Context: Grave 22  
Assoc: Bowl, 2 annular brooches, iron ring, beads, iron scraps, textiles  
Ref: Hutchinson 1966, 8, fig 6b (1)  
Not examined. Broken and mended at bow. Separate skbs, edges of hpl  
sharpened. Rev of casting hollow at tkb.  
No chemical analysis available

Little Eriswell G28 (1)

Museum: B St E                                      Accession no:  
Overall length: 92  
CM Type: Small B 2                      Åberg: II    Reichstein: *Typ* Stratford  
Context: Grave 28  
Assoc: With one other cb, shb, beads, wrist clasps Hines Type B13a, girdle hangers, ivory ring, iron knife and ring, CA frags, buckle, strap end  
Ref: Hutchinson 1966, 10, pl IIa (2); Reichstein no 865  
Not examined. Separate skbs.  
No chemical analysis available

Little Eriswell G28 (2)

Museum: B St E                                      Accession no:  
Overall length: 84  
CM Type: small-long foot                      Reichstein: *Typ* Barrington  
Context: Grave 28  
Assoc: with (1)  
Ref: Hutchinson 1966, 11, pl IIa (3); Reichstein no 865  
Not examined. Skbs cast with hpl.  
No chemical analysis available

Little Eriswell G33

Museum: B St E                                      Accession no:  
Overall length: broken  
CM Type: D 1                                      Åberg: III  
Context: Grave 33  
Assoc: 2 annular brooches, two pairs of wrist clasps Hines Type A, iron knife and ring, beads, textile evidence on brooch.  
Ref: Hutchinson 1966, 12, pls. IIIa and IV  
Not examined. Kbs hollow at rev.  
No chemical analysis available

Exning

Museum: NCM or CUM?                      Accession no: Not known  
Overall length: not determined  
CM Type: Z 1b                                      Leeds and Pocock: Vc  
Context: None  
Assoc: None  
Ref: Leeds and Pocock 1971, 17 pl 1c  
Not examined  
No chemical analysis available

Faversham

Museum: BM    Accession no: 1077.70  
Overall length: 76.2  
CM Type: Ass. small B 1                      Åberg: Kentish    Reich: *Typ* Midlum  
Context: None  
Assoc: None  
Ref: Åberg fig 36, Reichstein no 810  
Sideknobs cast with hpl. Two pin lugs. Good condition.  
AA analysis  
    Cu:      84.5              Zn:      2.80    Pb:      2.71    Sn:      7.76  
    Fe:      0.19              Ni:      0.03    Ag:      0.38

## Feering

Museum: Colc                      Accession no: 32.1888/2  
Overall length: 70.4                      Weight (g): 14  
CM Type: Small-long foot                      Reichstein: *Typ Feering*  
Context: Grave  
Assoc: Small-long brooch, 4 beads, iron pieces.  
Ref: Åberg no 58, Fig 94; Reichstein no 805, fig 107,3  
Flat reverse to casting, with 'smoothing marks' on hpl. Solid cross-section of bow. Diameter of pin = 2.2mm. Knobs small and lopsided, probably worn, especially on rhs sideknob.  
No chemical analysis available

## Felixstowe 1

Museum: Ips                      Accession no: 1962-144  
Overall length: Incomplete  
CM Type: D 5  
Context: none  
Assoc: none  
Ref: Leeds and Pocock 1971, 30  
No details.  
No chemical analysis available

## Felixstowe 2

Museum: Ips                      Accession no: 1962.145  
Overall length: 140.0                      Weight (g): 47  
CM Type: Associated with Z1                      Leeds and Pocock: *Vaii*  
Context: none  
Assoc: none  
Ref: none  
Flat reverse to casting, except slightly behind the foot and bow. Iron loop and pin extant at pin lug. Edges of headplate thin. Circular punch marks and segmentation on ridges. WM applied to fans and collar of tkb.  
No chemical analysis available

## Felixstowe 3

Museum: Ips                      Accession no: 32.1888/2  
Overall length: Incomplete  
CM Type: B or C  
Context: none  
Assoc: none  
Ref: none  
Probably chemically stripped. Diameter of pin = 3.9mm. Reverse of tkb, bow and foot is concave.  
No chemical analysis available

## Feltwell

Museum: NCM                      Accession no: 1965.2  
Overall length: 91.2  
CM Type: Small B 2  
Context: none  
Assoc: none  
Ref: none  
Flat reverse of casting. Single point punch marks. Diameter of wire = 2.9mm

## AA analysis

Cu:	79.0	Zn:	17.56	Pb:	2.29	Sn:	3.25
Fe:	0.39	Ni:	0.05	Ag:	0.20		

Flixborough 1

Museum: Linc                      Accession no: EXNUL  
Overall length:            incomplete                      Weight (g): 65  
CM Type: D 5                      Åberg: IV  
Context: None  
Assoc: None

Ref: Åberg no 184

Sideknobs cast with hpl, but set back. Iron loop on pin lug. Stepped catch. Reverse of bow, foot, tkb, foot, cpl and lappets concave. Triangular and single point punch marks and segmentation. Crisp casting.

Probe analyses

Zn:	6.19	Pb:	4.54	Sn:	5.86		
Fe:	0.20	Ni:	0.02	Ag:	0.11	Au:	0.00
As:	0.25	Sb:	0.10	Bi:	0.02	Co:	0.00

Fonaby G23

Museum: Scun                      Accession no: FON G23,2  
Overall length:    132.2                      Weight (g): 90  
CM Type: D 2                      Leeds and Pocock: IVa

Context: Grave 23

Assoc: 31 beads, copper alloy strips, bone comb, iron ring

Ref: Cook 1981, 50 a-c, 78, Fig 7, plate III

Very poor visibility, covered with textile.

Probe analyses

Zn:	8.57	Pb:	2.30	Sn:	7.01		
Fe:	0.16	Ni:	0.11	Ag:	0.13	Au:	0.00
As:	0.31	Sb:	0.05	Bi:	0.01	Co:	0.00

Fonaby G28

Museum: Scun                      Accession no: FON 5281  
Overall length:    68.5                      Weight (g): 18  
CM Type: Associated with small B 2    Åberg:

Context: Grave 28

Assoc: Ceramic bowl and spindle whorl, 46 beads, iron annular brooches and knives

Ref: Cook 1981, Fig 10

Solid bow, convex foot. Deep hollow at reverse of cpl. Iron coil, loop and pin. Cleaned.

Probe analyses

Zn:	0.27	Pb:	5.96	Sn:	9.84		
Fe:	0.04	Ni:	0.03	Ag:	0.03	Au:	0.00
As:	0.37	Sb:	0.04	Bi:	0.01	Co:	0.00

Fonaby G32

Museum: Scun                      Accession no: FON G32,4  
Overall length:    81.7                      Weight (g): 14  
CM Type: Small B 3

Context: Grave 32

Assoc: Small-long brooch of Leeds cross-pattee type Ei, bead

Ref: Cook 1981, Fig 11

Poor condition. Hollow foot and bow. Double semi-circular punch marks.

Probe analyses

Zn:	1.20	Pb:	4.48	Sn:	8.75		
Fe:	0.23	Ni:	0.03	Ag:	0.52	Au:	0.00
As:	0.33	Sb:	0.09	Bi:	0.00	Co:	0.00

Fonaby G35

Museum: Scun Accession no: FON G35,1

Overall length: 127.2 Weight (g): 61

CM Type: Associated with C

Context: Grave 35

Assoc: iron blade and frags

Ref: Cook 1981, Fig 12

Poorly preserved. Pin lug area appears to be backed with copper alloy plate. Flat reverse to casting, except slightly at the bow.

Probe analyses

Zn:	0.02	Pb:	0.16	Sn:	11.57		
Fe:	0.02	Ni:	0.03	Ag:	0.16	Au:	0.05
As:	0.14	Sb:	0.03	Bi:	0.03	Co:	0.00

Fonaby G38

Museum: Scun Accession no: FON G38,4

Overall length: 120.3 Weight (g): 56

CM Type: Z 4 Leeds type: C2

Context: Grave 38

Assoc: Iron knife, wrist clasp, lumps of copper alloy

Ref: Cook 1981, Fig 13

Poorly preserved. Two pin lugs, iron pin appearing to be hinged not sprung. Catch mended. Traces of gilding throughout.

Probe analyses

Zn:	9.01	Pb:	2.62	Sn:	4.99		
Fe:	0.23	Ni:	0.02	Ag:	0.08	Au:	0.00
As:	0.00	Sb:	0.14	Bi:	0.01	Co:	0.00

Fonaby G43 (1)

Museum: Scun Accession no: FON G43,2

Overall length: 130.0 Weight (g): 56

CM Type: Associated D 2

Context: Grave 43

Assoc: Cb (2), 48 beads, annular brooches, wrist clasps Hines type B20, part of drinking horn

Ref: Cook 1981, Fig 13, G43,2

Flat reverse to casting, except at tkb and bow. Back of bow somewhat poorly cast. Semi-circular punch marks. Poor condition. Textile remains throughout. Sideknobs cast with hpl. Hpl edges flexed back.

Probe analyses

Zn:	10.85	Pb:	2.23	Sn:	5.20		
Fe:	0.18	Ni:	0.04	Ag:	0.83	Au:	0.03
As:	0.06	Sb:	0.08	Bi:	0.00	Co:	0.00

Fonaby G43 (2)

Museum: Scun Accession no: FON G43,3

Overall length: incomplete, fragments only

CM Type: Associated with D

Context: Grave 43

Assoc: with (1)

Ref: Cook 1981, Fig 15

Thin casting at bow. Concave casting at reverse of animal head. Poor condition.

No chemical analysis available

Fonaby 1

Museum: Scun                      Accession no: FON US9  
Overall length: 120.0                      Weight (g): 87  
CM Type: D 3  
Context: U/S  
Assoc: U/S  
Ref: Cook 1981, Fig 20,9  
Substantial corrosion. Possible tkb which was reattached with rivets.

Probe analyses

Zn:	1.92	Pb:	3.18	Sn:	8.14		
Fe:	0.16	Ni:	0.02	Ag:	0.03	Au:	0.00
As:	0.00	Sb:	0.07	Bi:	0.00	Co:	0.00

Duplicate analysis on another part of the brooch:

Probe analyses

Zn:	4.09	Pb:	0.58	Sn:	6.37		
Fe:	0.28	Ni:	0.05	Ag:	0.55	Au:	0.05
As:	0.13	Sb:	0.05	Bi:	0.01	Co:	0.00

Fonaby 2

Museum: Scun                      Accession no: FON US10  
Overall length: incomplete                      Weight (g): 48  
CM Type: Associated D 2  
Context: U/S  
Assoc: U/S  
Ref: Cook 1981, Fig 20,10  
Iron coil and loop. Catch mended with a plate. Severely cleaned.

Probe analyses

Zn:	9.95	Pb:	3.27	Sn:	4.95		
Fe:	0.13	Ni:	0.02	Ag:	0.98	Au:	0.02
As:	0.14	Sb:	0.07	Bi:	0.01	Co:	0.00

Fonaby 3

Museum: Scun                      Accession no: FON US13  
Overall length: 130.2                      Weight (g): 86  
CM Type: Associated with C                      Åberg: III  
Context: U/S  
Assoc: U/S  
Ref: Cook 1981, Fig 22,13  
Reverse of casting hollow. Edges of hpl flexed back. Poor condition.

Probe analyses

Zn:	1.34	Pb:	3.03	Sn:	8.91		
Fe:	0.27	Ni:	0.04	Ag:	0.12	Au:	0.00
As:	0.27	Sb:	0.05	Bi:	0.02	Co:	0.01

Fonaby 4

Museum: Scun                      Accession no: FON US14  
Overall length: 150.0                      Weight (g): 106  
CM Type: D 5                      Leeds and Pocock: IVb  
Context: U/S  
Assoc: U/S  
Ref: Cook 1981, Fig 22,14 and plate V  
Reverse of tkb and bow hollow. Mend at foot. Extensive textile remains.

Probe analyses

Zn:	1.13	Pb:	1.43	Sn:	7.06		
Fe:	0.13	Ni:	0.03	Ag:	0.28	Au:	0.00
As:	0.00	Sb:	0.06	Bi:	0.00	Co:	0.00

### Fonaby 5

Museum: Scun                      Accession no: FON US15  
Overall length: 106.5                      Weight (g): 28  
CM Type: Large B 3  
Context: U/S  
Assoc: U/S  
Ref: Cook 1981, Fig 23,15  
Iron pin, loop and skb axis on hpl. Reverse bow and foot hollow.

#### Probe analyses

##### 1) top knob

Zn:	1.93	Pb:	5.52	Sn:	10.25		
Fe:	0.12	Ni:	0.05	Ag:	0.05	Au:	0.00
As:	0.26	Sb:	0.13	Bi:	0.00	Co:	0.00

##### 2) foot

Zn:	2.06	Pb:	4.98	Sn:	9.81		
Fe:	0.13	Ni:	0.02	Ag:	0.06	Au:	0.00
As:	0.27	Sb:	0.13	Bi:	0.00	Co:	0.01

### Fonaby 6

Museum: Scun                      Accession no: FON US11  
Overall length: 152.2                      Weight (g): 107  
CM Type: Associated Z 1b      Leeds and Pocock: Va  
Context: U/S  
Assoc: U/S but see pair U/S 12  
Ref: Fig 2.52; Cook 1981; Leeds and Pocock 1971, 31  
Flat reverse to casting except at bow and foot. Impression of catch shows through to the front. Cleaned, but possibly gilded.

#### Probe analyses

Zn:	3.19	Pb:	1.30	Sn:	7.21		
Fe:	0.37	Ni:	0.04	Ag:	0.27	Au:	0.05
As:	0.01	Sb:	0.04	Bi:	0.01	Co:	0.00

### Fonaby 7

Museum: Scun                      Accession no: FON US12  
Overall length: not determined      Weight (g): not det  
CM Type: Associated Z 1b      Leeds and Pocock: Va  
Context: U/S  
Assoc: U/S but see U/S 11  
Ref: Cook 1981  
See Fonaby 6  
No chemical analysis available

### Frilford

Museum: Cornell University                      Accession no:  
Overall length: not determined  
CM type: A3                      Reichstein: *Typ* Stratford  
Context: Grave  
Assoc: another 'cb', possibly of the same type, pin, iron ring and knife  
Ref: Leeds, *Antiq J XIII* 1933, 240, fig XXXIII,c; Reichstein no 767  
Not examined. Appears worn.  
No chemical analysis available.

Ganton Wold G1 (1)

Museum: BM                      Accession no: 76,2-12,4  
Overall length: 129.0  
CM Type: Large B 2              Åberg: II  
Context: Secondary in barrow  
Assoc: Fabric, two other cbs, wrist clasps type Hines B18a,  
beads, spindle whorl, 2 'vases'  
Ref: Greenwell 1877, 178; VCH II 93; Åberg no 66  
Sideknobs cast with hpl. Flat reverse to casting, except bow. Remains of  
iron loops. Appears quite worn, at lower edges of sideknobs.  
AA analysis  
    Cu:     87.0            Zn:     1.66     Pb:     4.51     Sn:     9.12  
    Fe:     0.13           Ni:     0.03     Ag:     0.15

Ganton Wold G1 (2)

Museum: BM                      Accession no: 76,2-12,5  
Overall length: 90.0  
CM Type: Associated D 2        Åberg: IV  
Context: See G1(1)  
Assoc: See G1(1)  
Ref: See G1(1)  
Poorly preserved. Two pin lugs. Circular punch marks.  
AA analysis  
    Cu:     83.0           Zn:     6.05     Pb:     4.50     Sn:     2.91  
    Fe:     0.58           Ni:     0.06     Ag:     0.12

Ganton Wold G1 (3)

Museum: BM                      Accession no: 76,2-12,6  
Overall length: incomplete  
CM Type: Associated D 2        Åberg: IV  
Context: See G1(1)  
Assoc: See G1(1)  
Ref: See G1(1)  
Flat reverse to casting. Sideknobs cast with hpl. Small upright catch. V  
punch marks. Poor condition, but not apparently worn.  
AA analysis  
    Cu:     88.0           Zn:     2.81     Pb:     2.69     Sn:     6.39  
    Fe:     0.26           Ni:     0.05     Ag:     0.28

Girton G2

Museum: CUM                    Accession no: D24.1B  
Overall length: 79.2  
CM Type: Small B 3            Åberg: II     Reichstein: *Typ Girton*  
Context: Grave 2  
Assoc: Roman enamelled brooch  
Ref: Fig 2.16; Hollingworth and O'Reilly 1925, pl IV,3; Reichstein no 781  
fig 116,5  
AA analysis  
    Cu:     86.0           Zn:     1.93     Pb:     4.19     Sn:     8.95  
    Fe:     0.30           Ni:     0.00     Ag:     0.35  
Probe analyses  
    Zn:     2.15           Pb:     5.30           Sn:     8.54  
    Fe:     0.36           Ni:     0.03           Ag:     0.32           Au:     0.00  
    As:     0.00           Sb:     0.06           Bi:     0.00           Co:     0.00

Girton G13 (1)

Museum: CUM                      Accession no: A1906.295  
Overall length: 93.0  
CM Type: A 3                      Åberg: I                      Reichstein: *Typ Stratford*  
Context: Grave 13  
Assoc: with another cb and possibly wrist clasps Hines type B12, small-long brooch  
Ref: Fox, 248 Fig 34 1-1a; Hollingworth and O'Reilly 1925; Åberg no 14; Reichstein no 783, fig 92,7.  
Facetted 'polyhedral' knobs of circular cross-section. Sideknobs slotted but not a pair. Edges of hpl flexed back. Catch stepped twice. Iron pin remains. Semi-circular punch marks.

AA analysis

Cu:	87.0	Zn:	0.47	Pb:	3.17	Sn:	11.63
Fe:	0.16	Ni:	0.00	Ag:	0.12		

Probe analyses

Zn:	0.42	Pb:	2.48	Sn:	11.99		
Fe:	0.12	Ni:	0.03	Ag:	0.11	Au:	0.03
As:	0.01	Sb:	0.05	Bi:	0.00	Co:	0.00

Girton G13 (2)

Museum: CUM                      Accession no: D24.20A  
Overall length: 96.5  
CM Type: A 3                      Åberg: I                      Reichstein:  
Context: Grave 13  
Assoc: See G13(1)  
Ref: See G13(1)

Knobs cross-section is circular. Catch replaced and broken again. Sideknobs cast with hpl. Semi-circular punchmarks and segmentation.

AA analysis

Cu:	83.0	Zn:	0.82	Pb:	3.84	Sn:	8.85
Fe:	0.07	Ni:	0.00	Ag:	0.13		

Girton G33 (1)

Museum: CUM                      Accession no: D24.14a  
Overall length: 101.3  
CM Type: D 2                      Åberg: IV                      Reichstein: *Typ Achlum*  
Context: Grave 33  
Assoc: Small-long brooch, iron knife and ring, wrist clasps Hines types B17a, B13a, beads  
Ref: Åberg no 152; Reichstein no 784, fig 86,2  
Iron sideknob axis. Sideknobs slotted. Semi-circular punch marks and segmentation of ridges.

AA analysis

Cu:	84.0	Zn:	5.83	Pb:	3.91	Sn:	6.83
Fe:	0.34	Ni:	0.00	Ag:	0.58		

Girton G33 (2)

Museum: CUM                      Accession no: D24.14b  
Overall length: 69.2  
CM Type: Small B 2                      Åberg: II                      Reichstein: *Typ Midlum*  
Context: Grave 33  
Assoc: see above  
Ref: Åberg no 152; Reichstein no 784, fig 86,6  
Double ring and dot punch marks.

AA analysis

Cu:	85.5	Zn:	6.11	Pb:	3.09	Sn:	6.44
Fe:	0.25	Ni:	0.00	Ag:	0.13		

Girton G39 (1)

Museum: CUM                      Accession no: A 1906.288a  
Overall length: 115.2  
CM Type: D 3                      Åberg: IV      Reichstein: *Typ West Stow*  
Context: Grave 39  
Assoc: Cb (2), wrist clasps Hines type B12, loop, glass beads  
Ref: Fig 2.35; Hollingworth and O'Reilly 1925, pl I (left); Reichstein no 782, fig 92, 2 or 3  
Sideknobs slotted. Stepped catch. Solid bow cross-section, iron sideknob axis. Pin lug on ridge. Segmented ridges.  
AA analysis  
    Cu:     85.5      Zn:     1.48    Pb:     3.71    Sn:     9.74  
    Fe:     0.15      Ni:     0.00    Ag:     0.14  
Probe analyses  
    Zn:     1.55      Pb:     3.35      Sn:     9.45  
    Fe:     0.12      Ni:     0.03      Ag:     0.10      Au:     0.00  
    As:     0.00      Sb:     0.03      Bi:     0.00      Co:     0.00

Girton G39 (2)

Museum: CUM                      Accession no: A1906.288b  
Overall length: 115.7  
CM Type: D 3                      Åberg: IV      Reichstein: *Typ West Stow*  
Context: Grave 39  
Assoc: with (1)  
Ref: Åberg no 153; Hollingworth and O'Reilly 1925, pl I (right); Reichstein no 782, fig 92, 2 or 3  
See pair, but bow cross-section is concave. Catch is larger. Stamps appear to be triangular.  
AA analysis  
    Cu:     86.0      Zn:     1.90    Pb:     2.69    Sn:    10.04  
    Fe:     0.14      Ni:     0.00    Ag:     0.10  
Probe analyses  
    Zn:     1.94      Pb:     2.53      Sn:    10.47  
    Fe:     0.13      Ni:     0.13      Ag:     0.11      Au:     0.04  
    As:     0.01      Sb:     0.08      Bi:     0.05      Co:     0.00

Girton 1

Museum: CUM                      Accession no: Z25532  
Overall length: incomplete  
CM Type: C or D                      Åberg: IV  
Context: Urn passing through Grave 5  
Assoc: urn  
Ref: Grave 5 referred to in Hollingworth and O'Reilly as containing a male burial, with copper alloy ring, toilet set, bronze bound bucket (pl VI,2).  
Poor condition.  
AA analysis  
    Cu:     86.0      Zn:     6.22    Pb:     1.57    Sn:     5.31  
    Fe:     0.35      Ni:     0.00    Ag:     0.43  
Probe analyses  
    Zn:     6.44      Pb:     0.90      Sn:     5.04  
    Fe:     0.04      Ni:     0.02      Ag:     0.41      Au:     0.00  
    As:     0.02      Sb:     0.04      Bi:     0.00      Co:     0.00

Girton 2

Museum: CUM Accession no: Z42.325

Overall length: 137.3

CM Type: D 5a Åberg: IV Reichstein:

Context: 'Group I'

Assoc: 2 disc brooches, girdle hanger, wrist clasps, beads

Ref: Fig 2.42; Fox pl XXVII, 2; Åberg no 155 fig 78; Hollingworth and O'Reilly 1925, 'Group I'.

Sideknobs cast with hpl. Deep hollows at reverse of knobs. Edges of hpl flexed back. Two pin lugs. WM plating on hpl and animal head fan. WM wire in collar at lower ends. Semi-circular punch marks.

AA analysis

Cu:	81.5	Zn:	9.70	Pb:	3.62	Sn:	6.62
Fe:	0.24	Ni:	n.a.	Ag:	0.14		

Probe analyses

Zn:	10.50	Pb:	4.35	Sn:	5.56		
Fe:	0.23	Ni:	0.03	Ag:	0.11	Au:	0.00
As:	0.00	Sb:	0.05	Bi:	0.03	Co:	0.00

Girton 3

Museum: CUM Accession no: Z31272

Overall length: 139.4

CM Type: D 5 Åberg: IV

Context: None

Assoc: None

Ref: Fig 2.45

Reverse of casting hollow at foot, tkb. Sideknobs slotted attached by iron pin. Double semi-circular and segmented Y punch marks.

AA analysis

Cu:	74.0	Zn:	8.49	Pb:	11.11	Sn:	6.95
Fe:	0.42	Ni:	0.00	Ag:	0.11		

Probe analyses

Zn:	9.00	Pb:	9.23	Sn:	7.79		
Fe:	0.42	Ni:	0.03	Ag:	0.12	Au:	0.00
As:	0.02	Sb:	0.14	Bi:	0.00	Co:	0.01

Girton 4

Museum: CUM Accession no: D24.24

Overall length: broken

CM Type: Associated C Åberg: IV Reichstein:

Context: ? Grave 53

Assoc: Not known

Ref: Girton G53 not discussed in Hollingworth and O'Reilly. This brooch or Girton 3 could be G55, accompanied by a large amber bead.

Very concave behind knobs. Probable semi-circular punch marks.

AA analysis

Cu:	83.5	Zn:	3.77	Pb:	4.20	Sn:	8.06
Fe:	0.13	Ni:	0.00	Ag:	0.14		

Probe analyses

Zn:	4.27	Pb:	3.05	Sn:	8.14		
Fe:	0.11	Ni:	0.03	Ag:	0.17	Au:	0.03
As:	0.00	Sb:	0.07	Bi:	0.00	Co:	0.00

## Gissing

Museum: NCM                      Accession no: none  
Overall length: 140.0  
CM Type: C 1  
Context: Possible grave  
Assoc: ?annular grave  
Ref: May be that referred to in Norfolk Arch XXVII 1940, 222  
Edges of hpl thinned and slightly notched. Small catch. Diameter of pin lug hole = 2.9mm. Worn at bow and tkb  
AA analysis  
    Cu:     85.5        Zn:     4.18    Pb:     4.67    Sn:     6.41  
    Fe:     0.20        Ni:     0.04    Ag:     0.11

## Glen Parva

Museum: Leicester                Accession no:  
Overall length: not determined  
CM Type: Assoc. A            Åberg: I    Reichstein: *Einzelformen*  
Context: Grave  
Assoc: pair of small-long brooches (with separate knobs with tabs), 2 CA girdle hangers, crystal bead, frag of conical glass beaker, 2 small CA rings, 16 glass beads, animal tooth pendant  
Ref: Åberg 1926, Fig 51; Reichstein no 820; Vierck 1977, Abb 1, 1-43  
Not examined. Unusual punch mark, triangular with circles inside (Vierck 1978 says niello decoration). Other punch marks. Hpl notched upper and lower edges.  
No chemical analysis available

## Glenthams 1

Museum: Lin                      Accession no: 14.78  
Overall length: 67.9              Weight (g): 9  
CM Type: A 1                    Åberg: I  
Context: Surface find  
Assoc: None  
Ref: Hines 1984, fig 1.4  
Tkb cross-section is circular. Pin lug attached to tkb collar. Bow cross-section is circular at the front and angled at the back. Catch placed to the rhs of cpl.  
Probe analyses  
    Zn:     0.04        Pb:     1.94        Sn:     11.19  
    Fe:     0.02        Ni:     0.05        Ag:     0.12        Au:     0.04  
    As:     0.15        Sb:     0.04        Bi:     0.01        Co:     0.00

## Glenthams 2

Museum: Lin                      Accession no: 42.36  
Overall length: 135.0              Weight (g): 66  
CM Type: D 3                    Åberg: IV  
Context: None  
Assoc: None  
Ref: None  
Kbs appear to have tabs in front, but are cast with hpl. Reverse of kb and collar are slightly hollow. Diameter of pin hole = 2.3mm. Bow has repaired hole. Reverse of foot has ridges or striations. Two holes pierced through hpl for repair. V with small circle at top punch marks. Worn at knobs, hpl and foot.  
Probe analyses  
    Zn:     5.25        Pb:     2.01        Sn:     9.37  
    Fe:     0.20        Ni:     0.04        Ag:     0.09        Au:     0.00  
    As:     0.00        Sb:     0.06        Bi:     0.01        Co:     0.00

Goodmanham

Museum: BM                      Accession no: WG 1976  
Overall length: 124.8  
CM Type: D 3                      Åberg: IV  
Context: None  
Assoc: None  
Ref: Fig 2.36; Åberg no 199  
Sideknobs cast with hpl. Casting hollow behind kbs and bow. Large ring and dot punch marks, also single point punch marks and possibly others. Worn at bow and kbs.  
AA analysis  
    Cu:     88.5        Zn:     4.73    Pb:     3.63    Sn:     4.87  
    Fe:     0.27        Ni:     0.04    Ag:     0.26

Grantham

Museum: Lin                      Accession no: AS 62  
Overall length: 133.3              Weight (g): 67  
CM Type: C 1                      Åberg: IV  
Context: River Witham bank  
Assoc: None  
Ref: Grantham Public Library and Museum Annual Report 1929-30, plate on page 14  
Reverse of tkb very concave, also bow. Upright catch. Double V punchmarks and segmented ridges. Bow and tkb worn smooth.  
Probe analyses  
    Zn:     0.40        Pb:     1.82        Sn:     13.44  
    Fe:     0.03        Ni:     0.01        Ag:     0.11        Au:     0.00  
    As:     0.14        Sb:     0.06        Bi:     0.01        Co:     0.00

Great Carbrooke

Museum: None                      Accession no: Drawing (BM)  
Overall length: not determined  
CM Type: Associated Z 1              Åberg: Vaii  
Context: none  
Assoc: none  
Ref: Leeds & Pocock 1971, 30, known from a drawing only  
Not examined.  
No chemical analyses available.

Great Chesterford

Museum: BM                      Accession no: 1964,7-2,98  
Overall length: broken  
CM Type: Associated D 1              Åberg: IV  
Context: Grave 20 SF 22  
Assoc: wrist clasp Hines type B7  
Ref: Evison excavations, 1953-7, unpublished  
Iron rivet at bow, on cpl and lappets. Double semi-circular punch marks. Probably worn at bow and kbs.  
AA analysis  
    Cu:     82.5        Zn:     0.52    Pb:     8.74    Sn:     6.15  
    Fe:     0.08        Ni:     0.02    Ag:     0.06

Haslingfield 1

Museum: Ashm                      Accession no: 1909.236  
Overall length: 126.0              Weight (g): 55  
CM Type: Associated Z 1              Leeds and Pocock: Va  
Context: None  
Assoc: None

Haslingfield 1 cont/

Ref: Fig 2.50; Leeds and Pocock, 17, pl I, F  
Broken at bow and mended with rivet. Ring and dot and semi-circular punch marks. Decoration extends along hpl edges where skbs would rest.

AA analysis

Cu:	84.5	Zn:	2.28	Pb:	2.14	Sn:	8.06
Fe:	0.15	Ni:	0.10	Ag:	0.23		

Haslingfield 2

Museum: Ashm                      Accession no: 1909.237  
Overall length: 105.9              Weight (g): 38  
CM Type: D 1                      Åberg: ? IV  
Context: None

Assoc: None

Ref: ? Åberg no 143

Two pin lugs. Skbs cast with hpl. Circular punch marks. Traces of gilding on animal head. Iron rivets on mend.

AA analysis

Cu:	78.5	Zn:	1.28	Pb:	5.48	Sn:	9.62
Fe:	0.13	Ni:	n.a.	Ag:	0.12		

Haslingfield 3

Museum: Ashm                      Accession no: 1909.238  
Overall length: 89.6                Weight (g): 26  
CM Type: Small B 2                Åberg: ? II  
Context: None

Assoc: None

Ref: ? Åberg 42

Skbs cast with hpl. Gilding. Single point punch marks. Kbs worn.

AA analysis

Cu:	82.0	Zn:	2.76	Pb:	2.76	Sn:	5.92
Fe:	0.38	Ni:	n.a.	Ag:	0.27		

Haslingfield 4

Museum: Ashm                      Accession no: 1909.239  
Overall length: 92.3                Weight (g): 37  
CM Type: D 4                      Åberg: ? IV  
Context: None

Assoc: None

Ref: Fig 2.39

Possible tinning on knobs and gilding on animal head.  
No chemical analysis available

Haslingfield 5

Museum: P R                      Accession no: Raphael 1919  
Overall length: 113.2                      Weight (g):  
CM Type: Large B 3                      Åberg: II  
Context: None  
Assoc: None  
Ref: Fig 2.15  
Iron sideknob axis. Flat reverse of casting. Semi-circular and single point punch marks. Segmentation of ridges.  
AA analysis  
    Cu:     86.5        Zn:     1.14    Pb:     1.50    Sn:     11.50  
    Fe:     0.12        Ni:     n.a.    Ag:     0.12

Haslingfield 6

Museum: CUM                      Accession no: 48.1472  
Overall length: 103.3  
CM Type: Associated C 2                      Åberg: III  
Context: none  
Assoc: none  
Ref: none  
Bow cross-section solid. Double semi-circular punch marks. Severely cleaned.  
AA analysis  
    Cu:     86.5        Zn:     3.86    Pb:     0.14    Sn:     9.20  
    Fe:     0.17        Ni:     n.a.    Ag:     0.09

Haslingfield 7

Museum: CUM                      Accession no: Z16094  
Overall length: 124.0  
CM Type: D 4                      Åberg: IV  
Context: None  
Assoc: None  
Ref: Fig 2.40; Forster Bequest  
Small rectangular catch. Two pin lugs. Y punch marks, possibly diamond shaped too.  
AA analysis  
    Cu:     86.5        Zn:     2.44    Pb:     2.15    Sn:     8.70  
    Fe:     0.12        Ni:     n.a.    Ag:     0.15

Haslingfield 8

Museum: CUM                      Accession no: Z21287  
Overall length: 109.0  
CM Type: D 4                      Åberg: IV  
Context: None  
Assoc: None  
Ref: Fig 2.40; Forster Bequest  
Long knobs with multiple collars. Sideknobs cast with hpl. Double semi-circular punch marks.  
AA analysis  
    Cu:     83.5        Zn:     1.44    Pb:     4.49    Sn:     8.37  
    Fe:     0.13        Ni:     n.a.    Ag:     0.13

Haslingfield 9

Museum: CUM                      Accession no: Z43408

Overall length: 127.3

CM Type: D 6a                      Åberg: IV

Context: none

Assoc: none

Ref: Fig 2.48; Forster Bequest

Skbs slotted. Deep concavity at back of tkb. Edges of hpl flexed back. Ring and dot and triangle plus dot punch marks. Segmentation of ridges.

AA analysis

Cu:	84.5	Zn:	1.00	Pb:	4.65	Sn:	13.24
Fe:	0.10	Ni:	n.a.	Ag:	0.07		

Haslingfield 11

Museum: BM                      Accession no: 74,3-26,1

Overall length: 143.6

CM Type: Z 2a                      Åberg: V

Context: None

Assoc: None

Ref: none

Two pin lugs. Flat back to casting, or even slightly convex. Small catch. Traces of iron in rhs pin lug. Single point punch marks.

AA analysis

Cu:	90.0	Zn:	0.56	Pb:	2.95	Sn:	6.73
Fe:	0.07	Ni:	0.04	Ag:	0.15		

Haslingfield 12

Museum: BM                      Accession no: 74,3-26,2

Overall length: 127.4

CM Type: C 2                      Åberg: III

Context: None

Assoc: None - but see Haslingfield 13

Ref: none

Deep hollows at reverse of tkb, also at bow and foot. Edges of hpl sharpened. Double semi-circular and Y punch marks. No evidence of wear.

AA analysis

Cu:	82.0	Zn:	0.86	Pb:	3.56	Sn:	10.65
Fe:	0.11	Ni:	0.02	Ag:	0.13		

Haslingfield 13

Museum: BM                      Accession no: 74,3-26,3

Overall length: 126.9

CM Type: C 2                      Åberg: III

Context: see above

Assoc: none but see above

Ref: ?Åberg no 86

Very similar to pair, except for finishing details and recut detail on animal head.

AA analysis

Cu:	86.5	Zn:	0.88	Pb:	2.77	Sn:	10.32
Fe:	0.11	Ni:	0.02	Ag:	0.14		

Haslingfield 14

Museum: BM Accession no: 74,3-26,4

Overall length: incomplete

CM Type: Large B 2 Åberg: II

Context: None

Assoc: None

Ref: ?Åberg no 43

Reverse of tkb hollow, also foot. Rather worn.

AA analysis

Cu:	84.0	Zn:	1.30	Pb:	6.79	Sn:	8.35
Fe:	0.06	Ni:	0.03	Ag:	0.22		

Hatton

Museum: Lin Accession no: 42.47

Overall length: 84.0 Weight (g): 26

CM Type: Small B 2 Åberg: II Reichstein: Typ Stratford

Context: None

Assoc: None

Ref: Reichstein no 824, fig 93,1

Skbs cast with hpl. Reverse of kbs flat, or even convex. Only bow is slightly concave. Catch small and on a ridge. Worn on skbs.

Probe analyses

Zn:	0.56	Pb:	3.01	Sn:	12.48		
Fe:	0.05	Ni:	0.02	Ag:	0.16	Au:	0.00
As:	0.05	Sb:	0.03	Bi:	0.00	Co:	0.00

Holdenby 1

Museum: North Accession no: D74

Overall length: 126.4

CM Type: Associated with Z1 Leeds and Pocock: Vai

Context: none

Assoc: none

Ref: Hartshorne, Memorials of Holdenby 1868; Leeds and Pocock 1975, fig 4b

Solid bow cross-section. Tkb on spike raised from hpl. No chemical analysis available, but sample taken by RB

Holdenby 2

Museum: North Accession no: D104

Overall length: 151.8 Weight (g): 135

CM Type: Associated with Z/shb Leeds: C3

Context: none

Assoc: Pair of saucer brooches

Ref: Leeds 1949, no 143; Åberg no 223, fig 91

Two pin lugs. Iron pin seems to be hinged. Solid bow. Small upright catch. Flat reverse to casting. Groups of three incised lines on the reverse of the hpl and probably on animal head end. Boss at bow rather smooth. No chemical analysis available, but sample taken by RB

Holme Pierpoint 1

Museum: BM Accession no: 1931,3-13,4

Overall length: 142.2

CM Type: D 5 Åberg: IV Reichstein:

Context: none

Assoc: none

Ref: none

Thin casting, hollow at reverse of kbs and bow. Two pin lugs, low on hpl. Small circles and double semi-circular punch marks, possibly with divisions

Holme Pierpoint 1 cont/

within the inner circle. Segmentation on collars of kbs, bow and animal head.

AA analysis

Cu:	83.0	Zn:	13.39	Pb:	3.30	Sn:	2.06
Fe:	0.56	Ni:	0.03	Ag:	0.13		

Probe analyses

Zn:	14.25	Pb:	3.70	Sn:	2.11		
Fe:	0.31	Ni:	0.03	Ag:	0.15	Au:	0.00
As:	0.09	Sb:	0.06	Bi:	0.00	Co:	0.01

Holme Pierpoint 2

Museum: BM                      Accession no: 1931,3-13,6  
Overall length: 141.1  
CM Type: D 5                      Åberg: IV                      Reichstein:  
Context: none  
Assoc: none  
Ref: none

See pair, Holme Pierpoint 1. This is smaller overall, with different numbers of punch marks and appears to have traces of gilding.

AA analysis

Cu:	78.5	Zn:	12.76	Pb:	3.35	Sn:	1.91
Fe:	0.34	Ni:	0.03	Ag:	0.13		

Probe analyses

Zn:	15.65	Pb:	4.29	Sn:	2.45		
Fe:	0.31	Ni:	0.02	Ag:	0.17	Au:	0.09
As:	0.17	Sb:	0.04	Bi:	0.04	Co:	0.00

Holme Pierpoint 3

Museum: BM                      Accession no: 1931,3-13,5  
Overall length: 145.8  
CM Type: D 5                      Åberg: IV                      Reichstein:  
Context: none  
Assoc: none  
Ref: none

Skbs cast with hpl. Reverse of casting flat, except slightly behind kbs. Tall catch. Single pin lug appears to have some copper alloy material through it. Single point punch marks. Bow appears to be worn smooth.

AA analysis

Cu:	85.5	Zn:	3.21	Pb:	3.53	Sn:	9.23
Fe:	0.43	Ni:	0.04	Ag:	0.32		

Probe analyses

Zn:	0.76	Pb:	1.49	Sn:	10.22		
Fe:	0.69	Ni:	0.04	Ag:	0.15	Au:	0.00
As:	0.30	Sb:	0.07	Bi:	0.00	Co:	0.00

Holme Pierpoint 4

Museum: BM                      Accession no: 1931,3-13,7  
Overall length: incomplete  
CM Type: D 5a                      Åberg: IV  
Context: none  
Assoc: none  
Ref: none

Skbs cast with hpl. Reverse of kbs hollow. Two pin lugs with iron corrosion between them. S shaped punch marks. Boss at bow worn smooth.

AA analysis

Cu:	83.5	Zn:	10.08	Pb:	1.92	Sn:	4.12
Fe:	0.22	Ni:	0.02	Ag:	0.09		

Holme Pierpoint 5

Museum: BM                      Accession no: 1931,3-13,8  
Overall length:                incomplete  
CM Type: B or C                Åberg: II/III    Reichstein: *Einzelformen*  
Context: none  
Assoc: none  
Ref: BB III, fig 40,5; Åberg no 58; Reichstein no 844  
Flat reverse to casting except for lump at the back of bow. Edges of hpl sharpened. Probably rather worn.  
AA analysis  
    Cu:        89.0        Zn:        0.25    Pb:        1.43    Sn:        12.18  
    Fe:        0.09        Ni:        0.03    Ag:        0.13

Holme Pierpoint 6

Museum: BM                      Accession no: 1931,3-13,10  
Overall length:                79.0  
CM Type: Small B 2            Åberg: II    Reichstein: *Einzelformen*  
Context: none  
Assoc: none  
Ref: Reichstein no 845 fig 188,6  
Skbs cast with hpl. Worn on bow and animal head. Poor surface.  
AA analysis  
    Cu:        90.0        Zn:        1.47    Pb:        2.75    Sn:        10.89  
    Fe:        0.22        Ni:        0.04    Ag:        0.03

Holme Pierpoint 7

Museum: BM                      Accession no: 1931,3-13,11  
Overall length:                incomplete  
CM Type: B or C                Åberg: II/III  
Context: none  
Assoc: none  
Ref: none  
Double semi-circular punch marks. Poor surface, but probably not very worn.  
AA analysis  
    Cu:        88.5        Zn:        4.89    Pb:        3.46    Sn:        6.42  
    Fe:        0.17        Ni:        0.03    Ag:        0.12

Holywell Row G16

Museum: CUM                      Accession no: Z7111A  
Overall length:                149.6  
CM Type: D 3                    Åberg:        Reichstein: *Typ Nassington*  
Context: Grave 16  
Assoc: wrist clasp Hines type C3, beads, equal-armed brooch, pin  
Ref: Lethbridge 1931, fig 6; Reichstein no 853, fig 110,1  
Two pin lugs. Skbs cast with hpl. Slight indents at reverse of kbs, kb collars, bow and cpl. Possible gilding. Small circular punch marks. Boss at bow worn.  
AA analysis  
    Cu:        86.5        Zn:        1.58    Pb:        3.31    Sn:        8.37  
    Fe:        0.27        Ni:        n.a.    Ag:        0.17

Holywell Row G21

Museum: CUM                      Accession no: Z 7115 C

Overall length: 143.9

CM Type: D 2

Context: Grave 21

Assoc: 2 small-long brooches, small disc, beads, iron fragments

Ref: Fig 2.27; Lethbridge 1931, fig 8,1

Skbs cast with hpl. Lethbridge states that the lhs skb is missing due to miscasting and tinning was used to disguise this. This seems unlikely, more probably some sort of solder for a replacement part. Double semi-circular and single point punch marks.

AA analysis

Cu:	88.0	Zn:	3.54	Pb:	2.59	Sn:	7.70
Fe:	0.54	Ni:	n.a.	Ag:	0.27		

Holywell Row G22

Museum: CUM                      Accession no: Z 7116

Overall length: 143.5

CM Type: C 2

Context: Grave 22

Assoc: Necklace (2 glass and 25 amber beads), iron latch-lifter

Ref: Lethbridge 1931, fig 7, C 1

Skbs cast with hpl. Deep hollows at reverse of tkb and foot. Segmented Y, short straight line, semi-circular and single point punch marks. Large ring and dot decoration.

AA analysis

Cu:	84.0	Zn:	1.16	Pb:	4.08	Sn:	10.20
Fe:	0.23	Ni:	n.a.	Ag:	0.14		

Holywell Row G37

Museum: CUM                      Accession no: Z 7121 A

Overall length: 49.2

CM Type: D 4

Context: Grave 37

Assoc: pair of small-long brooches, amber beads, iron blade, CA pin

Ref: Fig 2.40; Lethbridge 1931, Fig 9, 1

Skbs cast with hpl. WM on fans of kbs and animal head. V and semi-circular plus dot punch marks. Surface variable. Lethbridge comments on ancient mend at foot 'patched up with a section missing, secured by strip of bronze on underside'.

AA analysis

Cu:	87.0	Zn:	2.12	Pb:	3.95	Sn:	9.61
Fe:	0.17	Ni:	n.a.	Ag:	0.12		

Holywell Row G48 (1)

Museum: CUM                      Accession no: Z 7128 A

Overall length: 114.0

CM Type: Large B 2              Åberg: III      Reichstein: Typ Corbridge

Context: Grave 48

Assoc: 4 cb in total, girdle clasp, 2 pairs wrist clasp Hines type B14a, various fancy glass bead, rings

Ref: Lethbridge 1931, Fig 12, 1; Reichstein no 855, fig 94,5

Notch remains in nose, where figure in Lethbridge 1931, shows extant protuberance. Small double semi-circular punch mark. Iron pin remains in catch.

AA analysis

Cu:	80.0	Zn:	0.60	Pb:	10.34	Sn:	8.97
Fe:	0.45	Ni:	0.00	Ag:	0.10		

Holywell Row G48 (2)

Museum: CUM            Accession no: Z 7128 B  
Overall length: 89.4  
CM Type: Small B 2    Åberg:            Reichstein: *Typ Stratford*  
Context: Grave 48  
Assoc: See Grave 48 (1)  
Ref: Lethbridge 1931, fig 12, 3; Reichstein no 855, fig 94, 1 and 2  
Skbs not cast equally. Semi-circular stamps.  
AA analysis  
    Cu:     86.5        Zn:     1.00    Pb:     4.33    Sn:     7.22  
    Fe:     0.09        Ni:     0.00    Ag:     0.13

Holywell Row G48 (3)

Museum: CUM            Accession no: Z 7128 C  
Overall length: 92.6  
CM Type: Small B 2    Åberg:            Reichstein: *Typ Stratford*  
Context: Grave 48  
Assoc: See Grave 48 (1)  
Ref: Lethbridge 1931, fig 12,4; Reichstein no 855, fig 94, 1 and 2  
Skbs slotted. Blackened surface.  
AA analysis  
    Cu:     87.0        Zn:     1.12    Pb:     4.06    Sn:     9.43  
    Fe:     0.24        Ni:     0.00    Ag:     0.10

Holywell Row G48 (4)

Museum: CUM            Accession no: Z 7128 D  
Overall length: 116.6  
CM Type: Large B 2    Åberg:            Reichstein: *Typ West Stow*  
Context: Grave 48  
Assoc: See Grave 48 (1)  
Ref: Lethbridge 1931, fig 12,2; Reichstein no 855, fig 94,3  
Skbs now detached. Repair on catch. Sides of 'eyes' on foot marked with double V marks. Glossy grey surface, possibly due to high tin content.  
AA analysis  
    Cu:     73.5        Zn:     0.00    Pb:     0.79    Sn:    14.46  
    Fe:     0.07        Ni:     0.00    Ag:     0.05

Holywell Row G58

Museum: CUM            Accession no: Z 7136 A  
Overall length: 139.6  
CM Type: D 5  
Context: Grave 58  
Assoc: glass and amber beads, 3 annular brooches, 2 pairs wrist clasps  
Hines type B20  
Ref: Fig 2.41; Lethbridge 1931, fig 15, 2  
Double semi-circular and single straight line punch marks. Skbs cast with hpl. Rhs hpl wing has blobs of copper alloy.  
AA analysis  
    Cu:     83.5        Zn:     1.42    Pb:     2.42    Sn:     9.53  
    Fe:     0.17        Ni:     0.00    Ag:     0.21

Holywell Row G69

Museum: CUM            Accession no: Z 7142 A  
Overall length: 77.4  
CM Type: Small B 1    Åberg:            Reichstein: *Typ Stratford*  
Context: Grave 69  
Assoc: sm-1  
Ref: Fig 2.9; Lethbridge 1931, fig 11, D 1; Reichstein no 856 fig 94,7

Holywell Row G69 cont/

Skbs cast with hpl. Flat back to casting.

AA analysis

Cu:	87.0	Zn:	1.27	Pb:	4.01	Sn:	4.59
Fe:	0.23	Ni:	0.00	Ag:	0.12		

Holywell Row G79 (1)

Museum: CUM Accession no: Z7145A

Overall length: 117.2

CM Type: Large B 3

Reichstein: *Typ* Holywell Row

Context: Grave 79

Assoc: G79 (2) and (3), 2 small-long brooches (square-headed type), copper alloy pin, 2 girdle hangers, wrist clasp Hines type A and B20, copper alloy plate

Ref: Lethbridge 1931, Fig 16, 3; Reichsten no 857 fig 105,1

Skbs slotted, remains of iron through pin lug. Reverse of casting is hollow at tkb, bow and foot. Double semi-circular and single straight line punch marks. Possible traces of gilding. Worn on skbs.

AA analysis

Cu:	85.5	Zn:	0.83	Pb:	3.46	Sn:	9.20
Fe:	0.10	Ni:	0.00	Ag:	0.14		

Holywell Row G79 (2)

Museum: CUM Accession no: Z7145B

Overall length: 114.6

CM Type: C 2

Åberg:

Reichstein: Hybrid

Context: Grave 79

Assoc: See G79(1)

Ref: Fig 2.18; Lethbridge 1931, fig 16, 2; Reichstein no 857; fig 105,3

Reverse kbs are concave. Possible traces of gilding.

AA analysis

Cu:	83.0	Zn:	0.77	Pb:	7.73	Sn:	7.95
Fe:	0.14	Ni:	0.00	Ag:	0.19		

Holywell Row G79 (3)

Museum: CUM Accession no: Z7145C

Overall length: 134.0

CM Type: D 5a

Reichstein: *Typ* Little Wilbraham

Context: Grave 79

Assoc: See G79(1)

Ref: Lethbridge 1931, fig 16, 1; Reichstein no 857, fig 105,2

Probably two pin lugs. Large ring and dot decoration, joined with straight lines on hpl. Double semi-circular punch marks. Worn on rhs skb. punch marks. Gilding traces. Skbs unequal.

AA analysis

Cu:	84.0	Zn:	11.90	Pb:	0.98	Sn:	0.42
Fe:	0.29	Ni:	0.00	Ag:	0.04		

Holywell Row G99 (1)

Museum: CUM Accession no: Z 7158 A1

Overall length: incomplete

CM Type: D 2

Åberg: IV

Context: Grave 99

Assoc: G99 (2) and (3), beads, small-long brooch, copper alloy strip

Ref: Lethbridge 1931, fig 20, 2

Skbs attached on iron pin, which shows through reverse of skbs. Semi-circular punch marks.

Holywell Row G99 (1) cont/

AA analysis

Cu:	85.0	Zn:	2.12	Pb:	2.56	Sn:	0.67
Fe:	0.24	Ni:	n.a.	Ag:	0.13		

Holywell Row G99 (2)

Museum: CUM                      Accession no: Z 7158 A2

Overall length: 133.4

CM Type: D 2                      Åberg: IV

Context: Grave 99

Assoc: See G99(1)

Ref: Fig 2.28; Lethbridge 1931, fig 20,3

See pair G99(1). Lhs wing of hpl miscast and covered by an extra plate, decorated to match. Extra plate probably soldered on (grey coating). Rhs lappets miscast. Small semi-circular punch marks. Skbs now detached but Lethbridge shows the lhs one to be similar to those in G99(1).

AA analysis

Cu:	83.0	Zn:	2.34	Pb:	3.23	Sn:	6.44
Fe:	0.24	Ni:	n.a.	Ag:	0.16		

Holywell Row G99 (3)

Museum: CUM                      Accession no: Z 7158 B

Overall length: 132.0

CM Type: D 6a

Context: Grave 99

Assoc: See G99(1)

Ref: Fig 2.49; Lethbridge 1931, fig 20,1

Very small semi-circular punch marks, also single points.

AA analysis

Cu:	78.0	Zn:	0.35	Pb:	2.84	Sn:	12.27
Fe:	0.16	Ni:	n.a.	Ag:	0.09		

Hornsea

Museum: Hull or Yorks                      Accession no:

Overall length: not determined

CM Type: Z 4a                      Leeds and Pocock: Vf

Context: None

Assoc: None

Ref: Åberg no 237, fig 89; Leeds no 131; Leeds and Pocock 33

Not examined.

No chemical analysis available

Howletts G1 (1)

Museum: BM                      Accession no: 1936,5-11,11

Overall length: 80.0

CM Type: Assoc. with small B                      Reichstein: *Einzelformen*

Context: Grave 1

Assoc: with G1(2)

Ref: Reichstein no 813, fig 118,9

Skbs cast with hpl. Reverse of casting is flat, except at bow. Catch repaired using copper alloy plate. Worn at tkb and animal head. Poor condition.

AA analysis

Cu:	88.0	Zn:	3.92	Pb:	3.29	Sn:	6.89
Fe:	0.52	Ni:	0.05	Ag:	0.17		

Howletts G1 (1)

Probe analyses

Zn:	4.36	Pb:	2.11	Sn:	7.49		
Fe:	0.46	Ni:	0.04	Ag:	0.18	Au:	0.00
As:	0.37	Sb:	0.08	Bi:	0.00	Co:	0.02

Howletts G1 (2)

Museum: BM                      Accession no: 1936,5-11,12

Overall length:            incomplete

CM Type: Assoc. with small B                      Reichstein: *Einzelformen*

Context: Grave 1

Assoc: with G1 (1)

Ref: Reichstein fig 118,10

See pair G1(1), except animal head is more irregular. Also repaired catch, using two copper alloy plates, solid bow cross-section and incised lines on cpl and animal head. Better condition than G1(1).

AA analysis

Cu:	87.0	Zn:	2.40	Pb:	1.70	Sn:	7.54
Fe:	0.24	Ni:	0.03	Ag:	0.35		

Howletts G2

Museum: BM                      Accession no: 1936,5-11,13

Overall length:            98.9

CM Type: Small B 3      Åberg: II                      Reichstein: *Typ Goutum*

Context: Grave 2

Assoc: With small-long/cruciform brooch of Reichstein's *Typ Howletts*

Ref: Reichstein no 814, fig 177,2

Skbs cast with hpl, slight concavities behind kbs, bow and foot. Ridges both sides of bow. Two pin lugs. Casting flaw on reverse of cpl. Catch set to one side.

AA analysis

Cu:	87.5	Zn:	0.40	Pb:	1.87	Sn:	10.54
Fe:	0.25	Ni:	0.02	Ag:	0.12		

Howletts 1

Museum: BM                      Accession no: 1918,7-8,43

Overall length:            87.1

CM Type: Ass with A      Åberg: Kentish      Reichstein: *Einzelf.*

Context: none

Assoc: none

Ref: Åberg fig 37; Reichstein no 815 fig 118,8

Tkb on spike, rising from ridge on which pin lug is sited, with a tab in front. Iron pin for skbs. Ridges on cpl and bow probably segmented. Poor condition, probably cleaned. Åberg figure shows detail very clearly, but possibly not very accurately.

AA analysis

Cu:	83.0	Zn:	9.62	Pb:	2.87	Sn:	5.97
Fe:	0.62	Ni:	0.03	Ag:	0.52		

Howletts 2

Museum: BM                      Accession no: 1918,7-8,42

Overall length:            incomplete

CM Type: Assoc. small type B      Åberg: Kentish      Reichstein: *Einzelformen*

Context: None

Assoc: None

Ref: Åberg fig 38; Reichstein no 815, fig 118,7

Howletts 2 cont/

Edges of bow curve outwards, almost to a point like Scandinavian forms. Worn on tkb, bow and animal foot. Pin lug on a ridge, which runs into bow area. Iron probably used for both skb axis and pin. Tkb has an extra ridge between kb and collar. Hollow reverse to casting at foot and bow.

AA analysis

Cu:	86.5	Zn:	2.20	Pb:	3.74	Sn:	8.36
Fe:	0.95	Ni:	0.04	Ag:	0.15		

Hoxne

Museum: BM Accession no: 1910, 12-14 1

Overall length: incomplete

CM Type: Iron with zoomorphic gilded panels Åberg: IV

Context: none

Assoc: none

Ref: Åberg fig 82; Hughes and Tite 1977

Iron base, with applied gold and silver pieces. Gilded panels are based on leaded bronze trays. Silver wire bindings. Some WM may be tin sweat.

For chemical analysis see Hughes and Tite 1977

Hunstanton 1

Museum: NCM Accession no: 6.2.950

Overall length: 136.5

CM Type: C 1

Åberg: Reichstein:

Context: none

Assoc: none

Ref: none

Reverse of casting flat, except at tkb, bow, cpl and foot. Copper alloy foil curled through the pin lug, with iron loop. Circular punch marks. Cleaned drastically, possibly worn at bow.

AA analysis

Cu:	81.0	Zn:	0.51	Pb:	8.53	Sn:	9.70
Fe:	0.05	Ni:	0.03	Ag:	0.15		

Hunstanton 2

Museum: NCM Accession no: 6.2.950A

Overall length: incomplete

CM Type: C 2

Åberg: Reichstein:

Context: none

Assoc: none

Ref: none

Reverse of casting flat except at kbs and their collars, bow and foot. Circular and semi-circular punch marks. Cleaned but tkb probably worn.

AA analysis

Cu:	88.0	Zn:	2.08	Pb:	3.80	Sn:	8.08
Fe:	0.22	Ni:	0.02	Ag:	0.20		

Probe analyses

Zn:	1.93	Pb:	2.79	Sn:	6.90		
Fe:	0.16	Ni:	0.03	Ag:	0.19	Au:	0.00
As:	0.21	Sb:	0.05	Bi:	0.00	Co:	0.00

Icklingham

Museum: BM Accession no: 52,6-26

Overall length: 117.6

CM Type: Associated with A

Åberg: Reichstein:

Context: none

Assoc: none

Ref: none

Icklingham cont/

Tkb rather conical. Iron remains of skb axis on hpl. Reverse of bow and foot very concave. Back of tkb projects from hpl. Trace of thread around tkb. Wear probable at animal head. Poor surface

AA analysis

Cu:	76.5	Zn:	16.34	Pb:	3.39	Sn:	2.89
Fe:	0.44	Ni:	0.04	Ag:	0.12		

Probe analyses

Zn:	19.19	Pb:	2.24	Sn:	3.61		
Fe:	0.45	Ni:	0.04	Ag:	0.09	Au:	0.00
As:	0.00	Sb:	0.05	Bi:	0.02	Co:	0.01

Illington C101

Museum: NCM

Accession no: U101

Overall length: 93.2

CM Type: Small B 2      Åberg:      Reichstein: *Typ Stratford*

Context: Urn 101

Assoc: Bronze fragments

Ref: Reichstein no 830

Skbs slotted, semi-circular cross-section on iron axis. Reverse of bow and foot concave. Rather blackened.

AA analysis

Cu:	84.5	Zn:	0.82	Pb:	3.10	Sn:	9.01
Fe:	0.14	Ni:	0.01	Ag:	0.11		

Islip 1

Museum: North

Accession no: D114

Overall length: 128.3      Weight (g): 59

CM Type: D 1

Context: none

Assoc: none

Ref: none

Hollow areas at the rev of casting are furrow-like. Two pin lugs. Circular punch marks (rough made punch or possibly deliberate subdivisions within). Worn at bow.

No chemical analysis available

Islip 2

Museum: North

Accession no: D119

Overall length: 95.8      Weight (g): 30

CM Type: Small B 1      Åberg:      Reichstein: *Typ Islip*

Context: none

Assoc: none

Ref: Proceedings Soc. Antiq 2 1917-18, 114, fig 1,3; Åberg 37, fig 56; Reichstein no 837, fig 109,2

Reverse of casting hollow at bow, cpl and foot. Worn at tkb and foot.

No chemical analysis available.

Ixworth 1

Museum: Ashm

Accession no: 1909.450

Overall length: 70.5      Weight (g): 11

CM Type: A 1      Åberg: I      Reichstein: *Einzelformen*

Context: none

Assoc: none

Ref: Fig 2.2; Åberg 48; Reichstein no 858, pl 118,2

Bow cross-section is solid. Skbs cast with hpl. Single point punch marks.

Ixworth 1 cont/

AA analysis

Cu: 84.0 Zn: 1.52 Pb: 2.92 Sn: 10.80  
Fe: 0.28 Ni: 0.00 Ag: 0.27

Ixworth 2

Museum: Ashm Accession no: 1909.451

Overall length: 146.2

CM Type: C 1 Åberg: III

Context: none

Assoc: none

Ref: Dixon 1976, plate on p 48 (centre)

Reverse of casting flat except at tkb, bow, cpl and animal head. Repair at foot, with grey metal probably recent. Ashmolean catalogue suggests silver plate was attached. Segmentation of ridges. V and straight line punch marks. Worn catch.

AA analysis

Cu: 80.0 Zn: 15.00 Pb: 1.45 Sn: 2.60  
Fe: 0.31 Ni: 0.10 Ag: 0.06

Ixworth 3

Museum: BM Accession no: 1927,12-12,21

Overall length: 128.2

CM Type: Associated with C 1 Åberg: III

Context: none

Assoc: Probably with Ixworth 4

Ref: Fig 2.21

Casting thin, with deep concavities behind tkb, bow and foot. Edges of hpl sharpened. Pin lug on a ridge. Loop at end of animal head terminal. Tall upright catch. Large ring and dot decoration, on cpl apparently filled with white material. Semi-circular punch marks.

AA analysis

Cu: 86.5 Zn: 0.01 Pb: 1.72 Sn: 11.59  
Fe: 0.06 Ni: 0.00 Ag: 0.07

Ixworth 4

Museum: BM Accession no: 1971,9-1,1

Overall length: 131.4

CM Type: Associated with C 1 Åberg: III

Context: none

Assoc: See Ixworth 3

Ref: none

As 3 but with single point punch marks visible.

AA analysis

Cu: 86.5 Zn: 1.05 Pb: 1.97 Sn: 10.70  
Fe: 0.08 Ni: 0.02 Ag: 0.07

Kempston 1

Museum: Bedf Accession no: 3859

Overall length: 61.7

CM Type: A 1 Åberg: I Reichstein: *Einzelformen*

Context: none

Assoc: none

Ref: Reichstein no 762, fig 118,5

Tkb polyhedral. Hpl has nicks down both sides. Pin lug attached to tkb collar. Solid, lozenge cross-section bow cross-section. Spine of bow tends to lhs of brooch. Method of pin/skb attachment not clear, but does not appear to be iron.

Kempston 1 cont/

AA analysis

Cu:	93.5	Zn:	1.00	Pb:	2.27	Sn:	12.26
Fe:	0.18	Ni:	0.00	Ag:	0.19		

Kempston 2

Museum: Bedf                      Accession no: 3857  
Overall length: 69.6  
CM Type: Small-long ft      Reichstein: *Typ Foldvik-Empingham*  
Context: none  
Assoc: none  
Ref: Reichstein no 764  
Severely cleaned.

AA analysis

Cu:	81.5	Zn:	5.76	Pb:	5.68	Sn:	8.07
Fe:	0.39	Ni:	n.a.	Ag:	0.10		

Kempston 3

Museum: BM                              Accession no: 91,6-24,213  
Overall length: 83.9  
CM Type: Small B 2              Åberg: II  
Context: none  
Assoc: none  
Ref: none  
Reverse of casting flat except at kbs. Black and green corrosion.

AA analysis

Cu:	88.5	Zn:	1.36	Pb:	3.71	Sn:	7.30
Fe:	0.07	Ni:	0.03	Ag:	0.22		

Probe analyses

Zn:	1.34	Pb:	2.04	Sn:	8.07		
Fe:	0.08	Ni:	0.04	Ag:	0.25	Au:	0.00
As:	0.08	Sb:	0.09	Bi:	0.02	Co:	0.01

Kenninghall 1

Museum: Ashm                              Accession no: 1909.354  
Overall length: 114.8                      Weight (g): 78  
CM Type: Large B 2                      Åberg: II  
Context: none  
Assoc: none  
Ref: Åberg no 30  
Gilding throughout, except where worn. Surface XRF analysis showed gold and mercury. Reverse of casting flat except at bow and foot.

AA analysis

Cu:	77.0	Zn:	1.38	Pb:	3.36	Sn:	7.68
Fe:	0.21	Ni:	0.00	Ag:	0.28		

Kenninghall 2

Museum: Ashm                              Accession no: 1909.355  
Overall length: 119.0                      Weight (g): 48  
CM Type: D 4                              Åberg: III  
Context: none  
Assoc: none  
Ref: Fig 2.40; Åberg 128  
Reverse of casting concave at tkb, bow and animal head. Large ring and dot punch mark. Possible trace of gilding. Semi-circular, circular and/or double semi-circular punch marks.

Kenninghall 2 cont/

AA analysis

Cu: 86.0 Zn: 1.96 Pb: 5.10 Sn: 8.04  
Fe: 0.21 Ni: 0.00 Ag: 0.19

RB has taken samples 1986.

Kenninghall 3

Museum: Ashm Accession no: 1909.356

Overall length: incomplete

CM Type: D 1 Åberg: III

Context: none

Assoc: none

Ref: Åberg no 129

Two pin lugs. Skbs cast with hpl. Kbs hollow at the reverse. Small circular punch marks.

AA analysis

Cu: 80.5 Zn: 3.78 Pb: 2.48 Sn: 4.78  
Fe: 0.34 Ni: 0.10 Ag: 0.14

Kenninghall 4

Museum: Ashm Accession no: 1909.360

Overall length: 149.5 Weight (g): 72

CM Type: Z 1a Leeds and Pocock: Vgi

Context: none

Assoc: none

Ref: Åberg no 210; Leeds and Pocock, 18

Reverse of casting flat. Gilding throughout. Segmented ridges.

AA analysis

Cu: 86.0 Zn: 1.10 Pb: 3.20 Sn: 6.00  
Fe: 0.06 Ni: 0.10 Ag: 0.28

Rb has also sampled 1986.

Kenninghall 5

Museum: BM Accession no: 83,7-2,7

Overall length: 130.5

CM Type: Associated D 2 Åberg: IV

Context: none

Assoc: none

Ref: Åberg no 124, fig 71

Reverse of bow concave. V plus small circle and double semi-circular punch marks.

AA analysis

Cu: 89.3 Zn: 1.18 Pb: 2.63 Sn: 6.40  
Fe: 0.25 Ni: 0.04 Ag: 0.20

Kenninghall 6

Museum: NCM Accession no: 927.76.94.62

Overall length: 140.0

CM Type: Z 2a Leeds and Pocock: Vd

Context: none

Assoc: none

Ref: Leeds and Pocock, 18, pl IG

Skb cast with hpl. Reverse of casting flat. Cleaned but WM on fans originally. Double semi-circular punch marks. Very poor distinction.

AA analysis

Cu: 86.0 Zn: 0.83 Pb: 3.95 Sn: 7.09  
Fe: 0.33 Ni: 0.06 Ag: 0.15

Kenninghall 7

Museum: NCM                      Accession no: 927.76.94A  
Overall length: 136.0  
CM Type: D 3  
Context: none  
Assoc: none  
Ref: none  
Hpl and foot lopsided. Circular punch marks. Worn at bow. Cleaned thoroughly.  
AA analysis  
    Cu:     84.5            Zn:     1.38    Pb:     3.72    Sn:     9.25  
    Fe:     0.00           Ni:     0.00    Ag:     0.19

Kenninghall 8

Museum: NCM                      Accession no: 76.94 B  
Overall length: 140.0  
CM Type: Z 2a                    Leeds and Pocock: Ve  
Context: none  
Assoc: none  
Ref: Leeds and Pocock, 18, pl IG  
Reverse of casting flat, except slightly at bow and foot. Possibly WM at kb and animal head fans. Gilding. Possibly some cleaning.  
AA analysis  
    Cu:     85.0            Zn:     0.71    Pb:     3.67    Sn:     7.73  
    Fe:     0.00           Ni:     0.00    Ag:     0.14

Kenninghall 9

Museum: NCM                      Accession no: 76.94 C  
Overall length: incomplete  
CM Type: D 5  
Context: none  
Assoc: none  
Ref: none  
Tkb was originally on a spike. WM on skb area, with copper alloy rivets. Reverse of casting flat except very concave at bow and slight at foot. Small circular punch marks. Cleaned severely, but bow decoration appears to have been worn.  
AA analysis  
    Cu:     86.0            Zn:     0.84    Pb:     3.69    Sn:     7.99  
    Fe:     0.00           Ni:     0.00    Ag:     0.21

Kenninghall 10

Museum: NCM                      Accession no: 76.94 D  
Overall length: 109.5  
CM Type: D 4  
Context: none  
Assoc: see 11  
Ref: Fig 2.40  
Skbs attached using loops on kbs and hpl. Reverse of casting flat, except at foot and bow. Diameter of wire = 2.5 - 2.9mm. Semi-circular punch marks. Cleaning has removed most of detail, but probably quite worn.  
AA analysis  
    Cu:     85.0            Zn:     1.54    Pb:     3.99    Sn:     9.61  
    Fe:     0.00           Ni:     0.00    Ag:     0.19  
Probe analyses  
    Zn:     1.53            Pb:     3.65            Sn:     10.42  
    Fe:     0.17           Ni:     0.05            Ag:     0.17            Au:     0.00  
    As:     0.25           Sb:     0.06            Bi:     0.00            Co:     0.01

Kenninghall 11

Museum: NCM                      Accession no: 76.94 E  
Overall length: 108.3  
CM Type: D 4  
Context: none  
Assoc: see 10  
Ref: none  
Very similar to 10, with casting more rough at reverse of bow.  
AA analysis  
    Cu:     82.5        Zn:     1.68    Pb:     7.88    Sn:     7.97  
    Fe:     n.a.      Ni:     0.00    Ag:     0.15

Kenninghall 12

Museum: Not known                      Accession no:  
Overall length: not determined  
CM Type: Associated with Z 4    Leeds: C2  
Context: none  
Assoc: none  
Ref: Leeds 1949 no 130  
No chemical analysis available.

Laceby G1 (1)

Mus: Lin Accession no: 91.54  
 Overall length: 154.5 Weight(g) : 90  
 CM type: Z 1b Åberg: V  
 Context: Sand pit  
 Assoc: 2 other cb Laceby G1 (2) and (3)  
 Refs: Leeds E T, Antiq J XXXVI 1956, 184-9, plate XI, 1  
 Broken at foot. Two pin lugs, iron pin. Skbs cast with hpl.  
 Rev of casting flat except at bow and foot. Zoomorphic decoration is not  
 symmetrical. WM on animal head and possibly on kbs. Gilding. Single point  
 punch marks. Mend at foot is modern, but may have been mended there in  
 antiquity too. Incised lines etc seem quite crisp.  
 Probe analyses

Zn: 15.45	Pb: 1.13	Sn: 3.64		
Fe: 0.16	Ni: 0.06	Ag: 0.24	Au: 0.04	
As: 0.58	Sb: 0.12	Bi: 0.01	Co: 0.01	

Laceby G1 (2)

Mus: Lin Accession no: 92.54  
 Overall length: broken Weight (g): 58  
 CM type: Associated with D2 Åberg: IVa  
 Context: Sand pit  
 Assoc: With G1 (1)  
 Refs: See G1 (1), plate XI, 2  
 Missing below lappets. Short catch. Casting at rev of bow is rather messy.  
 Small, high pin lug, iron coil remains. Skbs cast with hpl. Hollow at rev  
 of tkb. Circular punch marks. Ring and dot decoration. Blackened with  
 corrosion products. Top of bow worn but incised lines on kbs quite clear.  
 Probe analyses

Zn: 11.16	Pb: 2.23	Sn: 5.36		
Fe: 0.36	Ni: 0.07	Ag: 0.17	Au: 0.00	
As: 0.00	Sb: 0.07	Bi: 0.00	Co: 0.01	

Laceby G1 (3)

Mus: Lin Accession no: 93.54  
 Overall length: broken Weight (g): 48  
 CM type: Associated with Z 1b Leeds and Pocock: Vc  
 Context: Sand pit  
 Assoc: With G1 (1)  
 Refs: See G1 (1), plate XI, 3  
 Missing below lappets. Skbs cast with hpl. Rev of casting flat, except  
 slightly at bow. Circular punch marks. Poor condition, pale green surface  
 corrosion.  
 Probe analyses

Zn: 1.31	Pb: 4.17	Sn: 10.13		
Fe: 0.09	Ni: 0.04	Ag: 0.11	Au: 0.04	
As: 0.12	Sb: 0.05	Bi: 0.01	Co: 0.00	

Lackford C48,2282 (1)

Mus: CUM Accession no:  
 Overall length: not determined  
 CM type: Associated with small type B Åberg: II  
 Context: WDY,67  
 Assoc: Decorated urn 48,2282, (Myres 1977, no 855) and cb C48,2282 (2)  
 Refs: Lethbridge 1951, fig 2 (middle row, right)



Lackford C50,76

Mus: CUM Accession no:  
Overall length: not determined  
CM type: Associated with large B or C  
Context: FCT,1  
Assoc: Decorated urn 50,76 (Myres 1977, no 923)  
Refs: Lethbridge 1951, fig 16 with 50,76  
Missing at cpl, possibly spatulate foot.  
No chemical analysis available.

Lakenheath 1

Mus: CUM Accession no: 97.44  
Overall length: 131.7  
CM type: D 5 Åberg: IV  
Context: none  
Assoc: none  
Refs: Fig 2.41  
Possibly two pin lugs. Repair to catch appears to be soldered, no evidence of rivets. Single point and S-shaped punch mark.  
AA Analyses  
Cu: 81.00 Zn: 6.61 Pb: 3.17 Sn: 4.39  
Fe: 0.28 Ni: 0.00 Ag: 0.33

Lakenheath 2

Mus: CUM Accession no: 97.136  
Overall length: 108.6  
CM type: D 1 Åberg: IV  
Context: none  
Assoc: 3 small-long brooches  
Refs: none  
Skbs cast with hpl. Skbs unequal in size. Rev of casting flat, including at bow.  
AA Analyses  
Cu: 86.50 Zn: 1.34 Pb: 2.85 Sn: 7.90  
Fe: 0.23 Ni: 0.00 Ag: 0.21  
Probe analyses  
Zn: 1.16 Pb: 2.19 Sn: 8.27  
Fe: 0.16 Ni: 0.03 Ag: 0.23 Au: 0.00  
As: 0.01 Sb: 0.07 Bi: 0.00 Co: 0.00

Lakenheath 3

Mus: CUM Accession no: 97.137  
Overall length: 113.7  
CM type: Associated D 5b Åberg: IV Reich: Typ  
Holywell Row  
Context: none  
Assoc: none  
Refs: Fig 2.30; Reichstein no 864, fig 99,3  
Joined single point punch marks segment lines on bow. Pin lug broken. Possible areas of tinning. Solid bow cross-section.  
AA Analyses  
Cu: 78.50 Zn: 0.79 Pb: 3.60 Sn: 8.39  
Fe: 0.11 Ni: 0.00 Ag: 0.11

Lakenheath 4

Mus: CUM Accession no: 98.208  
Overall length: 0.0  
CM type: D 2 Åberg: IV  
Context: none  
Assoc: none  
Refs: none  
Missing below cpl. Kbs shaped as semi-circular fans. Ring punch marks. Ring and dot decoration. Rev of casting rather uneven. Solid bow cross-section.  
AA Analyses  
Cu: 79.50 Zn: 3.51 Pb: 2.22 Sn: 7.46  
Fe: 0.33 Ni: 0.00 Ag: 0.10

Lakenheath 5

Mus: CUM Accession no: 97.210A  
Overall length: 112.6  
CM type: Associated with large B  
Context: none  
Assoc: 3 small-long brooches (1 pr)  
Refs: none  
Skbs cast with hpl. Rev of casting flat, including at bow, except at animal head. Holes pierced through cpl, for replacement of catch? Single pin lug, but placed towards rhs. Worn bow.  
No chemical analysis available.

Lakenheath 6

Mus: CUM Accession no: 99.88  
Overall length: 143.2  
CM type: D 5 Åberg: V  
Context: none  
Assoc: none  
Refs: Fig 2.41  
Rev of casting flat, including at bow. Iron coil rems. Skbs originally attached using holes pierced through hpl wings, now missing. Square indents in hpl wings. Circular punch marks.  
AA Analyses  
Cu: 84.50 Zn: 2.20 Pb: 2.52 Sn: 6.24  
Fe: 0.27 Ni: 0.00 Ag: 0.33

Lakenheath 7

Mus: CUM Accession no: 99.89  
Overall length: 137.3  
CM type: D 5a  
Context: none  
Assoc: none  
Refs: none  
Skbs cast with hpl. Rev of casting flat except at bow, kbs and animal head. Lower end of catch has ridge running from it. Double semi-circular and Y-shaped punch marks.  
AA Analyses  
Cu: 84.50 Zn: 4.61 Pb: 3.43 Sn: 7.62  
Fe: 0.32 Ni: 0.00 Ag: 0.13  
Probe analyses  
Zn: 2.25 Pb: 2.84 Sn: 8.25  
Fe: 0.26 Ni: 0.04 Ag: 0.20 Au: 0.00  
As: 0.00 Sb: 0.08 Bi: 0.00 Co: 0.00

Lakenheath 8

Mus: CUM  
 Overall length: 149.1  
 CM type: Z 1a  
 Context: none  
 Assoc: none  
 Refs: Jessop 1950, Anglo-Saxon Jewellery, pl XII (top)  
 Rhs skb glued on, previously used 3 copper rivets. Lhs skb missing. 3 patches of possible red enamel. Solid bow cross-section.

AA Analyses

Cu: 70.50	Zn: 2.38	Pb: 4.36	Sn: 6.34
Fe: 0.52	Ni: 0.00	Ag: 0.28	

Lakenheath 9

Mus: CUM  
 Overall length: 142.9  
 CM type: C 1  
 Context: none  
 Assoc: none  
 Refs: Fig 2.17  
 Rev of casting flat except behind bow, tkb and animal head. Iron remains in pin lug. Possible semi-circular punch marks.

AA Analyses

Cu: 76.00	Zn: 4.59	Pb: 2.32	Sn: 4.02
Fe: 0.24	Ni: 0.00	Ag: 0.20	

Lakenheath 10

Mus: CUM  
 Overall length: 71.8  
 CM type: Small B 2  
 Context: none  
 Assoc: 2 small-long brooches, round flat fibula, ring frag, glass frag  
 Refs: Reichstein no 863, no fig.  
 Skbs cast with hpl. Rev of casting flat except behind foot. Curious red corrosion on front, green corrosion on the back. No evidence of catch remains.

AA Analyses

Cu: 82.00	Zn: 1.41	Pb: 3.63	Sn: 4.98
Fe: 0.14	Ni: 0.00	Ag: 0.24	

Lakenheath 11

Mus: CUM  
 Overall length: 77.7  
 CM type: Small B 1  
 Context: none  
 Assoc: small-long  
 Refs: none  
 Rev of casting flat except behind animal head. Casting not symmetrical at foot. Catch and pin lug both broken. Worn. Pitted at foot.

AA Analyses

Cu: 70.50	Zn: 11.90	Pb: 7.16	Sn: 5.14
Fe: 0.38	Ni: 0.00	Ag: 0.01	

Lakenheath 12

Mus: CUM Accession no: A 1897.46  
Overall length: 133.6  
CM type: D 6a Åberg: IV  
Context: none  
Assoc: CA sheets, blue bead (A1908.119)  
Refs: none  
Skbs cast separately, with slot cut in base, iron pin running through as axis. Catch stepped in three stages. Hpl wings unequal. Double semi-circular punch marks. Joined single point punch marks form segmentation of ridges. Iron corrosion around pin lug.  
AA Analyses  
Cu: 83.50 Zn: 3.22 Pb: 3.01 Sn: 8.07  
Fe: 0.15 Ni: 0.00 Ag: 0.30

Lakenheath 13

Mus: CUM Accession no: Z 16265  
Overall length: 122.5  
CM type: D 2 Åberg: IV  
Context: none  
Assoc: none  
Refs: Åberg no 107  
Extension of animal head nose must have been attached at the back, possibly using solder (WM patch in this area). Double semi-circular punch marks.  
AA Analyses  
Cu: 82.00 Zn: 3.63 Pb: 2.46 Sn: 7.43  
Fe: 0.71 Ni: 0.00 Ag: 0.13

Lakenheath 14

Mus: CUM Accession no: Z 21358  
Overall length: 131.3  
CM type: C 2 Åberg: III  
Context: none  
Assoc: none  
Refs: none  
Skbs cast with hpl. Repair to poorly cast hpl wing (lhs). Ring and dot decoration, looking drilled/turned. Double curved (not semi-circular) and single point punch marks.  
AA Analyses  
Cu: 78.00 Zn: 5.53 Pb: 2.95 Sn: 7.70  
Fe: 0.22 Ni: 0.00 Ag: 0.26

Lakenheath 15

Mus: CUM Accession no: Z 30279  
Overall length: 107.9  
CM type: D 2  
Context: none  
Assoc: Possibly 2 ?coins, copper alloy loop, 2 strips, iron blade  
Refs: none  
Tkb misplaced (to lhs), lower half of casting also not symmetrical. Curved punch mark. Tkb now bent back. Catch bent, brooch rather battered.  
AA Analyses  
Cu: 85.00 Zn: 0.49 Pb: 4.71 Sn: 8.39  
Fe: 0.07 Ni: 0.00 Ag: 0.02

Lakenheath 16

Mus: BM Accession no: 1910,12-22,3  
Overall length: 112.7  
CM type: D 5 Åberg: IV  
Context: none  
Assoc: none  
Refs: Fig 2.41; Åberg, no 110 fig 75  
Rev of casting flat and solid. Tall catch. Animal head has possible loop at the end. Double semi-circular punch marks. Worn, but not severely.  
AA Analyses  
Cu: 82.00 Zn: 1.27 Pb: 3.21 Sn: 10.19  
Fe: 0.12 Ni: 0.03 Ag: 0.20

Lincoln 1

Mus: Lin Accession no: MD 1  
Overall length: broken Weight (g): 32  
CM type: Associated with C or D  
Context: MD find  
Assoc: none  
Refs: none  
Rev of casting flat, except behind tkb and bow. Skb rather flattened at the front, also slightly projecting from plane of brooch at the back. Large ring punch marks (d=2.4mm). Poor condition, missing below bow.  
Probe analyses  
Zn: 13.47 Pb: 2.19 Sn: 4.07  
Fe: 0.16 Ni: 0.06 Ag: 0.54 Au: 0.00  
As: 0.00 Sb: 0.06 Bi: 0.02 Co: 0.00

Lincoln 2

Mus: Lin Accession no: MD 2  
Overall length: 137.1 Weight (g): 110  
CM type: Associated D  
Context: MD find  
Assoc: none  
Refs: none  
Rev of casting very hollow behind kbs and collars, bow and animal head. Lappets are unequal. Semi-circular and double semi-circular punch marks, placed rather erratically in some areas, better in others. Kbs worn in the front.  
Probe analyses  
Zn: 2.44 Pb: 2.86 Sn: 6.94  
Fe: 0.24 Ni: 0.03 Ag: 0.21 Au: 0.00  
As: 0.32 Sb: 0.07 Bi: 0.01 Co: 0.00

Lincoln 3

Mus: Lin Accession no: MD 3  
Overall length: broken Weight (g): 98  
CM type: Associated with D  
Context: MD find  
Assoc: none  
Refs: none  
Broken at bow, otherwise similar to Lincoln 2. Better condition than Lincoln 2, but still worn.  
Probe analyses  
Zn: 2.64 Pb: 3.25 Sn: 8.20  
Fe: 0.27 Ni: 0.04 Ag: 0.25 Au: 0.00  
As: 0.39 Sb: 0.07 Bi: 0.01 Co: 0.00

Linton Heath G27 (1)

Mus: CUM Accession no: 48.1547A  
Overall length: 67.8  
CM type: small-long foot Reich: *Typ Bradwell-on-Sea*  
Context: Probably G27, Reichstein says these brooches are from Lakenheath.  
Assoc: Female (50 years), Linton Heath 2  
Refs: Neville 1854, 102; Reichstein no 798, *Taf* 98, 2  
Kbs circular in cross-section. Skbs with slot at base. Copper alloy pin appears to be seamed, as in drawn wire. Long catch. Solid casting, including at bow. Severely cleaned.  
AA Analyses  
Cu: 84.50 Zn: 0.99 Pb: 2.36 Sn: 10.88  
Fe: 0.26 Ni: 0.02 Ag: 0.09

Linton Heath G27 (2)

Mus: CUM Accession no: 48.1547B  
Overall length: 67.9  
CM type: small-long foot Reich: *Typ Bradwell-on-Sea*  
Context: See Linton Heath 1  
Assoc: with Linton Heath 1  
Refs: Reichstein no 798, *Taf* 98, 1  
See pair. This one has very sharp detail. Bow is solid in cross-section.  
AA Analyses  
Cu: 83.00 Zn: 0.95 Pb: 2.42 Sn: 11.01  
Fe: 0.27 Ni: 0.01 Ag: 0.09

Linton Heath 3

Mus: Not known Accession no: Not known  
Overall length: not determined  
CM type: Associated Z 1 Leeds and Pocock: Vh  
Context: None  
Assoc: None  
Refs: Leeds and Pocock, 19 pl II D  
Not examined. Apparently gilt, possibly WM too.  
No chemical analysis available.

Little Wilbraham G31 (1)

Mus: CUM Accession no: 48.1347A  
Overall length: 117.2  
CM type: Large B 2  
Context: Grave 31  
Assoc: Little Wilbraham G31(2), beads  
Refs: Neville 1852, Pl 7  
Skbs cast separately, slotted. Semi-circular punch marks. Poor condition below cpl.  
AA Analyses  
Cu: 74.50 Zn: 14.90 Pb: 1.77 Sn: 5.15  
Fe: 0.17 Ni: 0.00 Ag: 0.31

Little Wilbraham G31 (2)

Mus: CUM Accession no: 48.1347B  
Overall length: 116.3  
CM type: Large B 2  
Context: Grave 31  
Assoc: Little Wilbraham G31(1)  
Refs: see above  
Condition slightly better than pair but still severely 'cleaned'.

Little Wilbraham G31 (2)

AA Analyses

Cu: 74.50      Zn: 15.50      Pb: 2.03      Sn: 4.98  
Fe: 0.18      Ni: 0.00      Ag: 0.29

Little Wilbraham G32

Mus: CUM?      Accession no:  
Overall length: not determined  
CM type: C2      Åberg:      Reich:  
Context: Grave 32  
Assoc: 2 other cb, 2 pairs of wrist clasps, 2 CA rings, girdle hanger, bucket  
Refs: Neville 1852, pl 7, Little Wilbraham G32 cont/

Not examined. Ring and dot decoration. Skbs separate, attached by iron pin.  
No chemical analysis available.

Little Wilbraham G40

Mus: CUM?      Accession no:  
Overall length: not determined  
CM type: D2 associated      Åberg:      Reichstein:  
Context: Grave 40  
Assoc: Great shb, another 'cb', pair wrist clasps, 12 beads  
Refs: Neville 1852, pl 6  
Not examined. Lappets are type D2, but simple foot. Skbs probably cast with hpl.  
No chemical analysis.

Little Wilbraham G47

Mus: CUM      Accession no: 48.1387  
Overall length: 102.3  
CM type: Ass with C 2      Åberg: III      Reich: *Einzelformen*  
Context: Grave 47  
Assoc: ring, tweezers, wrist clasp, ear-pick  
Refs: Neville 1852, pl 6; Reichstein no 796, *Taf* 107,2  
Skbs cast with hpl, stepped back from hpl. Double semi-circular punch marks. Poor condition at cpl, with green corrosion products. Possibly quite worn at time of burial.  
AA Analyses  
Cu: 82.00      Zn: 1.14      Pb: 4.37      Sn: 8.64  
Fe: 0.54      Ni: 0.04      Ag: 0.17

Little Wilbraham G73 (1)

Mus: CUM      Accession no: 48.1401A  
Overall length: 96.4  
CM type: Associated C 1      Åberg: III      Reich: *Typ*  
   Little Wilbraham  
Context: Grave 73  
Assoc: 5 beads, iron knife, small copper alloy buckle  
Refs: Neville 1852, pl 8; Reichstein no 787, fig 107,6  
Skbs cast separately and now missing. Thin edges to wings, slope back from hpl. Circular boss at bow. Catch pierced (for ?mend).

Little Wilbraham G73 (1) cont/

AA Analyses

Cu: 83.00      Zn: 8.42      Pb: 4.72      Sn: 3.36  
Fe: 0.51      Ni: 0.04      Ag: 0.12

Probe analyses

Zn: 7.94      Pb: 4.28      Sn: 3.43  
Fe: 0.49      Ni: 0.02      Ag: 0.13      Au: 0.00  
As: 0.00      Sb: 0.12      Bi: 0.00      Co: 0.00

Little Wilbraham G73 (2)

Mus: CUM      Accession no: 48.1401B

Overall length: 116.4

CM type: Large B 1      Åberg: III      Reich: *Typ* Islip

Context: Grave 73

Assoc: see G73(1)

Refs: Fig 2.10; Reichstein no 787, fig 107,5

Skbs separate, slotted, attached using iron pin. Some casting flaws at bow and hpl. Edges of wings thinned. Wings of hpl slope back.

AA Analyses

Cu: 84.50      Zn: 0.62      Pb: 3.42      Sn: 7.14  
Fe: 0.07      Ni: 0.03      Ag: 1.03

Probe analyses

Zn: 0.62      Pb: 3.33      Sn: 7.35  
Fe: 0.03      Ni: 0.03      Ag: 2.50      Au: 0.00  
As: 0.07      Sb: 0.08      Bi: 0.00      Co: 0.00

Little Wilbraham G79

Mus: CUM      Accession no: 48.1406A

Overall length: 114.8

CM type: D 5      Åberg: IV

Context: Grave 79

Assoc: small-long

Refs: Neville 1852, Pl 7

Skbs separate. Rev of bow concave but with casting flaw. Triangular punch marks. Segmentation. Heavy cleaning has penetrated lhs wing of hpl.

AA Analyses

Cu: 82.50      Zn: 1.03      Pb: 5.04      Sn: 8.36  
Fe: 0.23      Ni: 0.04      Ag: 0.14

Probe analyses

Zn: 1.11      Pb: 2.45      Sn: 8.32  
Fe: 0.16      Ni: 0.05      Ag: 0.11      Au: 0.00  
As: 0.00      Sb: 0.08      Bi: 0.02      Co: 0.00

Little Wilbraham G81

Mus: CUM      Accession no: 48.1409

Overall length: 121.1

CM type: D 4      Åberg: IV      Reich: Hybrid

Context: Grave 81

Assoc: 2 small-long brooches, situla, 12 beads

Refs: Åberg no 133 fig 81; Neville 1852, pl 2; Reichstein no 788, *Taf* 111,4

Rev of casting flat, including at bow. Short catch, iron in pin lug. Skbs not symmetrical. Gilding on front except in areas of WM. Circular punch marks.

AA Analyses

Cu: 91.50      Zn: 0.24      Pb: 1.56      Sn: 4.93  
Fe: 0.09      Ni: 0.02      Ag: 0.18

Little Wilbraham G87

Mus: CUM Accession no: 48.1412A  
Overall length: 102.0  
CM type: D 5b  
Context: Grave 87  
Assoc: small-long, wrist clasp Hines type B7, belt fitting  
Refs: Neville 1852, pl 4  
Rev of casting flat except at bow tkb and foot. Casting flaw along the sides of the catch. Double semi-circular punch mark.  
AA Analyses  
Cu: 80.00 Zn: 10.09 Pb: 3.17 Sn: 5.76  
Fe: 0.24 Ni: 0.03 Ag: 0.21

Little Wilbraham G95 (1)

Mus: CUM Accession no: 48.1418A  
Overall length: 91.4  
CM type: Associated C 2  
Context: Grave 95  
Assoc: Two other cb, 39 beads  
Refs: Neville 1852, pl 1  
Rev of casting flat, except at bow. Ring and dot punch mark.  
AA Analyses  
Cu: 79.00 Zn: 1.09 Pb: 8.28 Sn: 8.20  
Fe: 0.09 Ni: 0.03 Ag: 0.17

Little Wilbraham G95 (2)

Mus: CUM Accession no: 48.1418B  
Overall length: 91.4  
CM type: Associated with C 2  
Context: Grave 95  
Assoc: See G95(1)  
Refs: See G95(1)  
See pair.  
AA Analyses  
Cu: 75.00 Zn: 2.15 Pb: 12.10 Sn: 8.20  
Fe: 0.22 Ni: 0.02 Ag: 0.18  
Probe analyses  
Zn: 1.87 Pb: 8.34 Sn: 8.79  
Fe: 0.19 Ni: 0.03 Ag: 0.19 Au: 0.00  
As: 0.02 Sb: 0.08 Bi: 0.00 Co: 0.00

Little Wilbraham G95 (3)

Mus: CUM Accession no: 48.1419  
Overall length: 135.0  
CM type: D 5  
Context: Grave 95  
Assoc: See G95(1)  
Refs: Neville 1852, pl 4  
Y-shaped and double semi-circular punch marks. Rather battered.  
AA Analyses  
Cu: 86.00 Zn: 0.95 Pb: 3.44 Sn: 7.66  
Fe: 0.07 Ni: 0.02 Ag: 0.20

Little Wilbraham G105 (1)

Mus: CUM Accession no: 48.1426A  
Overall length: 130.8  
CM type: Associated with Z 1 Åberg: IV  
Context: Grave 105

Little Wilbraham G105 (1) cont/

Assoc: Cb G105(2), 5 beads

Refs: Fig 2.46; Neville 1852, Pl 4 (one example of pair)

Two loops at the back of the skb and one at the back of the hpl allow attachment of skbs by pin. Repair at foot, using a copper alloy rivet and plate. Semi-circular punch marks. Cleaned, poor condition.

AA Analyses

Cu: 83.00 Zn: 1.49 Pb: 2.70 Sn: 10.38

Fe: 0.11 Ni: 0.03 Ag: 0.17

Probe analyses

Zn: 1.49 Pb: 3.64 Sn: 10.57

Fe: 0.11 Ni: 0.04 Ag: 0.14 Au: 0.00

As: 0.00 Sb: 0.07 Bi: 0.00 Co: 0.00

Little Wilbraham G105 (2)

Mus: CUM

Accession no: 48.1426B

Overall length: 130.8

CM type: Associated with Z1

Åberg: IV

Context: Grave 105

Assoc: See G105(1)

Refs: See G105(1)

As pair, except without repair to foot and more heavily cleaned. Remains of iron pin in pin lug. Sturdy casting. Catch decorated. Lower rhs wing is clipped at corner, punch marks follow the outline, so it must have been a fault in casting, not later damage.

AA Analyses

Cu: 83.50 Zn: 1.35 Pb: 2.90 Sn: 10.49

Fe: 0.10 Ni: 0.04 Ag: 0.17

Probe analyses

Zn: 1.28 Pb: 3.88 Sn: 10.83

Fe: 0.06 Ni: 0.05 Ag: 0.15 Au: 0.00

As: 0.00 Sb: 0.07 Bi: 0.00 Co: 0.00

Little Wilbraham G111

Mus: CUM

Accession no: 48.1429

Overall length: 91.3

CM type: spatulate foot

Context: Grave 111

Assoc: pair of square-headed brooches, dished oval piece, wrist clasp Hines Type B7

Refs: Neville 1852, Pl 6

Skbs cast with hpl. Rev of casting flat (including at bow) except behind kbs. Small catch.

AA Analyses

Cu: 76.00 Zn: 16.07 Pb: 2.68 Sn: 3.96

Fe: 0.23 Ni: 0.00 Ag: 0.44

Little Wilbraham G116

Mus: CUM

Accession no: 48.1321

Overall length: 129.6

CM type: D 3

Åberg: IV

Context: Grave 116

Assoc: 2 swastika brooches, wrist clasp Hines type B20, knife

Refs: Fig 2.38; Neville 1852, pl 8

Flat back to casting, except slight indents behind tkb, bow, cpl. Pin lug on a ridge which reaches the bow. Iron coils

Little Wilbraham G166 cont/

extant. Untidy casting at the rev of the bow. Single short line punch marks. Severely cleaned, some pitting.

AA Analyses

Cu:	84.00	Zn:	3.59	Pb:	1.62	Sn:	9.0
Fe:	0.31	Ni:	0.01	Ag:	0.11		

Little Wilbraham G128

Mus: CUM Accession no: 48.1435

Overall length: 75.0

CM type: Associated with small B 2 Åberg: II Reich:  
*Einzelformen*

Context: Grave 128

Assoc: 1 amber bead

Refs: Neville 1852, Pl 10; Reichstein no 791, *Taf* 119,3.

Skbs set back from line of hpl. Rev of casting flat, including at bow. Small catch, placed low on cpl. Worn on rhs skb. Pitting on hpl and rhs hpl wing. Bent to rhs below bow. Severely cleaned

AA Analyses

Cu:	86.50	Zn:	0.41	Pb:	3.26	Sn:	7.70
Fe:	0.31	Ni:	0.08	Ag:	0.60		

Little Wilbraham G133

Mus: CUM Accession no: 48.1437

Overall length: 128.2

CM type: C 2 Åberg: III Reich: Little Wilbraham

Context: Grave 133

Assoc: pair of radiate brooches, wrist clasp Hines type C3, scoop

Refs: Neville 1852, Pl 8; Reichstein no 792, *Taf* 106,3

Skbs cast with hpl. Rev of casting flat, except at bow, kbs and foot. Single point punch mark. Cleaned and pitted.

AA Analyses

Cu:	87.50	Zn:	0.63	Pb:	1.49	Sn:	9.38
Fe:	0.11	Ni:	0.05	Ag:	0.36		

Probe analyses

Zn:	0.56	Pb:	1.07	Sn:	9.41		
Fe:	0.07	Ni:	0.06	Ag:	0.32	Au:	0.00
As:	0.00	Sb:	0.04	Bi:	0.00	Co:	0.00

Little Wilbraham G143

Mus: CUM Accession no: 48.1441

Overall length: 107.7

CM type: Large B 1 Åberg: Reich: Islip

Context: Grave 143

Assoc: small-long (with semi-circular and single point punch marks), 10 beads.

Refs: Neville pl 8; Reichstein no 793, *Taf* 108,1

Tkb circular in cross-section, attached with tab at front. Pin lug on spine which extends up to tkb. Rev of casting flat, including at bow. Semi-circular punch mark. Segmented ridges. Cleaned.

AA Analyses

Cu:	86.50	Zn:	0.23	Pb:	1.51	Sn:	10.55
Fe:	0.09	Ni:	0.04	Ag:	0.14		

Little Wilbraham G171 (1)

Mus: CUM Accession no: 48.1309  
Overall length: 122.6  
CM type: Associated D  
Context: Grave 171  
Assoc: G171 (2), 2 ring brooches, tweezers, small-long brooch  
Refs: None  
Skbs cast with hpl. Rev of casting flat except at bow, kbs and animal head.  
Cleaned.  
AA Analyses  
Cu: 81.50 Zn: 1.62 Pb: 4.38 Sn: 7.76  
Fe: 0.21 Ni: 0.01 Ag: 0.10

Little Wilbraham G171 (2)

Mus: CUM Accession no: 48.1310  
Overall length: 153.0  
CM type: D 3  
Context: Grave 171  
Assoc: See G171(1)  
Refs: Neville 1852, pl 4  
Skbs cast with hpl. Two pin lugs, joined by iron pin. Rev of casting flat  
except very hollow behind bow, kbs and foot. Fairly good condition.  
AA Analyses  
Cu: 76.50 Zn: 10.50 Pb: 2.54 Sn: 5.28  
Fe: 0.33 Ni: 0.01 Ag: 0.30

Little Wilbraham G173-4 (1)

Mus: CUM Accession no: 48.1463A  
Overall length: 83.6  
CM type: Small B 2 Åberg: II  
Context: Grave 173-4  
Assoc: 2 CA rings, wrist clasp Hines type B12, pin, 2 small-long brooches,  
Cb (2)  
Refs: Neville 1852, pl 10  
Rev of casting flat, except at bow and kbs. Double semi-circular punch  
marks. Cleaned, but surface is now poor.  
AA Analyses  
Cu: 84.00 Zn: 0.89 Pb: 3.78 Sn: 10.40  
Fe: 0.10 Ni: 0.04 Ag: 0.18  
Probe analyses  
Zn: 0.89 Pb: 2.06 Sn: 9.97  
Fe: 0.04 Ni: 0.06 Ag: 0.16 Au: 0.00  
As: 0.01 Sb: 0.06 Bi: 0.00 Co: 0.00

Little Wilbraham G173-4 (2)

Mus: CUM Accession no: 48.1463B  
Overall length: 80.4  
CM type: D 3 Åberg: III  
Context: Grave 173-4  
Assoc: see above  
Refs: Neville 1852, pl 10  
Skbs cast with hpl. Pin lug on ridge, extending to bow. Bow cross-section  
solid. Rev of casting flat except at kbs and foot. Cleaned, but reasonable  
surface now remains.

Little Wilbraham 1 cont/

AA Analyses

Cu: 83.00 Zn: 2.70 Pb: 3.23 Sn: 8.77  
Fe: 0.25 Ni: 0.04 Ag: 0.20

Probe analyses

Zn: 2.55 Pb: 2.83 Sn: 8.37  
Fe: 0.25 Ni: 0.07 Ag: 0.22 Au: 0.00  
As: 0.00 Sb: 0.05 Bi: 0.00 Co: 0.00

Little Wilbraham 2

Mus: CUM Accession no: 48.1471B

Overall length: 100.9

CM type: Associated with C 2 Åberg: III Reich:  
*Einzelformen*

Context: Unnumbered grave

Assoc: Cb 48.1471a with small-long foot

Refs: Reichstein no 796, *Taf* 107,2

Skbs cast with hpl. Skbs stepped back from hpl. Good quality casting.  
Double semi-circular stamps throughout. Cleaned.

AA Analyses

Cu: 84.00 Zn: 0.43 Pb: 5.47 Sn: 8.87  
Fe: 0.18 Ni: 0.07 Ag: 0.10

Probe analyses

Zn: 0.48 Pb: 3.64 Sn: 9.30  
Fe: 0.16 Ni: 0.08 Ag: 0.11 Au: 0.00  
As: 0.00 Sb: 0.15 Bi: 0.00 Co: 0.00

Little Wilbraham 3

Mus: CUM Accession no: 53.102A

Overall length: 67.6

CM type: Small B 2 Åberg: II Reich: *Typ Hjelmhede*

Context: Unnumbered grave

Assoc: child burial, glass and amber beads, iron knife and ring, bone  
combs, plain pottery bowl

Refs: Reichstein no 797, *Taf* 115,9

Semi-circle and dot punch marks. Broken pin lug. Solid bow cross-section.

AA Analyses

Cu: 86.00 Zn: 0.05 Pb: 2.86 Sn: 9.65  
Fe: 0.06 Ni: 0.03 Ag: 0.10

Little Wilbraham 4

Mus: CUM Accession no: 53.102B

Overall length: 68.6

CM type: Small B 2 Åberg: II Reich: *Typ Hjelmhede*

Context: Unnumbered grave

Assoc: See Little Wilbraham 3

Refs: Reichstein no 797 *Taf* 115, 13

See above, slightly more eroded, with no evidence of punch marks remaining.

AA Analyses

Cu: 84.50 Zn: 0.02 Pb: 2.31 Sn: 9.39  
Fe: 0.07 Ni: 0.03 Ag: 0.10

Londesborough G7

Mus: Newcastle

Accession no:

Overall length: 113

CM type: D 3

Context: Grave 7

Assoc: Iron ring and ferrule, penannular brooch, pair wrist clasps, single wrist clasp, pottery bowl, 18 beads, comb, spindle whorl

Refs: Swanton 1966, fig 6, 4

Circular punch marks. Not examined

No chemical analysis available.

Londesborough G9 (1)

Mus: Hull

Accession no:

Overall length: 132

CM type: D 5a

Context: Grave 9

Assoc: Cb G9(2) and (3), pair annular brooches, pair wrist clasps, pair girdle hangers, strap mount, 26 beads, bone annular brooch.

Refs: Swanton 1966, fig 6,1 (left)

Punch marks. Decoration on knobs. Not examined. Crisp detail No chemical analysis available.

Londesborough G9 (2)

Mus: Hull

Accession no:

Overall length: 135

CM type: D 5a

Context: Grave 9

Assoc: see Grave G9 (1)

Refs: Swanton 1966, fig 6,1 (right)

See pair. Very similar.

No chemical analysis available.

Londesborough G9 (3)

Mus: Hull

Accession no:

Overall length: 109

CM type: D 5

Context: Grave 9

Assoc: see G9(1)

Refs: Swanton 1966, fig 6,3

Not examined. Much more worn than those above.

No chemical analysis available.

Londesborough G10

Mus: Hull

Accession no:

Overall length: 112

CM type: D 5b

Context: Grave 10

Assoc: 2 pairs annular brooches, small-long brooch, wrist clasp, toilet set, CA strap mounts

Refs: Swanton 1966, fig 6, 2

Not examined. Separate sideknobs.

No chemical analysis available.

Longbridge

Mus: BM Accession no: 80,2-14,1  
Overall length: 186.4  
CM type: Z 3 Leeds and Pocock: Vk  
Context: Grave  
Assoc: Gold C-bracteate (Åberg fig 181)  
Refs: Plate 6; Åberg fig 87; Leeds and Pocock, 21  
Solid casting. Short catch on ridge. Gilding of good standard. White metal missing except at boss on bow. Well preserved.

AA Analyses

Cu:	90.00	Zn:	6.44	Pb:	0.88	Sn:	3.37
Fe:	0.28	Ni:	0.14	Ag:	0.11		

Probe analyses

Zn:	2.67	Pb:	1.30	Sn:	4.31		
Fe:	0.11	Ni:	0.08	Ag:	0.10	Au:	0.00
As:	0.04	Sb:	0.08	Bi:	0.00	Co:	0.00

Loveden Hill 1

Mus: Lin Accession no: none  
Overall length: broken  
CM type: Associated C or D Åberg: III/IV  
Context: stray find  
Assoc: none  
Refs: Fennell 1964, 173 fig 23,5  
Foot only, ring and dot decoration. Hollow rev to casting.  
No chemical analysis available.

Loveden Hill C58/137

Mus: Lin Accession no: 58/137  
Overall length: broken  
CM type: Associated with small type B Åberg: II  
Context: Urn 58/137  
Assoc: Urn 58/137, Loveden C58(2), (3) and (4), sheet metal, bead  
Refs: Fennell 1964, 173, fig 23,1  
Short upright catch.  
No chemical analysis available.

Loveden Hill C58/110a

Mus: Lin Accession no: 58/110 a  
Overall length: broken  
CM type: Associated with small B 1 Åberg: II/III  
Context: Urn 58/110  
Assoc: two other cb feet, copper alloy frags  
Refs: Fennell 1964, fig 22 (top left)  
Foot and part of bow remaining. Short upright catch  
No chemical analysis available.

Loveden Hill C58/110b

Mus: Lin Accession no: 58/110 b  
Overall length: not determined  
CM type: C or D Åberg: II/III  
Context: Urn 58/110  
Assoc: see C58/110a  
Refs: Fennell 1964, fig 22 (top centre)  
Only foot left.  
No chemical analysis available.



Market Overton 2

Mus: Oakham? Accession no:  
Overall length: not determined  
CM type : Z3 Leeds and Pocock: Vk  
Context: none  
Assoc: none  
Refs: As above, pl LXXI, 5; Leeds and Pocock, 20  
Not examined.  
No chemical analysis available.

Market Overton 3

Mus: Oakham? Accession no:  
Overall length: not determined  
CM type: Z3 Leeds and Pocock: Vi  
Context: none  
Assoc: none  
Refs: As above, pl LXXI, 6; Leeds and Pocock, 20  
Not examined.  
No chemical analysis available.

Market Overton 4

Mus: Oakham? Accession no:  
Overall length: not determined.  
CM type: Z1b Leeds and Pocock: Vc  
Context: none  
Assoc: none  
Refs: Leeds 1949, 87, pl S8; Leeds and Pocock, 17  
Not examined.  
No chemical analysis available.

Mildenhall

Mus: CUM Accession no: 1904.149  
Overall length: not determined  
CM type: A 1 Åberg: I Reich: *Typ* Dorchester  
Context: none  
Assoc: none  
Refs: Åberg 1926 Fig 44; Reichstein no 866, *Taf* 75,14  
Not examined.  
No chemical analysis available.

Milton-next-Sittingbourne 1

Mus: MAID Accession no: 181  
Overall length: 90.0  
CM type: Associated with B or C  
Context: none  
Assoc: none  
Refs: Åberg, 31, fig 41  
Skbs cast separately, possibly with tabs or slots? Decoration on bow. Iron corrosion on reverse. Solid bow cross-section. Poor preservation.  
Probe analyses  
Zn: 11.17 Pb: 5.06 Sn: 6.16  
Fe: 0.29 Ni: 0.02 Ag: 0.04 Au: 0.00  
As: 0.00 Sb: 0.08 Bi: 0.01 Co: 0.00

Milton-next-Sittingbourne 2

Mus: MAID Accession no: 374  
Overall length: 74.0  
CM type: Small B 2  
Context: none  
Assoc: none  
Refs: none  
Wings slope back from hpl. Long catch. Hollow bow cross-section. Probably worn at bow and tkb.  
Probe analyses  
Zn: 9.20 Pb: 5.10 Sn: 4.23  
Fe: 0.26 Ni: 0.02 Ag: 1.07 Au: 0.00  
As: 0.34 Sb: 0.11 Bi: 0.03 Co: 0.00

Milton-next-Sittingbourne 3

Mus: MAID Accession no: None  
Overall length: 72.0  
CM type: Associated small B  
Context: none  
Assoc: none  
Refs: probably Åberg fig 40; Reichstein no 817  
Poorly preserved. Wings slope back from hpl, slightly. Reverse of casting hollow at foot and bow. Mended (recently). Iron corrosion products at back. No chemical analysis available.

Mitchell's Hill G1

Mus: Ashm Accession no: 1909.470  
Overall length: 153.9 Weight (g): 108  
CM type: Z 1a Åberg: V  
Context: Grave 1  
Assoc: Amber and glass beads, 2 ribbon ring brooches, wrist clasp  
Refs: probably Åberg no 207  
Two pin lugs. Surface cleaned. Ends of spirals on knobs probably punched by single point punch.  
AA Analyses  
Cu: 85.00 Zn: 3.54 Pb: 3.35 Sn: 6.62  
Fe: 0.34 Ni: 0.10 Ag: 0.24

Mitchell's Hill G25

Mus: Ashm Accession no: 1909.477  
Overall length: 135.2 Weight (g): 61  
CM type: C 1 Åberg: III Reich: Little Wilbraham  
Context: Grave 25  
Assoc: Pair 'quoit-shaped' brooches, wrist clasp Hines type B12, armlet fragments, 4 yellow beads.  
Refs: probably Åberg 72, Reichstein no 870, no fig.  
Skbs cast with hpl. Reverse of casting hollow at bow, knob and foot. Small ring punch marks. Possible gilding.  
AA Analyses  
Cu: 90.50 Zn: 2.20 Pb: 1.27 Sn: 6.10  
Fe: 0.16 Ni: 0.00 Ag: 0.15

Mitchell's Hill 1

Mus: Ashm Accession no: 1909.466  
Overall length: 124.9 Weight (g): 57  
CM type: Large B 3 Åberg: III Reich: Holywell Row  
Context: none

Assoc: none

Refs: Reichstein no 867, Taf 99,1

Bow concave. Pin lug broken and mended in antiquity, using a copper-alloy plate and two rivets through hpl. Skbs cast separately. Possible trace of gold on hpl.

AA Analyses

Cu: 75.00	Zn: 13.00	Pb: 2.18	Sn: 5.28
Fe: 0.30	Ni: 0.00	Ag: 0.08	

Mitchell's Hill 4

Mus: Ashm Accession no: 1909.480  
Overall length: broken  
CM type: D 3 Åberg: III Reich: *Einzelformen*  
Context: none

Assoc: none

Refs: possibly Åberg no 120

Below bow only extant. Mended in antiquity by soldering on a plate, having cut a slot into the catch. Possibly gilding and white metal on cpl. Double circle punch marks.

AA Analyses

Cu: 84.00	Zn: 15.00	Pb: 2.86	Sn: 3.32
Fe: 0.35	Ni: 0.00	Ag: 0.20	

Mitchell's Hill 5

Mus: Ashm Accession no: 1909.482  
Overall length: 85.0 Weight (g): 28  
CM type: Assoc large B 2 Åberg: II Reich: West Stow Heath  
Context: none

Assoc: none

Refs: Åberg 26; Reichstein no 869

Casting concave behind bow, knobs and foot. Possible casting fault behind nostrils. Possible use of copper alloy wire at reverse. Ring and dot decoration. Iron corrosion on pin lug.

AA Analyses

Cu: 79.00	Zn: 3.70	Pb: 11.04	Sn: 6.87
Fe: 0.99	Ni: 0.00	Ag: 0.26	

Mitchell's Hill 6

Mus: Ashm Accession no: 1909.488  
Overall length: 146.8 Weight (g): 100  
CM type: Z 1a Åberg: V  
Context: none

Assoc: none

Refs: Åberg 206

Skbs cast separately, attached using loops on kb and hpl wing. Iron on pin lug. Segmented Y punch mark. Segmentation on ridges too. Gilding, white metal treatment. Gilding tested by XRF, showing Au, Ag and Hg.

AA Analyses

Cu: 90.50	Zn: 1.48	Pb: 3.74	Sn: 7.42
Fe: 0.18	Ni: 0.00	Ag: 0.16	

Morning Thorpe G16

Mus: NCM

Accession no: MRN 16B

Overall length: 136.0

CM type: Z 1b

Context: Grave 16

Assoc: Pair square-headed small-long brooches, 2 pairs of wrist clasps, Hines type B7 and B13c, 49 beads, iron knife, CA ring

Refs: Green et al 1987, fig 297

Rev of casting very flat. Two pin lugs, not placed centrally. Mercury gilding, good quality on foot. Single point punch marks. WM on nose. Worn at bow.

AA Analyses

Cu: 87.50	Zn: 1.48	Pb: 2.87	Sn: 8.97
Fe: 0.26	Ni: 0.00	Ag: 0.17	

Morning Thorpe G30 (1)

Mus: NCM

Accession no: MRN 30J

Overall length: 112.5

CM type: Large B 1

Context: Grave 30

Assoc: Pot, 140 beads, wrist clasps Hines type B13b, 2 other cb, pair annular brooches, CA cylinders

Refs: Green et al 1987, fig 305

Skbs on iron pin, slotted. Rev of casting flat, including kbs. Double semi-circular punch marks. Worn at tkb and foot.

AA Analyses

Cu: 77.50	Zn: 16.67	Pb: 3.54	Sn: 2.82
Fe: 0.55	Ni: 0.00	Ag: 0.11	

Morning Thorpe G30 (2)

Mus: NCM

Accession no: MRN 30K

Overall length: 112.5

CM type: Large B 1

Context: Grave 30

Assoc: See G30 (2)

Refs: See G30 (2)

See pair, above. Slightly less worn. Catch position slightly different.

AA Analyses

Cu: 78.00	Zn: 16.84	Pb: 1.98	Sn: 2.82
Fe: 0.38	Ni: 0.00	Ag: 0.20	

Morning Thorpe G30 (3)

Mus: NCM

Accession no: MRN 30N

Overall length: 119.3

CM type: Associated with C 1

Context: Grave 30

Assoc: See G30(1)

Refs: Green et al 1987, fig 306

Skbs attached. Rev of casting flat except at bow and foot. Double semi-circular punch marks. Fair condition. Various corrosion products.

AA Analyses

Cu: 81.00	Zn: 12.97	Pb: 2.70	Sn: 2.86
Fe: 0.29	Ni: 0.00	Ag: 0.17	

Morning Thorpe G80

Mus: NCM Accession no: MRN 80J  
Overall length: 119.3  
CM type: D 6a  
Context: Grave 80  
Assoc: Pair wrist clasps Hines type B20, pair annular brooches, pair circular, scutiform pendants, iron knife, ring, 2 C-bracteates, CA loop and wire, 21 beads  
Refs: Green et al 1987, fig 321  
Skb on iron pin, slotted neatly. Rev of casting flat except at tkb and collar, skb (but not collar), bow and foot. Double semi-circular punch marks. Ridges segmented. Decoration on bow worn.  
AA Analyses  
Cu: 82.00 Zn: 2.22 Pb: 3.53 Sn: 9.11  
Fe: 0.36 Ni: 0.00 Ag: 0.16

Morning Thorpe G90 (1)

Mus: NCM Accession no: MRN 90 Ai  
Overall length: 88.4  
CM type: Small B 2  
Context: Grave 90  
Assoc: two other cb, 2 wrist clasps Hines type 18b OR c, 89 beads, iron rings and knife, pot  
Refs: Green et al 1987, fig 323  
Rev of casting flat except (slight) at kbs and foot. Double semi-circular and single point punch marks. Fair condition.  
AA Analyses  
Cu: 79.50 Zn: 1.67 Pb: 3.64 Sn: 10.46  
Fe: 0.00 Ni: 0.06 Ag: 0.16

Morning Thorpe G90 (2)

Mus: NCM Accession no: MRN 90 Aii  
Overall length: broken  
CM type: Small B 2  
Context: Grave 90  
Assoc: see G90(1)  
Refs: see G90 (1)  
See pair (1) above. Slightly better preserved.  
No chemical analysis available.

Morning Thorpe G90 (3)

Mus: NCM Accession no: MRN 90 Aiii  
Overall length: broken  
CM type: Large B 2  
Context: Grave 90  
Assoc: see G90(1)  
Refs: see G90(1)  
Rev of casting flat, except (slight) at tkb. Semi-circular punch mark.  
AA Analyses  
Cu: 74.00 Zn: 1.48 Pb: 15.63 Sn: 7.18  
Fe: 0.00 Ni: 0.22 Ag: 0.06

Morning Thorpe G91

Mus: NCM Accession no: MRN 91D  
Overall length: 133.3  
CM type: Associated D 5b  
Context: Grave 91  
Assoc: 2 annular brooches, iron knife, 11 beads, CA sheet  
Refs: Green et al 1987, fig 325

Morning Thorpe G91 cont/

Rev of casting flat, except at kbs, bow and foot. Hpl wings not symmetrical. Small triangular punch marks. Catch mended, using CA strip folded over the stump of the old catch. Worn at kbs, bow and foot collar.

AA Analyses

Cu: 84.00	Zn: 0.53	Pb: 3.68	Sn: 10.32
Fe: 0.13	Ni: 0.00	Ag: 0.24	

Morning Thorpe G96

Mus: NCM Accession no: MRN 96F

Overall length: broken

CM type: D 5

Context: Grave 96

Assoc: Pair cross potent small-long, 2 wrist clasp Hines type B19, 16 beads, iron knife

Refs: Green et al 1987, fig 327

Rev of casting flat, except at foot, bow and tkb. Possible casting flaw at nose. Fan at end of animal head may have been reattached in antiquity, using WM ?solder. Animal head detail not symmetrical. Double semi-circular punch marks and segmented ridges. Worn at bow and foot.

AA Analyses

Cu: 84.00	Zn: 2.50	Pb: 4.91	Sn: 8.07
Fe: 0.15	Ni: 0.00	Ag: 0.09	

Morning Thorpe G97

Mus: NCM Accession no: MRN 97A

Overall length: 92.0

CM type: Small B 3

Context: Grave 97 (2 burials)

Assoc: Wrist clasps Hines type B12, iron knife, buckle, ferrule, CA sheet, iron shield-boss etc, spear-head, stud, pot

Refs: Green et al 1987, fig 330

Rev of casting flat, except at foot. Circular punch mark. Segmented ridges. Worn at foot.

AA Analyses

Cu: 85.00	Zn: 0.00	Pb: 3.05	Sn: 8.53
Fe: 0.00	Ni: 0.00	Ag: 0.23	

Morning Thorpe G129

Mus: NCM Accession no: MRN 129A

Overall length: 144.3

CM type: D 5

Context: Grave 129 (possibly two individuals)

Assoc: annular brooch, 20 beads, iron ferrule, spearhead and knife, pot

Refs: Green et al 1987, fig 339

Skbs cast with hpl. Casting flat at rev except at bow, foot and slightly at kbs. Circular, single point and double semi-circular punch marks.

AA Analyses

Cu: 86.00	Zn: 2.19	Pb: 3.37	Sn: 8.12
Fe: 0.35	Ni: 0.00	Ag: 0.17	

Morning Thorpe G131

Mus: NCM Accession no: MRN 131A

Overall length: 119.3

CM type: D 1

Context: Grave 131

Assoc: 2 annular brooches, CA sheet

Refs: Green et al 1987, fig 340

Morning Thorpe G131 cont/

Skbs cast with. Rev of casting flat, except at kbs and foot. Circular and double semi-circular punch marks.

AA Analyses

Cu: 83.00	Zn: 0.61	Pb: 5.54	Sn: 11.25
Fe: 0.00	Ni: 0.00	Ag: 0.17	

Morning Thorpe G133

Mus: NCM Accession no: MRN 133F

Overall length: 130.3

CM type: D 1

Context: Grave 133

Assoc: 2 annular brooches, 12 beads, wrist clasps Hines type B13a, Roman disc-brooch used as pendant, iron staple, knife and key, CA sheet, staples

Refs: Green et al 1987, fig 342

Rev of casting flat, except behind kbs, kb collars, foot. Good condition.

AA Analyses

Cu: 88.00	Zn: 0.32	Pb: 2.37	Sn: 9.93
Fe: 0.00	Ni: 0.00	Ag: 0.12	

Morning Thorpe G153

Mus: NCM Accession no: MRN 153I

Overall length: broken

CM type: Associated with C

Context: Grave 153

Assoc: Pair wrist clasps Hines type C, pair cross pattee small-long brooches, CA ring, buckle, 8 beads

Refs: Green et al 1987, fig 348

Rev of casting hollow at bow and tkb. Rev tkb shows the spike on which it is placed. Iron used for skb attachment. Deep ring and dot decoration. Inlaid strips on hpl. Double semi-circular punch marks. Segmentation of ridges on kb collars. Frag of WM wire inlay on bow spine. Fair condition.

AA Analyses

Cu: 81.00	Zn: 12.38	Pb: 3.52	Sn: 2.32
Fe: 0.45	Ni: 0.00	Ag: 0.12	

Morning Thorpe G160

Mus: NCM Accession no: MRN 160A

Overall length: broken

CM type: D 2

Context: Grave 160

Assoc: pair annular brooches

Refs: Green et al 1987, fig 351

Tall catch, placed on a ridge. Solid casting, rev of tkb recessed. Smalltriangular punch marks. Some surface definition lost through wear.

AA Analyses

Cu: 82.50	Zn: 4.44	Pb: 2.66	Sn: 9.00
Fe: 0.00	Ni: 0.00	Ag: 0.37	

Morning Thorpe G208

Mus: NCM Accession no: MRN 208Di

Overall length: 133.7

CM type: Associated with D 2

Context: Grave 208

Assoc: Pot, pair annular brooches, wrist clasps Hines type B8, B13b, B18b, 34 beads, copper alloy ring, iron knife

Refs: Green et al 1987, fig 360

Rev casting flat, except at tkb and foot. Possible casting flaw at foot.

Morning Thorpe G208 cont/

Edges of hpl wings are notched and sharpened to receive skbs. Skbs on iron pin, deep hollow in casting at rev. Double V with small circle and double semi-circular punch marks. Solid casting, fair condition.

AA Analyses

Cu:	85.00	Zn:	0.09	Pb:	3.20	Sn:	10.59
Fe:	0.00	Ni:	0.00	Ag:	0.14		

Morning Thorpe G209

Mus: NCM Accession no: MRN 209B

Overall length: 130.0

CM type: D 2

Context: Grave 209

Assoc: Pair annular brooches, 2 pairs wrist clasps Hines type B13a, 38 beads, iron knife, ring and key

Refs: Green et al 1987, fig 362

Skbs originally attached using iron axis, then replaced using rivets with WM decoration. Casting at foot not symmetrical. Rev of casting flat, except at kbs and bow. Small triangular and larger double V punch marks. WM strip/wire on foot collar. Worn at bow and tkb. Good condition.

AA Analyses

Cu:	85.00	Zn:	2.00	Pb:	3.57	Sn:	7.98
Fe:	0.47	Ni:	0.00	Ag:	0.21		

Morning Thorpe G253

Mus: NCM Accession no: MRN 253P

Overall length: 119.6

CM type: D 2

Context: Grave 253

Assoc: Wrist clasps Hines type B12 and B7, 2 annular brooches, CA strips, sheet, tag-ends, girdle hanger, belt plate, iron rods, ring, disc, more than 40 beads, pot

Refs: Green et al 1987, fig 380

Skbs separate. Diagonal slashes and small circular punch marks. Much organic remains.

AA Analyses

Cu:	80.00	Zn:	9.39	Pb:	1.82	Sn:	4.50
Fe:	0.27	Ni:	0.00	Ag:	0.29		

Morning Thorpe G346

Mus: NCM Accession no: MRN 346E

Overall length: 92.0

CM type: A 3

Context: Grave 346

Assoc: 2 small-long brooches, 11 beads, tweezers

Refs: Green et al 1987, fig 411

Tkb placed towards the front of hpl. Rev of casting flat. Single point punch marks. Corrosion and textile/threads cover hpl.

AA Analyses

Cu:	86.00	Zn:	0.31	Pb:	4.22	Sn:	8.20
Fe:	0.15	Ni:	0.00	Ag:	0.09		

Morning Thorpe G353 (1)

Mus: NCM Accession no: MRN 353Q

Overall length: 126.6

CM type: Associated with Z 1b

Context: Grave 353

Assoc: 2 other cb, 2 pairs wrist clasps Hines type C3, CA rings, girdle

Morning Thorpe G353 (1) cont/

hanger, pewter ring, plate, strips, iron knife, bar, buckle, rivets, 90 beads

Refs: Green et al 1987 fig 415

Rev of casting flat, except indent at tkb, bow and foot. Pin lug replaced using two CA sheets. Well crafted lappets. Detail on foot not symmetrical. Skbs attached using iron pin and loops on kbs and hpl. Skbs very similar to tkb in decoration. Boss may have WM. Hpl has circular central ?glass setting. Textile on skb. Not very worn.

AA Analyses

Cu:	82.00	Zn:	10.42	Pb:	3.59	Sn:	3.85
Fe:	0.00	Ni:	0.05	Ag:	0.11		

Morning Thorpe G353 (2)

Mus: NCM Accession no: MRN 353R

Overall length: 87.0

CM type: Small B 2

Context: Grave 353

Assoc: See above

Refs: See above

Not examined. Skbs cast with hpl. Kbs appear worn.

No chemical analysis available.

Morning Thorpe G353 (3)

Mus: NCM Accession no: MRN 353S

Overall length: 87.0

CM type: Small B 2

Context: Grave 353

Assoc: see above

Refs: see above

See above.

No chemical analysis available.

Morning Thorpe G358 (1)

Mus: NCM Accession no: MRN 358B

Overall length: broken

CM type: D 3

Context: Grave 358

Assoc: 1 pair and 1 single annular brooches, small-long brooch, 2 pairs wrist clasp Hines type B7, iron knife and buckle, CA buckle, strips, girdle hanger, tag-ends, 63 beads

Refs: Green et al 1987, fig 417

Kbs have 2 collars. Single straight line punch marks. Large ring and dot decoration. Poor surface detail, thoroughly corroded.

No chemical analysis available.

Morning Thorpe G358 (2)

Mus: NCM Accession no: MRN 358Q

Overall length: not measured

CM type: spatulate foot

Context: Grave 358

Assoc: see above

Refs: Green et al 1987, fig 419

Rev of casting flat. Skbs cast with hpl. Poor surface detail.

No chemical analysis available.

Morning Thorpe G362

Mus: NCM Accession no: MRN 362J  
Overall length: 0.0  
CM type: Associated with type A  
Context: Grave 362 (2 burials)  
Assoc: 2 pairs wrist clasp Hines type B13a, CA ring, buckle, strip and sheet, iron knife, axe, stud and spearhead, 56 beads  
Refs: Green et al 1987, fig 424  
Skbs separate, rounded profile, but flattened at the back. Slotted. Poor surface.  
AA Analyses  
Cu: 76.50 Zn: 16.24 Pb: 5.45 Sn: 1.57  
Fe: 0.00 Ni: 0.00 Ag: 0.10

Morning Thorpe G370

Mus: NCM Accession no: MRN 370G  
Overall length: 138.0  
CM type: C 2  
Context: Grave 370  
Assoc: Frags wrist clasp, 2 cruciform-headed small-long brooches, iron key and knives, CA ring and strip, 12 beads, pot stamp decorated.  
Refs: Green et al 1987, fig 429  
Skbs separate, slotted. Rev of casting flat except behind kbs, foot. Hpl wings not symmetrical. Double semi-circular punch mark. Solid casting. Worn at bow and foot.  
AA Analyses  
Cu: 84.50 Zn: 2.52 Pb: 2.50 Sn: 6.81  
Fe: 0.28 Ni: 0.00 Ag: 0.14

Morning Thorpe G371

Mus: NCM Accession no: MRN 371C  
Overall length: 0.0  
CM type: C 1  
Context: Grave 371  
Assoc: Square-headed brooch (Hines type XVIII), 2 annular brooches, iron rivets, rings and buckle, CA sheet, 18 beads  
Refs: Green et al 1987, fig 431  
Rev of casting hollow at tkb, bow, cpl and foot. Foot repaired using ?solder on recut. Double semi-circular punch mark. Fair condition. Textile on hpl.  
AA Analyses  
Cu: 76.50 Zn: 15.32 Pb: 3.32 Sn: 1.72  
Fe: 0.36 Ni: 0.06 Ag: 0.27

Morning Thorpe G393

Mus: NCM Accession no: MRN 393M  
Overall length: incomplete  
CM type: D 5  
Context: Grave 393  
Assoc: 2 annular brooches, girdle hangers, CA loop, tag-end, sheet frags and ring, iron buckle, bar and knife, 76 beads  
Refs: Green et al 1987, fig 446  
Rev of casting flat. Catch detached, apparently soldered on. Two pin lugs. Circular stamps. Good preservation, some textile remains.  
AA Analyses  
Cu: 82.00 Zn: 2.71 Pb: 3.87 Sn: 7.81  
Fe: 0.00 Ni: 0.00 Ag: 0.35

Morning Thorpe G396

Mus: NCM Accession no: MRN 396L  
Overall length: 129.3  
CM type: D 3  
Context: Grave 396  
Assoc: Pair annular brooches, silver ring, 2 pairs wrist clasps Hines type A, girdle hanger, iron knife and ring, 6 beads, stamp-marked pot  
Refs: Green et al, fig 448  
Skbs cast with hpl. Rev of casting flat, except at bow and foot. Circle in triangle and single point punch marks. Fair condition.  
AA Analyses  
Cu: 84.50 Zn: 1.95 Pb: 3.13 Sn: 9.53  
Fe: 0.00 Ni: 0.00 Ag: 0.15

Morning Thorpe G397

Mus: NCM Accession no: MRN 397A  
Overall length: incomplete  
CM type: D 2  
Context: Grave 397  
Assoc: Pair annular brooches, pair wrist clasps, Hines type B7, CA tag-end, wire, sheet, buckle, pair girdle hangers, iron buckle, knife, 13 beads  
Refs: Green et al 1987, fig 449  
Rev of casting flat. Double semi-circular punch marks. Tkb apparently worn.  
AA Analyses  
Cu: 82.50 Zn: 1.68 Pb: 8.75 Sn: 7.14  
Fe: 0.00 Ni: 0.00 Ag: 0.12

Mucking G92 (1)

Mus: BM Lab no: 31  
Overall length: not determined  
CM type: D 5b  
Context: Grave 92  
Assoc: glass claw beaker  
Refs: Excavation report in press  
Not examined. Separate skbs.  
No chemical analysis available.

Mucking G92 (2)

Mus: BM Lab no: 32  
Overall length: not determined  
CM type: D 5b  
Context: Grave 92  
Assoc: see G92 (1)  
Refs: in press  
Not examined. See pair.  
No chemical analysis available.

Mucking G579

Mus: HBMC Lab no: 715210  
Overall length: not determined  
CM type: Associated with large B 2  
Context: Grave 579  
Assoc: iron buckle  
Refs: in press  
Rev of casting flat, except at bow. Single point punch marks. Probably worn at bow, but poor preservation.

Mucking G579 cont/

AA Analyses

Cu:	78.00	Zn:	1.70	Pb:	9.96	Sn:	9.48
Fe:	0.16	Ni:	0.02	Ag:	0.20		

Mucking G825 (1)

Mus: HBMC

Lab no: 727062

Overall length: 79.2

CM type: Small B 2

Context: Grave 825

Assoc: Cb G825(2), copper alloy fragments, iron pin, knife and rivets, shield boss rim, copper alloy bucket bands

Refs: in press

Rev of casting flat. Catch missing. Poor surface condition.

AA Analyses

Cu:	84.50	Zn:	3.02	Pb:	1.53	Sn:	8.60
Fe:	0.14	Ni:	0.01	Ag:	0.11		

Mucking G825 (2)

Mus: HBMC

Lab no: 727063

Overall length: broken

CM type: Associated with small B

Context: Grave 825

Assoc: see G825(1)

Refs: in press

As pair, only less well preserved.

AA Analyses

Cu:	84.00	Zn:	3.08	Pb:	2.20	Sn:	9.76
Fe:	0.12	Ni:	0.02	Ag:	0.14		

Mucking G878 (1)

Mus: HBMC

Lab no: 727044

Overall length: 70.3

CM type: Small B 1

Context: Grave 878

Assoc: Pair G878(2), copper alloy bracelet, 2 rings, spring, wire and coin, iron pin, knife and 2 buckles, applied brooch, beads

Refs: in press

Rev of casting flat, incl bow. Sharp detail.

AA Analyses

Cu:	76.00	Zn:	1.65	Pb:	15.31	Sn:	8.14
Fe:	0.16	Ni:	0.02	Ag:	0.08		

Mucking G878 (2)

Mus: HBMC

Lab no: 727045

Overall length: 71.0

CM type: Small B 1

Context: Grave 878

Assoc: see G878(1)

Refs: in press

As pair.

AA Analyses

Cu:	77.00	Zn:	1.70	Pb:	14.54	Sn:	8.27
Fe:	0.31	Ni:	0.01	Ag:	0.08		

Nassington G17

Mus: Pete  
Overall length: 58.2  
CM type: A 1  
Context: Grave 17  
Accession no: 17  
Reich: *Typ Pritzler*  
Assoc: Small-long brooch (trefoil-headed), 11 beads, comb frags, pierced coin  
Refs: Leeds and Atkinson 1943, *Antiq J XXVII* pl XXV a; Reichstein no 839, *Taf 79,5*  
Bow cross-section solid, with angled front and curved reverse. Catch made as a pocket. Worn.  
No chemical analysis available.

Nassington G28 (1)

Mus: CUM  
Overall length: 135.0  
CM type: D 2  
Context: Grave 28  
Accession no: 74.324  
Assoc: with G28(2) and (3), 2 annular brooches, beads, wrist clasp Hines type B7  
Refs: Leeds and Atkinson 1943, pl XXVI, 28a  
Skbs slotted. Iron skb axis, runs to end of kbs. Edges of hpl wings thinned. Single pin lug on a ridge. Single point punch mark. Textile remains.  
AA Analyses  
Cu: 82.00 Zn: 4.42 Pb: 2.98 Sn: 7.06  
Fe: 0.20 Ni: 0.00 Ag: 0.49

Nassington G28 (2)

Mus: CUM  
Overall length: 145.9  
CM type: D 2  
Context: Grave 28  
Accession no: 74.325  
Assoc: see G28(1)  
Refs: As above, fig 28b  
Rev of casting hollow behind tkb and foot. Hpl wings thinned at edges. Skbs slotted, with iron axis. Double V and single point punch marks. Fair condition, rather pitted.  
AA Analyses  
Cu: 85.00 Zn: 1.24 Pb: 2.92 Sn: 7.08  
Fe: 0.26 Ni: 0.00 Ag: 0.20

Nassington G28 (3)

Mus: CUM  
Overall length: 147.4  
CM type: D 1  
Context: Grave 28  
Accession no: 74.333  
Assoc: see G28(1)  
Refs: See above, pl XXVII, 28  
Two pin lugs. Two concentric circle punch marks. Rhs skb reattached using iron rivet, rhs now missing.  
AA Analyses  
Cu: 85.50 Zn: 5.90 Pb: 2.51 Sn: 5.90  
Fe: 0.29 Ni: 0.00 Ag: 0.29

Nassington G32

Mus: Pete Accession no: L1039/32  
Overall length: broken Weight (g): 54  
CM type: D 2  
Context: Grave 32  
Assoc: small-long brooch (square-headed), annular brooch, mount of bucket  
Refs: Leeds and Atkinson, pl XXVII, 32  
Two pin lugs, placed low down. Small catch on ridge. Rev of casting flat, except behind kbs. Catch detail poor. Small circular punch mark. Worn.  
No chemical analysis available.

Nassington 1

Mus: CUM Accession no: 74.321 A  
Overall length: 109.3  
CM type: Large B 2  
Context: Grave or area P  
Assoc: 2 small-long brooches (trefoil-headed), bone comb  
Refs: Leeds and Atkinson 1943, pl XXV, Pa  
Skbs cast with hpl. Solid casting, except for flaw at animal head. Possibly hole drilled through end of animal head. Catch broken.  
AA Analyses  
Cu: 78.00 Zn: 5.50 Pb: 11.48 Sn: 5.83  
Fe: 0.49 Ni: 0.00 Ag: 0.15

Nassington 2

Mus: CUM Accession no: 74.323  
Overall length: 147.5  
CM type: D 1  
Context: Grave or area M  
Assoc: 2 buckles, disc and tweezers  
Refs: Leeds and Atkinson, pl XXVII, M  
Skbs cast with hpl. Two pin lugs. Circular and single point punch marks.  
Mended at foot.  
AA Analyses  
Cu: 84.50 Zn: 3.42 Pb: 3.01 Sn: 5.43  
Fe: 0.16 Ni: 0.00 Ag: 0.69

Newnham Croft, Cambs 1

Mus: CUM Accession no: 36.358  
Overall length: 134.4  
CM type: Z 2a Leeds and Pocock: Vd  
Context: Grave, excav 1910  
Assoc: see pair 2 and cb 3  
Refs: Proc Camb Antiq Soc XXXVIII 1937, pl V, a; Leeds and Pocock, 18  
Rev of casting flat. Circular punch mark. Knob on bow worn smooth.  
AA Analyses  
Cu: 82.00 Zn: 0.82 Pb: 3.69 Sn: 10.21  
Fe: 0.13 Ni: 0.00 Ag: 0.09

Newnham, Croft Cambs 2

Mus: CUM Accession no: 36.358  
Overall length: 135.1  
CM type: Z 2a Leeds and Pocock: Vd  
Context: Grave, excav 1910  
Assoc: see pair  
Refs: see above  
As above. Similar non-symmetrical casting.

Newnham Croft, Cambs 2 cont/

AA Analyses

Cu:	84.50	Zn:	1.80	Pb:	2.57	Sn:	10.71
Fe:	0.09	Ni:	0.01	Ag:	0.13		

Newnham Croft, Cambs 3

Mus: Unknown                      Accession no:  
Overall length: not determined  
CM type: D 1  
Context: Grave  
Assoc: See 1 and 2, above  
Refs: Fox, 244, pl XXVII,5; Jessup 1950, Anglo-Saxon Jewellery, 105, pl XII  
(lower)  
Not examined. Circular punch marks. Looks in good condition  
No chemical analysis available.

Newnham, Northants 1

Mus: North                                  Accession no: D191  
Overall length: 156.0  
CM type: Z 3                                  Åberg: V1  
Context: none  
Assoc: none  
Refs: Leeds 1949, 87  
Catch on long ridge, marked with 3 slashes. Semi-circular punch mark.  
Ridges notched. Worn.  
No chemical analysis available.

North Luffenham

Mus: Not known                              Accession no:  
Overall length: not determined  
CM type: Z 3                                  Leeds and Pocock: Vb  
Context: none  
Assoc: none  
Refs: Leeds and Pocock 1971, 17  
Not examined.  
No chemical analysis available.

North Owersby

Mus: Lin                                      Accession no: 89.82  
Overall length: 77.8  
CM type: Small B 1                              Åberg: II  
Context: none  
Assoc: none  
Ref: Lincoln Museum Association 4, 1969, 177, fig 4.3  
Rev of casting flat, except at bow. Poor condition. Worn.  
Probe analyses  
Zn: 1.70                      Pb: 3.84                      Sn: 10.81  
Fe: 0.14                      Ni: 0.04                      Ag: 0.14                      Au: 0.05  
As: 0.07                      Sb: 0.06                      Bi: 0.00                      Co: 0.00

Norton-on-Tees

Mus: ? Accession no: ?  
Overall length: not determined  
CM type: Associated B  
Context: Grave  
Assoc: 3 glass beads, 1 amber bead, frag CA clasp, 2 sheet frags, CA girdle hanger  
Refs: Vyner B E, Med Arch 28, 1984, 173-5  
Not examined. Tall catch. Skbs cast with hpl. Iron pin.  
No chemical analysis available.

Northwold

Mus: BM Accession no: 53,8-15,48  
Overall length: 133.4 Åberg: IV  
CM type: D 5  
Context: none  
Assoc: none  
Refs: Åberg no 130  
Skbs separate, with front tabs. Slotted with iron skb axis. Rev of casting flat, except behind kbs, bow and foot. Double V punch mark and a curved one, unclear design. Single point punch mark. Fair condition. Skbs reattached recently.  
AA Analyses  
Cu: 84.00 Zn: 0.25 Pb: 2.43 Sn: 13.19  
Fe: 0.09 Ni: 0.03 Ag: 0.11

Pakenham

Mus: IPS Accession no: 957-177  
Overall length: 138.8 Weight (g): 77  
CM type: C 1  
Context: none  
Assoc: none  
Refs: none  
Skbs separate. Rev of casting hollow at bow, tkb, foot. Casting rough at rev of bow. Semi-circular punch mark. Worn at bow.  
No chemical analysis available.

Partney 1

Mus: Lin Accession no: 39.50  
Overall length: broken Weight (g): 66  
CM type: Z 1a Leeds and Pocock: Ve  
Context: Family grave  
Assoc: not known  
Refs: Leeds and Pocock, 18  
Rev of casting flat except bow. Catch on a long ridge. Circular punch mark. Gilding and WM on foot and ? on bow. Worn gilding.  
No chemical analysis available.

Partney 2

Mus: Lin Accession no: 40.50  
Overall length: broken Åberg: IVa  
CM type: D 6  
Context: Family grave  
Assoc: ?see above  
Refs: Antiq J XXXVIII, 1954, 229-32  
Edges of hpl thinned. Very hollow casting rev of tkb and collar, also at bow. Working marks on hpl and cpl. Pierced holes on zoom nostrils. Badly cleaned, but probably worn originally. No chemical analysis available.



Rudstone 2

Mus: BM                                  Accession no: 76,2-12,9  
Overall length: 93.4  
CM type: A 2                              Åberg: II                              Reich: Typ Midlum  
Context: none  
Assoc: see 1, above  
Refs: Reichstein no 884, Taf 87,4  
As above, only slightly more worn.  
AA Analyses  
Cu: 86.00                              Zn: 0.00                              Pb: 1.74                              Sn: 12.06  
Fe: 0.12                                Ni: 0.04                              Ag: 0.16

Rugby 1

Mus:    Accession no:  
Overall length:  
CM type: A3  
Context: none  
Assoc: none  
Refs: Akerman 1855, pl XVIII,2  
Not examined.  
No chemical analysis available.

Rugby 2

Mus:    Accession no:  
Overall length:  
CM type: Large B 2  
Context: none  
Assoc: none  
Refs: Akerman 1855, pl XVIII,5  
Not examined. Tkbs separate and have tabs.  
No chemical analysis available

Ruskington G1

Mus: Lin                                      Accession no: 13.81  
Overall length: 116.2                      Weight (g): 54  
CM type: C 1                                Åberg: IV  
Context: Grave 1, 1935 excav  
Assoc: 2 swastika brooches, decorated sherd  
Refs: Hawkes, Arch J CIII 1946, Pl X, Di  
Skbs separate. Rev of tkb hollow. Small catch on a ridge. Casting flaw at catch. Poor surface.  
No chemical analysis available.

Ruskington G11

Mus: Lin                                      Accession no: 23.75  
Overall length: 138.1                      Weight (g): 62  
CM type: D 6a                                Leeds and Pocock: IVb  
Context: Grave 11, 1975 excav  
Assoc: 2 annular brooches, wrist clasp Hines type B18f, CA rings, beads, buckle, purse fittings, tags, iron plate, ring, key and knife  
Refs: Lincoln records.  
Rev of casting flat, except at bow. Holes drilled through kb and lappets.  
Catch short and upright. Circle-in-triangle punch marks. Single point punch marks. Worn.  
No chemical analysis available.

Ruskington G13

Mus: Lin  
Overall length: 136.0      Accession no: 83.82  
Weight (g): 92  
CM type: D 2      Åberg: IV  
Context: Grave 13  
Assoc: iron knife, amber and glass beads  
Refs: Hawkes op cit, pl X D4  
Rev of casting hollow at kbs, bow and foot. Pin lug rather upright. Working marks near catches. Ring and dot decoration. Single point punch marks. Good condition.  
Probe analyses  
Zn: 2.31      Pb: 0.28      Sn: 8.31  
Fe: 0.13      Ni: 0.03      Ag: 0.14      Au: 0.12  
As: 0.00      Sb: 0.03      Bi: 0.00      Co: 0.00

Ruskington 1

Mus: Lin  
Overall length: 112.8      Accession no: 7.36  
Weight (g): 50  
CM type: D 5      Åberg: IV  
Context: Gravel working  
Assoc: not clear  
Refs: none  
Edges of hpl thinned. Rev of casting flat, except at tkb, bow. Skbs slotted. V punch marks. Ring and dot decoration. Poor surface.  
Probe analyses  
Zn: 9.81      Pb: 3.97      Sn: 2.47  
Fe: 0.36      Ni: 0.03      Ag: 0.12      Au: 0.00  
As: 0.25      Sb: 0.07      Bi: 0.01      Co: 0.00

Ruskington 2

Mus: Lin  
Overall length: 131.0      Accession no: 12.56  
Weight (g): 90  
CM type: Z 1b      Leeds and Pocock: V  
Context: none  
Assoc: none  
Refs: none  
Two pin lugs. Rev of casting flat, except for occasional flaws and pittings. Short upright catch. Gilding and WM. Gilding worn. Worn at bow.  
Probe analyses  
Zn: 1.12      Pb: 1.23      Sn: 7.66  
Fe: 0.22      Ni: 0.03      Ag: 0.22      Au: 0.03  
As: 0.07      Sb: 0.08      Bi: 0.00      Co: 0.00

Ruskington 3

Mus: Lin  
Overall length: 118.5      Accession no: 15.36  
Weight (g): 66  
CM type: D 5b      Åberg: IV  
Context: none  
Assoc: none  
Refs: none  
Rev of casting hollow at tkb, skbs, bow. Small pin lug. Small upright catch. Double V punch mark. Notching on ridges. Worn.  
Probe analyses  
Zn: 7.14      Pb: 2.41      Sn: 7.86  
Fe: 0.19      Ni: 0.02      Ag: 0.30      Au: 0.00  
As: 0.00      Sb: 0.11      Bi: 0.00      Co: 0.00

Ruskington 4

Mus: Lin  
Overall length: 130.0  
CM type: D 2  
Context: none  
Assoc: none  
Refs: none  
Accession no: 17.36  
Weight (g): 76  
Åberg: IV  
Rev of casting hollow at bow and kbs. Catch on a ridge. Single point punch marks. Worn.  
Probe analyses  
Zn: 2.53 Pb: 6.10 Sn: 7.46  
Fe: 0.12 Ni: 0.04 Ag: 0.16 Au: 0.07  
As: 0.05 Sb: 0.04 Bi: 0.01 Co: 0.01

Ruskington 5

Mus: Lin  
Overall length: 120.5  
CM type: D 2  
Context: none  
Assoc: none  
Refs: none  
Accession no: 35.56  
Weight (g): 50  
Åberg: IV  
Tkb on a spike. Skbs on iron axis. Rev of bow hollow. Working marks on rev of cpl. Short line punch marks. Double V punch marks. Worn.  
Probe analyses  
Zn: 2.63 Pb: 2.40 Sn: 6.06  
Fe: 0.24 Ni: 0.04 Ag: 0.22 Au: 0.00  
As: 0.19 Sb: 0.08 Bi: 0.01 Co: 0.01

Ruskington 6

Mus: Lin  
Overall length: 126.1  
CM type: Z 2b  
Context: none  
Assoc: none  
Refs: Hawkes, Arch J CIII, 1946, 90; Leeds and Pocock, 17  
Accession no: 82.82  
Weight (g): 66  
Leeds and Pocock: Vb  
Rev of casting flat. Skbs not symmetrical. Two pin lugs. Short catch on a slight ridge. Some problems in casting? Good condition.  
Probe analyses  
Zn: 3.56 Pb: 2.02 Sn: 6.95  
Fe: 0.18 Ni: 0.07 Ag: 0.23 Au: 0.05  
As: 0.10 Sb: 0.06 Bi: 0.00 Co: 0.01



Searby

Mus: Lin  
Overall length: 124.6  
CM type: D 2  
Context: Sand pit  
Assoc: none  
Refs: Arch J 21, 1864, 264-5  
Rev of casting flat, except at bow. Hole through nose of animal head, with angled profile from both directions, possibly for attaching decorative element. Rhs skb cast higher than lhs. Iron pin. Dark corrosion.  
Probe analysis  
Zn: 3.70 Pb: 2.96 Sn: 7.34  
Fe: 0.21 Ni: 0.04 Ag: 0.12 Au: 0.00  
As: 0.32 Sb: 0.05 Bi: 0.00 Co: 0.00

Sewerby G8

Mus: Sewerby Hall  
Overall length: 126.0  
CM type: C 2  
Context: Grave 8  
Assoc: 2 annular brooches (rounded cross-section), iron blade, beads  
Refs: Hirst 1985, fig 34,2  
Not examined. Rhs skb separate, different decoration to lhs example, probably a replacement. Lhs skb has lip over hpl wing. Triangular punch mark with line inside. Single and double point punch marks.  
No chemical analysis available.

Sewerby G12 (1)

Mus: Sewerby Hall  
Overall length: 112  
CM Type: Large B 1  
Context: Grave 12  
Assoc: total of 3 cb, 1 small-long, beads, iron blade, wire  
Refs: Hirst 1985 fig 36, 4  
Not examined. Skbs cast with hpl. Double ring and dot punch mark. Stepped catch.  
Worn at foot.  
No chemical analysis available.

Sewerby G12 (2)

Mus: Sewerby Hall  
Overall length: 107  
CM type: D 2  
Context: Grave 12  
Assoc: See above  
Refs: Hirst 1985 fig 36,2  
Not examined. Semi-circular punch mark with triangle inside. Also double row of points. Short upright catch.  
No chemical analysis available.



Sleaford G13

Mus: BM Accession no: 83,4-1,36  
Overall length: 137.3  
CM type: C 1 Åberg: III  
Context: Grave 13  
Assoc: Fragment of another cb?  
Refs: Thomas G W 1887, Archaeologia L, 389  
Skbs cast unevenly. Rev of casting flat, except hollow behind bow. Iron pin remains. Kbs worn.  
AA analysis:  
Cu: 83.50 Zn: 1.80 Pb: 3.92 Sn: 9.10  
Fe: 0.49 Ni: 0.03 Ag: 0.22

Sleaford G49

Mus: BM Accession no: 83,4-1,85  
Overall length: 143.7  
CM type: D 6a Åberg: IV  
Context: Grave 49  
Assoc: Iron buckles and knife, 12 beads, very large cist  
Refs: Thomas *op cit*, 391  
Casting hollow at rev of bow and tkb. Tiny semi-circular punch marks. Some wear indicated.  
AA analysis:  
Cu: 82.50 Zn: 0.13 Pb: 2.59 Sn: 10.22  
Fe: 0.23 Ni: 0.02 Ag: 0.11

Sleaford G50

Mus: BM Accession no: 83,4-1,90  
Overall length: 167.0  
CM type: Z 1a Leeds and Pocock: Vgii  
Context: Grave 50  
Assoc: small-long brooch, 130 beads, bone ring, CA wire, pendant, silver ring, amber and glass bracelets  
Refs: Plate 1; Thomas *op cit*, 391, plate XXIII, fig 1; Åberg no 233, fig 86; Leeds and Pocock, 19  
Rev of casting flat. Two pin lugs, iron pin. Two very poor mends at the cpl and foot area, one of better quality at animal head. Round and triangular bosses, set with blue and red stones/glass. Circular, triangular and V shaped punch marks. Gilding of good quality. Preservation fair.  
AA analysis:  
Cu: 83.50 Zn: 3.93 Pb: 2.31 Sn: 7.49  
Fe: 0.22 Ni: 0.02 Ag: 0.30

Sleaford G66

Mus: BM Accession no: 83,4-1,119  
Overall length: 79.8  
CM type: Small B 1 Åberg: II Reich: Midlum  
Context: Grave 66  
Assoc: Child, 2 CA wire bracelets, annular brooch, ear-ring, 13 beads, small-long brooch  
Refs: Thomas *op cit*, 392; Åberg no 64, fig 57; Reichstein no 825 Taf 87,5  
Neatly executed. Catch set slightly to one side. Good glossy surface in most places.  
AA analysis:  
Cu: 87.50 Zn: 0.28 Pb: 5.07 Sn: 7.66  
Fe: 0.11 Ni: 0.03 Ag: 0.16

Sleaford G79

Mus: BM Accession no: 83,4-1,140  
 Overall length: 130.0 Åberg: IV  
 CM type: D 2  
 Context: Grave 79  
 Assoc: Small annular brooch, 5 beads  
 Refs: Thomas *op cit*, 393  
 Rather solid casting. Rev flat, except behind foot. Textile remains in iron of pin lug. V punch mark with small circle at apex. Surface good.  
 AA analysis:  

Cu: 85.00	Zn: 2.84	Pb: 4.00	Sn: 6.58
Fe: 0.27	Ni: 0.03	Ag: 0.20	

 Probe analysis  

Zn: 2.04	Pb: 1.15	Sn: 7.56	
Fe: 0.14	Ni: 0.05	Ag: 0.20	Au: 0.00
As: 0.09	Sb: 0.11	Bi: 0.04	Co: 0.00

Sleaford G80

Mus: BM Accession no: 83,4-1,143  
 Overall length: 135.3 Åberg: IV  
 CM type: D 4  
 Context: Grave 80  
 Assoc: Flat annular brooch, 19 beads, 3 pierced coins, 1 wrist clasp Hines type B14b  
 Refs: Thomas *op cit*, 393  
 Pin lug on slight ridge. Double semi-circular and single point punch marks. Poor condition.  
 AA analysis:  

Cu: 89.00	Zn: 0.94	Pb: 4.24	Sn: 5.55
Fe: 0.14	Ni: 0.03	Ag: 0.16	

Sleaford G86

Mus: BM Accession no: 83,4-1,160  
 Overall length: 138.3 Leeds and Pocock: Vc  
 CM type: Z 1b  
 Context: Grave 86  
 Assoc: CA annular brooches, 112 beads, girdle hanger, iron knife, buckle and CA tag. wrist clasp Hines type B17a, CA strips  
 Refs: Thomas *op cit*, 393; Leeds and Pocock, 17 (who attribute the brooch to G95, contra the BM catalog and Brown)  
 Flat rev to casting. Catch on a ridge. Iron on pin lug with textile impression. V punch mark, possible ring and dot decoration. Severe cleaning.  
 AA analysis:  

Cu: 85.50	Zn: 2.58	Pb: 2.45	Sn: 6.54
Fe: 0.30	Ni: 0.05	Ag: 0.24	

Sleaford G116

Mus: BM Accession no: 83, 4-1, 207  
 Overall length: 147.1 Leeds and Pocock: Vc  
 CM type: Z 1b  
 Context: Grave 116  
 Assoc: 2 annular brooches, circular disc, gilt and decorated wrist clasps Hines type B12, iron ring and knife  
 Refs: Fig 2.54; Thomas *op cit*, 395-6; Åberg no 236; Leeds and Pocock, 17  
 Gilded and silvered (tested by XRF analysis). Silver appears like foil in places. Gilding eroded. Single point punch marks. Probably two pin lugs. Broken and mended at bow, using iron rivets.

Sleaford G116 cont/

AA analysis:

Cu: 87.00      Zn: 0.01      Pb: 1.67      Sn: 9.69  
Fe: 0.06      Ni: 0.03      Ag: 0.14

Probe analysis

Zn: 0.03      Pb: 1.50      Sn: 9.98  
Fe: 0.02      Ni: 0.05      Ag: 0.14      Au: 0.00  
As: 0.17      Sb: 0.04      Bi: 0.01      Co: 0.00

Sleaford G123

Mus: BM

Accession no: 83, 4-1, 227

Overall length: 79.4

CM type: Small B 2

Åberg: III

Context: Grave 123

Assoc: 2 annular brooches, 2 pairs of wrist clasps Hines type B13b, iron frag

Refs: Thomas *op cit*, 396

Rev of casting flat. Iron pin. Possibly replacement catch. Kbs worn but bow spine quite sharp.

AA analysis:

Cu: 71.50      Zn: 0.17      Pb: 15.20      Sn: 8.57  
Fe: 0.17      Ni: 0.00      Ag: 0.08

Sleaford G143

Mus: BM

Accession no: 83,4-1,270

Overall length: 130.8

CM type: Z 1b

Leeds and Pocock: Vc

Context: Grave 143

Assoc: 2 female burials, one with square-headed small-long brooch only, the other with this brooch, a small-long brooch, wrist clasp Hines type B7, 2 silver discs and 'bulla' on necklace of 271 beads, arm rings, CA bracelet and rings, girdle hanger, ivory purse frame, iron buckle and knife

Refs: Fig 2.54; Thomas *op cit*, 398; Åberg 234, fig 84; Leeds and Pocock, 17

Rev of casting flat. Iron remains on two pin lugs. Swastika design appears to be scratched on after casting. Single point punch marks. Gilding and silvering (tested by XRF analysis), both rather worn. Broken and mended at foot.

AA analysis:

Cu: 85.50      Zn: 5.49      Pb: 3.13      Sn: 4.18  
Fe: 0.14      Ni: 0.02      Ag: 0.67

Probe analysis

Zn: 6.26      Pb: 1.22      Sn: 4.36  
Fe: 0.13      Ni: 0.00      Ag: 0.62      Au: 0.00  
As: 0.21      Sb: 0.10      Bi: 0.00      Co: 0.00

Sleaford G155

Mus: BM

Accession no: 83,4-1,321

Overall length: 84.3

CM type: Small B 2

Åberg: III

Reich: *Typ* Stratford

Context: Grave 155

Assoc: small-long, wrist clasps Hines types A and B7, 7 beads, iron buckle

Refs: Thomas *op cit*, 399; Reichstein no 826, Taf 93, 4

Rev of casting indented behind kbs, bow and foot. Iron corrosion.

Semi-circular punch marks. Worn at kbs and bow.

AA analysis:

Cu: 81.00      Zn: 0.09      Pb: 4.66      Sn: 11.70  
Fe: 0.06      Ni: 0.02      Ag: 0.08

Sleaford G158

Mus: BM Accession no: 83,4-1,327  
 Overall length: 126.3  
 CM type: D 4 Åberg: IV  
 Context: Grave 158  
 Assoc: With G159, 2 females in total, one buried with this cb, 2 annular brooches, wrist clasps Hines type B7, 95 beads, girdle hanger, iron keys? bucket pendant, the other with 2 annular brooches, 46 beads  
 Refs: Thomas *op cit*, 399;  
 Iron corrosion over pin lug(s). Casting is lopsided, see esp. lappets. Area of fan at animal head recessed, possibly for an applied plate. Rhs skb worn at lower edge.  
 AA analysis:  
 Cu: 88.00 Zn: 1.38 Pb: 2.32 Sn: 7.27  
 Fe: 0.21 Ni: 0.04 Ag: 0.14

Sleaford G169

Mus: BM Accession no: 83,4-1,363  
 Overall length: 128.7  
 CM type: Associated with Z1 and Z2 Leeds and Pocock: Vb  
 Context: Grave 169  
 Assoc: 2 small-long brooches, 43 beads, iron buckle and knife, urn  
 Refs: Fig 2.55; Plate 5; Thomas *op cit*, 400; Åberg no 232, fig 85; Leeds and Pocock, pl IB  
 Rev of casting flat. Two pin lugs, set to one side of hpl. Iron corrosion in pin lugs and catch. Fine gilding and silvering (tested by XRF analysis). Rectangular boss at foot set with ?garnet. Single point, semi-circular and triangular punch marks. Short straight line punch marks. Decoration remains crisp.  
 AA analysis:  
 Cu: 84.00 Zn: 3.75 Pb: 4.28 Sn: 6.38  
 Fe: 0.33 Ni: 0.03 Ag: 0.29

Sleaford G182 (1)

Mus: BM Accession no: 83,4-1,385  
 Overall length: 93.9  
 CM type: Assoc. small type B Åberg: II Reich: Goutum  
 Context: Grave 182  
 Assoc: cb (1) (see below), flat swastika-style pierced annular brooches, iron blade, urn  
 Refs: Thomas *op cit*, 401; Reichstein no 828, Taf 119, 4  
 Skbs cast with np1. Rev of casting slightly indented at rev of tkb. Poorly preserved.  
 AA analysis:  
 Cu: 79.00 Zn: 1.48 Pb: 5.07 Sn: 9.12  
 Fe: 0.11 Ni: 0.02 Ag: 0.18

Sleaford G182 (2)

Mus: BM Accession no: 83,4-1,386  
 Overall length: 92.4  
 CM type: Small B 3 Åberg: III Reich: Goutum  
 Context: Grave 182  
 Assoc: see above  
 Refs: Fig 2.14; Reichstein no 828, Taf 119, 6  
 Better surface than other brooch. Indent at rev of tkb. Iron pin for skbs. Grey surface covering. Worn at tkb.  
 AA analysis:  
 Cu: 82.00 Zn: 2.17 Pb: 5.42 Sn: 9.65  
 Fe: 0.29 Ni: 0.02 Ag: 0.18

Sleaford G189

Mus: BM  
Overall length: broken  
CM type: Associated C  
Context: Grave 189  
Assoc: none  
Refs: Thomas *op cit*, 401;  
Pin lug on a ridge. Tkb hollow, skbs prob attached on iron axis. Semi-circular or triangular punch marks. Poor condition, but bow appears to have been worn.  
AA analysis:  
Cu: 83.00 Zn: 1.54 Pb: 2.50 Sn: 12.07  
Fe: 0.07 Ni: 0.02 Ag: 0.09

Accession no: 83,4-1,391

Åberg: II OR III

Sleaford G205 (1)

Mus: BM  
Overall length: 88.2  
CM type: Small B 2  
Context: Grave 205  
Assoc: cb ((2) see below), annular brooch, pair of wrist clasps Hines type B 18e (?gilded), CA ring, 43 beads, iron buckle, CA tag  
Refs: Thomas *op cit*, 402; Reichstein no 829, Taf 116, 1  
Flat rev of casting. Double semi-circular punch marks. Worn at tkb, bow and lower edge of rhs skb. Also elsewhere.  
AA analysis:  
Cu: 77.00 Zn: 1.75 Pb: 3.17 Sn: 9.47  
Fe: 0.25 Ni: 0.02 Ag: 0.11

Accession no: 83,4-1,433

Åberg: II Reich: *Typ Girton*

Sleaford G205 (2)

Mus: BM  
Overall length: 96.5  
CM type: Small B 2  
Context: Grave 205  
Assoc: see above  
Refs: Reichstein no 829, Taf 116, 3  
Longer than other cb from this grave. Reverse of casting flat except at kbs, bow and foot. Iron on pin lug. Catch entirely missing, no sign of breakage etc. Worn but surface mostly rough.  
AA analysis:  
Cu: 83.50 Zn: 5.17 Pb: 3.06 Sn: 8.05  
Fe: 0.25 Ni: 0.04 Ag: 0.54

Accession no: 83,4-1,434

Åberg: II Reich: *Typ Girton*

Sleaford G223

Mus: BM  
Overall length: 114.7  
CM type: D 1  
Context: Grave 223  
Assoc: Annular brooches, 42 beads.  
Refs: Fig 2.25; Thomas *op cit*, 403;  
Rev of casting flat. Two pin lugs, iron corrosion. Semi-circular punch marks with circle within. Triangular punch mark with circle within. Segmentation of ridges on nose. Good condition.  
AA analysis:  
Cu: 84.00 Zn: 1.17 Pb: 7.83 Sn: 8.27  
Fe: 0.19 Ni: 0.12 Ag: 0.14  
Probe analysis  
Zn: 1.16 Pb: 4.21 Sn: 8.08  
Fe: 0.21 Ni: 0.04 Ag: 0.14 Au: 0.00  
As: 0.14 Sb: 0.07 Bi: 0.00 Co: 0.00

Accession no: 83,4-1,478

Åberg: IV

Sleaford G233

Mus: BM Accession no: 83,4-1,513  
Overall length: 125.6  
CM type: D 5 Åberg: IV  
Context: Grave 233  
Assoc: wrist clasp Hines type B14b, double-ended brooch, annular brooch, 19 beads, CA strap for knife and keys  
Refs: Thomas *op cit*, 404;  
Casting rather flat and thin, hollow at reverse of kbs, bow and foot. Iron remains at pin lug. Semi-circular punch marks. Very poor surface.  
AA analysis:  
Cu: 74.00 Zn: 5.22 Pb: 2.85 Sn: 8.76  
Fe: 0.64 Ni: 0.00 Ag: 0.21

Sleaford 1

Mus: Lin Accession no: 85.5  
Overall length: more than 140.0 Weight (g): 62  
CM type: D 3  
Context: Stray find at Bass Maltings  
Assoc: none  
Refs: none  
Miscast at foot. Two pin lugs. Rev of casting flat except at foot and kbs. Rev of casting untidy at skb. Semi-circular punch marks. Poor preservation, corroding. Worn at skbs and bow.  
No chemical analysis available.

Snape 0420

Mus: Suffolk Arch. Unit Accession no: 1282  
Overall length: 145  
CM type: Associated with Z 1  
Context: Grave 0420  
Assoc: To follow  
Refs: ex W Filmer-Sankey, Snape Historical Trust, EAA volume (forth), for brooch design see Akerman 1855, pl XL (Sporle brooch).  
Not examined. Large ornate form. Single pin lug, short catch.  
No chemical analysis available.

Snape 0327 (1)

Mus: As above Accession no: 0817 or 0818  
Overall length: 97  
CM type: Small C 2  
Context: Grave 0327  
Assoc: 3 cb altogether, with Snape 3 and 4  
Refs: X-ray NX 2916 ex William Filmer-Sankey  
Irregularly placed semi-circular punch marks. Loop at end of animal head. Tkb has extra collar. Hollow rev of casting at bow. Skb attached.  
No chemical analysis available.

Snape 0327 (2)

Mus: As above Accession no: 0817 or 0818  
Overall length: 95  
CM type: Small C 2  
Context: Grave 0327  
Assoc: see 2  
Refs: X-ray NX2916 ex W Filmer-Sankey  
Pair to (2), possible casting flaw at foot. Loop at foot broken  
No chemical analysis available.



South Willingham

Mus: BM  
Overall length: 108.6  
CM type: Large B 3  
Context: none  
Assoc: none  
Refs: Åberg no 100  
Rev of tkb projects past the hpl. Rev of tkb and foot are indented.  
Possible segmented Y punch marks. Circular and single point punch marks.  
Very poor surface condition.  
AA analysis:  
Cu: 84.50 Zn: 4.57 Pb: 3.58 Sn: 7.51  
Fe: 0.24 Ni: 0.03 Ag: 0.36

Accession no: 76,2-12,11

Åberg: III

South Yorkshire

Mus: Dr Mitchiners collection  
Overall length: broken  
CM type: Small type B  
Context: metal detector find  
Assoc: none  
Refs: none  
Pin lug on a ridge which runs to the cpl. Rev of casting indented at tkb.  
Double V and double semi-circular punch mark. Worn at bow and tkb.  
AA analysis:  
Cu: 83.00 Zn: 12.00 Pb: 2.61 Sn: 3.30  
Fe: 0.48 Ni: 0.00 Ag: 0.25

Accession no: 1003

Spong Hill C62

Mus: NCM  
Overall length: not determined  
CM type: B or C  
Context: Urn 62  
Assoc: 1 or 2 cb?, 4 glass beads, plain urn, ivory fragments  
Refs: Vol I, fig 109  
Several pieces. Hpl with double V punch marks. Casting hollow behind tkb.  
Associated bow is slightly hollow at rev. Skbs possibly associated have semi-circular cross-section with hole pierced straight through. Associated cb or small-long brooch frag, cpl only, flat at rev of casting.  
No chemical analysis available.

Accession no: 62/1

Åberg: Reich:

Spong Hill C1034

Mus: NCM  
Overall length: not determined  
CM type: Associated with A 2 or A 3  
Context: Urn 1034  
Assoc: Pot 4 lines of chevrons, beads. fragments of several cb  
Refs: Excavation report, Vol I, fig 109  
Hpl only, narrow wings, circular kbs.  
Probe analysis  
Zn: 0.03 Pb: 1.13 Sn: 12.99  
Fe: 0.08 Ni: 0.00 Ag: 0.07 Au: 0.02  
As: 0.00 Sb: 0.02 Bi: 0.01 Co: 0.00

Accession no: 1034/1

Spong Hill C1072

Mus: NCM Accession no: 1072/1  
Overall length: 0.0  
CM type: Small B 1 or possibly A2  
Context: Urn 1072  
Assoc: Plain pot, 30-40 glass beads  
Refs: Vol I, fig 107  
Foot only, rev of casting flat.  
Probe analysis  
Zn: 0.34 Pb: 0.43 Sn: 12.41  
Fe: 0.36 Ni: 0.02 Ag: 0.17 Au: 0.02  
As: 0.25 Sb: 0.02 Bi: 0.03 Co: 0.00

Spong Hill C1168 (1)

Mus: NCM Accession no: 1168/1  
Overall length: not determined  
CM type: Small B 1 or possibly type A2  
Context: Urn 1168  
Assoc: Three other fragments of cruciform, plain pot, iron pin, barred zoomorphic comb  
Refs: Vol I, fig 107; Vol II, fig 195  
Foot only, solid casting, rev of casting flat or slightly convex. Catch runs to end, but is only functional up to the eye level.  
Probe analysis  
Zn: 16.10 Pb: 3.50 Sn: 4.03  
Fe: 0.45 Ni: 0.04 Ag: 0.10 Au: 0.04  
As: 0.17 Sb: 0.06 Bi: 0.01 Co: 0.00

Spong Hill C1168 (2)

Mus: NCM Accession no: 1168/2  
Overall length: not determined  
CM type: Associated with B  
Context: Urn 1168  
Assoc: See above  
Refs: Vol I, fig 108 (left); Vol II, fig 195 (centre of lower line)  
Hpl only, rev of casting flat, iron pin.  
Probe analysis  
Zn: 0.38 Pb: 0.80 Sn: 12.76  
Fe: 0.07 Ni: 0.03 Ag: 0.12 Au: 0.05  
As: 0.07 Sb: 0.07 Bi: 0.01 Co: 0.00

Spong Hill C1168 (3)

Mus: NCM Accession no: 1168/3  
Overall length: 0.0  
CM type: Associated with B  
Context: Urn 1168  
Assoc: see above  
Refs: Vol I, fig 108 (centre); Vol II, fig 195 (right of upper line)  
Similar to above (2).  
No chemical analysis available.

Spong Hill C1168 (4)

Mus: NCM Accession no: 1168/4  
Overall length: not determined  
CM type: A or B  
Context: Urn 1168  
Assoc: see above  
Refs: Vol I, fig 108 (right); Vol II, fig 195 (left on lower line)  
Foot only.  
No chemical analysis available.

Spong Hill C1176

Mus: NCM Accession no: 1176/2  
Overall length: not determined  
CM type: Associated A or B  
Context: Urn 1176  
Assoc: Plain pot, sheet frags, iron blade  
Refs: Vol I, fig 107  
Foot only, reverse of casting flat.  
No chemical analysis available.

Spong Hill C1216

Mus: NCM Accession no: 1216  
Overall length: 0.0 Weight (g) : 8  
CM type: Associated with A 2 or A 3  
Context: Urn 1216  
Assoc: Pot with 12 vertical bosses, iron pin, 3 beads, barred zoomorphic comb  
Refs: Vol I, fig 107; Vol V fig 195  
Bow solid cross-section. Tkb appears to attached to the pin lug. Iron spring loop evident. Skbs have circular cross-sections. Lines on bow worn.  
Probe analysis  
Zn: 0.43 Pb: 3.54 Sn: 10.23  
Fe: 0.05 Ni: 0.04 Ag: 0.33 Au: 0.06  
As: 0.11 Sb: 0.05 Bi: 0.00 Co: 0.01

Spong Hill C1468 (1)

Mus: NCM Accession no: 1468/1  
Overall length: 91.9  
CM type: A 2  
Context: Urn 1468  
Assoc: With another cb, plain pot, 1 glass bead  
Refs: Vol I fig 107 (left)  
Rev flat, including at bow, which is slightly convex. Pin lug is thick, and attached to tkb. Catch misplaced slightly towards one side. Condition fair.  
Probe analysis  
Zn: 0.51 Pb: 2.72 Sn: 7.83  
Fe: 0.11 Ni: 0.03 Ag: 0.12 Au: 0.02  
As: 0.21 Sb: 0.06 Bi: 0.01 Co: 0.02

Spong Hill C1468 (2)

Mus: NCM Accession no: 1468/2  
Overall length: not determined  
CM type: Associated A 2  
Context: Urn 1468  
Assoc: see above  
Refs: Vol I, fig 107 (centre); Vol II, fig 195  
Foot and bow only. Probably not a pair, but close to C1468(1). Solid bow, but trapezoidal in cross-section. Single point punch marks on nose and on

Spong Hill C1468 (2)

cpl facets. Slight wear on bow?

Probe analysis

Zn:	0.07	Pb:	1.68	Sn:	8.65		
Fe:	0.25	Ni:	0.03	Ag:	0.07	Au:	0.05
As:	0.30	Sb:	0.01	Bi:	0.02	Co:	0.01

Spong Hill C1469

Mus: NCM Accession no: 1469

Overall length: 67.2

CM type: A 2

Context: Urn 1469

Assoc: Pot with vertical and horizontal grooves and bosses, copper alloy needle, iron penannular brooch

Refs: Vol I, fig 107

Rev of bow slightly convex at the back. Flat rev of foot. Catch is stepped and short, rather upright. On the rev, slot cut into inner side of catch/cpl. Iron pin remains. Tkb appears to be set back, probably attached to pin lug. Well preserved, except slight wear on bow.

Probe analysis

Zn:	2.07	Pb:	2.91	Sn:	9.78		
Fe:	0.35	Ni:	0.02	Ag:	0.14	Au:	0.03
As:	0.22	Sb:	0.07	Bi:	0.05	Co:	0.01

Spong Hill C1664

Mus: NCM Accession no: 1664

Overall length: not determined

CM type: Associated with small type B

Context: Urn 1664

Assoc: 3 chevron urn, iron needle, bone needle case and comb fragments

Refs: Vol I, fig 107

Skbs have circular cross-section, attached using iron axis. Hollow bow cross-section.

No chemical analysis available.

Spong Hill C1730

Mus: NCM Accession no: 1730

Overall length: not determined

CM type: Associated with small B 3

Context: Urn 1730

Assoc: Urn, copper alloy bar and lump

Refs: Vol II, Fig 138

Ft and part of bow only. Short upright catch.

No chemical analysis available.

Spong Hill C2087

Mus: NCM Accession no: 2197

Overall length: not determined

CM type: Associated with B

Context: Urn 2087

Assoc: Urn with Vc, VIb stamps

Refs: Vol II, Fig 137

Rhs skb, part of bow and foot missing.

No chemical analysis available.

Spong Hill C2195

Mus: Accession no: 2195  
Overall length: not determined  
CM type: Small B 1 or B 2  
Context: Urn 2195  
Assoc: Urn, pottery spindle whorl, triangular bone comb, copper alloy lumps  
Refs: Vol II, fig 138  
Foot only. Catch decorated with lines. Minimum definition of animal head.  
No chemical analysis available.

Spong Hill C2197

Mus: NCM Accession no: 2087  
Overall length: not determined  
CM type: A 1  
Context: Urn 2197  
Assoc: Pot with Ia stamps, iron pin, glass bead, bone comb  
Refs: Vol II, fig 137  
Foot missing. Bow cross-section diamond-shaped.  
No chemical analysis available.

Spong Hill C2656

Mus: Accession no: C2656/1  
Overall length: 0.0 Weight (g): 46  
CM type: Associated with A  
Context: Urn 2656/1  
Assoc: Plain urn, iron bar and coil, copper alloy ring, bracelet, beads  
Refs: Fig 2.6; Vol IV, fig 92  
Rev of casting slightly convex at back of bow. Kb cross-sections all circular. Skbs in iron pin, with slots cut. On rev, slot in underside of catch/catchplate. Short upright catch. Probably rather worn in bow and on front of tkb.  
Probe analysis  
Zn: 10.03 Pb: 0.64 Sn: 3.38  
Fe: 0.36 Ni: 0.06 Ag: 2.37 Au: 0.08  
As: 0.21 Sb: 0.17 Bi: 0.01 Co: 0.00

Spong Hill C2918

Mus: NCM Accession no: 2918/1  
Overall length: not determined  
CM type: A or B  
Context: Urn 2918  
Assoc: Pot with stamps VII c  
Refs: Vol V (forth)  
Fragments of bow and hpl fused together. Bow casting flat at rev. Tkb appears to have been on a spike, rather than cast with (suggesting type A associations). Pin lug on raised strip.  
Probe analysis  
Zn: 1.66 Pb: 3.20 Sn: 10.18  
Fe: 0.11 Ni: 0.03 Ag: 0.14 Au: 0.02  
As: 0.03 Sb: 0.04 Bi: 0.01 Co: 0.01

Spong Hill C2997

Mus: NCM Accession no: 2997/1  
Overall length: not determined  
CM type: A2 or B1?  
Context: Urn 2997 with 2992  
Assoc: 2 decorated urns, iron tweezers, glass beads, iron rivet  
Refs: Vol V (forth)

Spong Hill C2997 cont/

Foot and part of bow only. Possibly long catch originally, now unclear. Rev of casting very flat.

Probe analysis

Zn:	17.23	Pb:	0.06	Sn:	3.02		
Fe:	0.17	Ni:	0.05	Ag:	0.09	Au:	0.01
As:	0.44	Sb:	0.21	Bi:	0.00	Co:	0.01

Spong Hill C3055 (1)

Mus: NCM Accession no: 3055/1

Overall length: not determined

CM type: Associated with B or C

Context: Urn 3055, with 3054, 3048

Assoc: Decorated urn, cb (2), glass beads, antler

Refs: Vol V (forth)

Rev of casting very hollow, good relief. Double semi-circle punch mark.

Probe analysis

Zn:	11.96	Pb:	0.11	Sn:	2.89		
Fe:	0.28	Ni:	0.03	Ag:	0.19	Au:	0.01
As:	0.11	Sb:	0.07	Bi:	0.01	Co:	0.00

Spong Hill C3055 (2)

Mus: NCM Accession no: 3055/2

Overall length: not determined

CM type: A 3 or B 2

Context: Urn 3055

Assoc: See above

Refs: Vol V (forth)

Foot only. Rev of casting flat. Semi-circular punch marks

Probe analysis

Zn:	2.85	Pb:	1.51	Sn:	7.76		
Fe:	0.08	Ni:	0.04	Ag:	0.09	Au:	0.01
As:	0.05	Sb:	0.08	Bi:	0.04	Co:	0.01

Spong Hill C3304

Mus: NCM Accession no: 3304/1

Overall length: not determined

CM type: B

Context: Urn 3304/1

Assoc: Decorated urn, more than one cb, iron springs, iron bar, glass beads, ivory frag

Refs: Vol V (forth)

Fragments of various metals. Catalog number given to piece with hpl, semi-circular cross-section of kb.

No chemical analysis available.

Spong Hill G2 (1)

Mus: NCM Accession no: G2,1

Overall length: 135.4 Weight (g): 74

CM type: Associated with Z 1b

Context: Grave 2

Assoc: Female 20-25 years, 2 small-long (not a pair), annular brooch, 7 beads, plain urn, iron rings and knife, copper alloy fragments

Refs: Vol III, fig 70,1

Flat reverse to casting, except slightly convex at rev of bow. Wings slope away from the hpl. Iron pin and skb axis. Skbs have loops to attach to skb axis. Single pin lug. Stepped catch. Preservation fair, some wear on bow

Spong Hill G2 (1) cont/

and foot. Textile around skbs and diagonally across the hpl. Semi-circular punch marks.

Probe analysis

Zn: 7.45	Pb: 1.06	Sn: 7.55		
Fe: 0.24	Ni: 0.14	Ag: 0.09	Au: 0.05	
As: 0.26	Sb: 0.02	Bi: 0.00	Co: 0.01	

Spong Hill G2 (2)

Mus: NCM Accession no: G2,8

Overall length: 135.7 Weight (g): 80

CM type: Associated with Z 1b

Context: Grave 2

Assoc: See above

Refs: Vol III, fig 71,8

As above, slightly less well preserved but similar crispness of casting.

Probe analysis

Zn: 7.50	Pb: 1.73	Sn: 8.65		
Fe: 0.25	Ni: 0.13	Ag: 0.10	Au: 0.03	
As: 0.29	Sb: 0.05	Bi: 0.02	Co: 0.01	

Spong Hill G5 (1)

Mus: NCM Accession no: G5,6a

Overall length: not determined

CM type: spatulate foot

Context: Grave 5

Assoc: Female burial, urn, silver ring, wrist clasp Hines type A, beads

Refs: Vol III, fig 73, 6a

Single punch mark on hpl.

No chemical analysis available.

Spong Hill G5 (2)

Mus: NCM Accession no: G5,6b

Overall length: not determined

CM type: spatulate foot

Context: Grave 5

Assoc: see above

Refs: Vol III, fig 73, 6b

See G5 (1)

No chemical analysis available

Spong Hill G22 (1)

Mus: NCM Accession no: G22,4

Overall length: Weight (g): 34

CM type: Small B 3

Context: Grave 22, cut by cremation C1946

Assoc: Female 25-35 years, decorated urn, brooch pair and another cb, spindle whorl, beads, crystal bead, iron latch lifter, knife

Refs: Vol III, fig 78,4

Rev hollow at tkb, bow and foot. Skbs slotted, slightly more than semi-circular in cross-section, but flat at rev. Iron skb axis. Worn at bow.

Probe analysis

Zn: 1.03	Pb: 1.27	Sn: 7.57		
Fe: 0.22	Ni: 0.05	Ag: 0.14	Au: 0.05	
As: 0.25	Sb: 0.04	Bi: 0.01	Co: 0.01	

Spong Hill G22 (2)

Mus: NCM  
Overall length: 88.1      Accession no: G22,6  
Weight (g): 34  
CM type: Small B 3  
Context: Grave 22  
Assoc: see above  
Refs: Vol III, fig 78,6  
See above  
Probe analysis  
Zn: 0.49      Pb: 2.79      Sn: 10.27  
Fe: 0.10      Ni: 0.03      Ag: 0.24      Au: 0.03  
As: 0.36      Sb: 0.06      Bi: 0.02      Co: 0.00

Spong Hill G22 (3)

Mus: NCM      Accession no: G22,3  
Overall length: 121.3      Weight (g): 84  
CM type: Associated with D 5b  
Context: Grave 22  
Assoc: See above  
Refs: Fig 2.44; Vol III, fig 79,3  
Rev of casting very hollow at bow, slightly at rev of ft, lappets and tkb.  
Catch replaced. Wide skbs, slotted. Iron pin and skb axis. Good condition.  
Rounded punch mark.  
Probe analysis  
Zn: 0.82      Pb: 1.98      Sn: 8.78  
Fe: 0.05      Ni: 0.04      Ag: 0.15      Au: 0.03  
As: 0.07      Sb: 0.05      Bi: 0.00      Co: 0.00

Spong Hill G26

Mus: NCM      Accession no: G26(5a)  
Overall length: 94.4      Weight (g): 30  
CM type: A 2  
Context: Grave 26  
Assoc: Female burial, stamp-linked urn (IIc, VIIc), iron blade, 72 beads  
(incl. tin beads), Romano-British gilt disc brooch (repaired), copper alloy  
sheet fragments  
Refs: Vol III, fig 83,5  
Rev of casting flat, except for circular cross-section tkb. Bow flat at  
rev. Skbs slotted, circular in cross-section, rather worn. Silvering  
present. Also worn on tkb.  
Probe analysis  
Zn: 0.22      Pb: 3.88      Sn: 10.67  
Fe: 0.05      Ni: 0.04      Ag: 0.25      Au: 0.04  
As: 0.13      Sb: 0.06      Bi: 0.01      Co: 0.01

Spong Hill G39

Mus: NCM      Accession no: G39(1a)  
Overall length: 121.5      Weight (g): 90  
CM type: D 2  
Context: Grave 39  
Assoc: Adult female, beads, 2 annular brooches, strap end,  
copper alloy buckle plate, beads, plain urn, iron buckle plate and loop  
Refs: Fig 2.32; Vol III, fig 93,1  
Tool marks across back of bow. Loop at the foot. Casting bubble at rev of  
tkb and on lappet. Flat at rev except, hollow rev to kbs. Good condition.  
Probe analysis  
Zn: 1.88      Pb: 1.48      Sn: 6.10  
Fe: 0.16      Ni: 0.04      Ag: 0.22      Au: 0.01  
As: 0.12      Sb: 0.07      Bi: 0.02      Co: 0.00

Spong Hill G45

Mus: NCM Accession no: G45(8a)  
Overall length: 130.3  
CM type: D 4  
Context: Grave 45  
Assoc: Bones (not aged or sexed), 2 annular brooches, copper alloy ring, beads, iron knife, plain urn sherds  
Refs: Vol III, fig 100,8  
Rev of casting hollow at bow, skbs and foot. Iron skb axis. Edges of hpl wings are worn, from skb axis. Casting flaws at rev. Parts of punch mark (double V and circle) were not done with one implement. Worn at bow and foot.  
Probe analysis  
Zn: 6.47 Pb: 1.63 Sn: 6.66  
Fe: 0.21 Ni: 0.03 Ag: 0.64 Au: 0.05  
As: 0.03 Sb: 0.10 Bi: 0.03 Co: 0.01

Spong Hill G46

Mus: NCM Accession no: G46(3)  
Overall length: 97.8 Weight (g): 32  
CM type: Associated with B 2  
Context: Grave 46  
Assoc: Bones (age and sex unknown) 2 equal-armed brooches, silver ring, iron knife and buckle, wrist clasp Hines type B17b, ring  
Refs: Vol III, fig 101,3  
Flat at rev of casting, incl bow cross-section solid. Iron pin. Two associated knobs are not a pair, one is oval and the other semi-circular. Both worn, but the semi-circular one more so. Both slotted. Edges of hpl wings are sharpened. Triangular stamps. Worn at tkb and bow, but fair at foot.  
Probe analysis  
Zn: 7.46 Pb: 5.52 Sn: 4.64  
Fe: 0.22 Ni: 0.03 Ag: 0.33 Au: 0.01  
As: 0.14 Sb: 0.08 Bi: 0.03 Co: 0.00

Spong Hill G57

Mus: NCM Accession no: G57(7)  
Overall length: 135.0 Weight (g): 90  
CM type: Z 1b  
Context: Grave 57  
Assoc: Female 35-45, plain urn, wrist clasps Hines B7 and B13a, 2 annular brooches, beads  
Refs: Vol III, fig 107,7  
Flat at reverse. Two pin lugs. Circular punch marks. Gilding and white metal. White metal lifting in places. Crisp condition, possibly slightly worn at bow on bow.  
Probe analysis  
Zn: 7.79 Pb: 0.37 Sn: 2.69  
Fe: 0.25 Ni: 0.11 Ag: 0.10 Au: 0.04  
As: 0.00 Sb: 0.02 Bi: 0.01 Co: 0.01

Spong Hill G58

Mus: NCM Accession no: G58(3a)  
Overall length: broken Weight (g): 80  
CM type: Associated with D  
Context: Grave 58  
Assoc: Bones (age and sex not known), plain urn, annular brooch, iron knife, copper alloy repair clip and sheet  
Refs: Vol III, fig 109, 3a

Spong Hill G58 cont/

Hollow at rev of bow, kbs, foot. Wings flex back from hpl. Semi-circular punch mark. Decoration on catch. Broken edge smoothed by wear, worn at kbs and on bow.

Probe analysis

Zn: 4.66	Pb: 0.72	Sn: 6.35		
Fe: 0.31	Ni: 0.03	Ag: 0.38	Au: 0.01	
As: 0.23	Sb: 0.04	Bi: 0.02	Co: 0.02	

Sporle 1

Mus: NCM Accession no: 9.179.950

Overall length: 137.0

CM type: C 1

Context: none

Assoc: none

Refs: none

Rev of casting flat, except at bow and foot. Double semi-circular punch mark. Cleaned but prob originally not very worn.

AA analysis:

Cu: 85.00	Zn: 8.16	Pb: 2.36	Sn: 4.03
Fe: 0.26	Ni: 0.02	Ag: 0.19	

Sporle 2

Mus: NCM Accession no: ?

Overall length: not determined

CM type: Z1 Leeds and Pocock: Va

Context: none

Assoc: none

Refs: Akerman 1855 pl XL, 1; Leeds and Pocock 17, 30, fig 4A

Not examined.

No chemical analysis available.

St Ives, Hunts

Mus: Unknown collection Accession no: ?

Overall length: not determined

CM type: Z 1a Leeds and Pocock: Vgii

Context: none

Assoc: none

Refs: Leeds 1955, Antiq J XXXV, 88-90, pl xxiii, a; Leeds and Pocock, 19, pl IIA

Not examined. No gilding.

No chemical analysis available.

St John's G1

Mus: CUM Accession no: 88.30.50

Overall length: 125.7

CM type: D 1 Åberg: IV

Context: Grave group 1

Assoc: CA annular brooch, amber beads, rock crystal, CA ring

Refs: Fox Pl XXVII, 1

Rev of casting flat, except at kbs, bow and foot. Catch small and on a ridge. Concentric circles and segmented Y-shape punch marks. 3 petal 'flower' on foot, 4-petal 'flower' on hpl. All stamps worn.

AA analysis:

Cu: 85.00	Zn: 0.24	Pb: 3.72	Sn: 11.70
Fe: 0.08	Ni: 0.00	Ag: 0.10	

St John's G38

Mus: CUM Accession no: 88.30.28  
Overall length: 121.8  
CM type: Large B 1 Åberg: II Reich: Type Islip  
Context: Grave 8  
Assoc: 2 small-long brooches, beads, copper discs and plates  
Refs: Reichstein no 780, Taf 108,3  
Rev of casting flat except at tkb, bow and foot. Skbs cast with hpl. Ring and dot decoration, apparent turning marks inside ring. Worn at skb.  
AA analysis:  
Cu: 85.00 Zn: 2.00 Pb: 4.39 Sn: 8.38  
Fe: 0.11 Ni: 0.00 Ag: 0.23  
Probe analysis  
Zn: 1.90 Pb: 3.19 Sn: 9.94  
Fe: 0.15 Ni: 0.04 Ag: 0.22 Au: 0.00  
As: 0.00 Sb: 0.06 Bi: 0.00 Co: 0.00

St John's 1

Mus: Ashm Accession no: 1909.306  
Overall length: 140.6 Weight (g): 70  
CM type: D 1  
Context: none  
Assoc: none  
Refs: Fig 2.24; Fox, 242  
Rev of casting concave at kbs and kb collar (except rhs), also at bow and foot. Rhs kb lower than lhs. Two pin lugs. Twisted silver wire inset at foot collar. Single point punch marks. Fair condition.  
AA analysis:  
Cu: 77.00 Zn: 14.00 Pb: 2.47 Sn: 2.58  
Fe: 0.59 Ni: 0.10 Ag: 0.15

St John's 2

Mus: CUM Accession no: 88.30.22  
Overall length: 111.8  
CM type: D 5 Åberg: IV  
Context: none  
Assoc: none  
Refs: Fig 2.41  
Skbs cast with hpl. Rev of casting hollow at kbs, kb collars, bow and foot. Skbs project back from hpl. Two pin lugs, iron pin remains. Catch is on a ridge. Segmented Y and double semi-circular punch marks. Worn throughout.  
AA analysis:  
Cu: 86.50 Zn: 1.54 Pb: 2.63 Sn: 11.82  
Fe: 0.36 Ni: 0.00 Ag: 0.11

St John's 3

Mus: CUM Accession no: 88.30.42  
Overall length: 119.8  
CM type: D 1 Åberg: IV  
Context: Grave  
Assoc: Possibly 2 small-long brooches, 8 beads, 2 pairs 'tinned' wrist clasps  
Refs: none  
Skbs cast with hpl. Double semi-circular punch marks. Catch short and rectangular. Worn.  
AA analysis:  
Cu: 87.00 Zn: 1.94 Pb: 3.23 Sn: 9.62  
Fe: 0.12 Ni: 0.00 Ag: 0.21

St John's 4

Mus: CUM Accession no: 88.30.47  
Overall length: 0.0 Åberg: IV  
CM type: D 5a  
Context: Grave  
Assoc: CB 10, 11  
Refs: none  
Rev of casting flat except at bow and cpl. Kbs placed low on hpl, rhs lower than lhs. Double semi-circular and single point punch marks. Ring and dot decoration. Worn and corroded.  
AA analysis:  
Cu: 84.50 Zn: 0.27 Pb: 1.30 Sn: 13.02  
Fe: 0.09 Ni: 0.00 Ag: 0.12

St John's 5

Mus: CUM Accession no: 88.30.48  
Overall length: broken Åberg: IV  
CM type: Associated with D 2  
Context: none  
Assoc: none  
Refs: none  
Rev of casting flat, except sl at bow. Poss two pin lugs. Catch small. Circular and semi-circular punch marks. Pitted.  
AA analysis:  
Cu: 86.50 Zn: 6.67 Pb: 2.16 Sn: 5.42  
Fe: 0.24 Ni: 0.00 Ag: 0.22  
Probe analysis  
Zn: 7.44 Pb: 2.53 Sn: 5.38  
Fe: 0.21 Ni: 0.04 Ag: 0.17 Au: 0.00  
As: 0.00 Sb: 0.12 Bi: 0.01 Co: 0.00

St John's 6

Mus: CUM Accession no: 88.30.66  
Overall length: 133.0 Åberg: V  
CM type: D 6  
Context: none  
Assoc: none  
Refs: Fig 2.47  
Flat at rev. Semi-circular, V and possibly circular punch marks. Severe corrosion.  
AA analysis:  
Cu: 83.00 Zn: 2.87 Pb: 8.14 Sn: 6.42  
Fe: 0.31 Ni: 0.00 Ag: 0.31  
Probe analysis  
Zn: 3.16 Pb: 4.60 Sn: 6.49  
Fe: 0.22 Ni: 0.05 Ag: 0.25 Au: 0.00  
As: 0.00 Sb: 0.09 Bi: 0.00 Co: 0.00

St John's 7

Mus: CUM Accession no: 88.30.67A1  
Overall length: 102.9 Åberg: Reich: *Typ* Stratford  
CM type: Large B 2  
Context: Grave  
Assoc: with 15  
Refs: Reichstein no 776, Taf 92, 2  
See pair. Slightly better state.  
No chemical analysis available.

St John's 8

Mus: CUM Accession no: 88.30.68  
Overall length: 0.0  
CM type: D 1 Åberg: IV  
Context: none  
Assoc: none  
Refs: none  
Skbs cast with hpl. Rev of casting flat, except at bow. Flaws at bow and foot collar. Pin lug solid. Rhs skb worn.  
AA analysis:  
Cu: 73.50 Zn: 3.66 Pb: 17.36 Sn: 5.51  
Fe: 0.12 Ni: 0.00 Ag: 0.03

St John's 9

Mus: CUM Accession no: 88.30.71  
Overall length: 78.0  
CM type: Small B 2 Åberg: III  
Context: none  
Assoc: none  
Refs: none  
Rev of casting hollow at foot.  
AA analysis:  
Cu: 91.50 Zn: 0.12 Pb: 1.83 Sn: 13.17  
Fe: 0.16 Ni: 0.00 Ag: 0.06

St John's 10

Mus: CUM Accession no: 88.30.93A  
Overall length: 120.5  
CM type: D 3 Åberg: Reich: *Einzelformen*  
Context: Unnumbered grave  
Assoc: See pair, 1 other cb, beads, tweezers  
Refs: Reichstein no 779, Taf 109, 5  
Mend at lhs skb (fig ?) with rivet. Slight miscast on rev of bow. Rev of casting flat except at kbs, bow and foot. Good condition.  
AA analysis:  
Cu: 85.00 Zn: 5.31 Pb: 2.70 Sn: 7.13  
Fe: 0.31 Ni: 0.00 Ag: 0.24

St John's 11

Mus: CUM Accession no: 88.30.93B  
Overall length: 122.0  
CM type: D 3 Åberg: Reich: *Einzelformen*  
Context: Grave  
Assoc: CB 012  
Refs: Pair to above, Reichstein Taf 109, 3  
As above, without mend.  
AA analysis:  
Cu: 83.00 Zn: 3.43 Pb: 3.29 Sn: 8.35  
Fe: 0.47 Ni: 0.00 Ag: 0.23

St John's 12

Mus: CUM Accession no: 88.30.94  
Overall length: 123.2  
CM type: Large B 1 Åberg: Reich: *Typ Islip*  
Context: Grave (as 10 and 11)  
Assoc: Cb 10 and 11  
Refs: Reichstein no 779, Taf 109, 4  
Rev of casting flat except at tkb, bow and foot. Skb separate, but method

St John's 12 cont/

of attachment not clear. Poor surface detail.

AA analysis:

Cu:	84.00	Zn:	9.29	Pb:	3.23	Sn:	2.79
Fe:	0.09	Ni:	0.00	Ag:	0.29		

St John's 13

Mus: CUM

Accession no: Z42832A

Overall length: 132.7

CM type: D 4

Reich: *Typ* West Stow Heath

Context: Grave

Assoc: Hexagonal jet bead, amber beads, pin, tweezer and pair to cb (below)

Refs: Fox pl XXVII,3 (right); Reichstein no 778, Taf 95,9

Rev of casting flat. Circular tkb flattened at rev, placed on a spine rising from hpl. Pin lug on the continuation of this spine. Damage at tkb possibly from miscast.

AA analysis:

Cu:	84.00	Zn:	2.12	Pb:	3.39	Sn:	10.43
Fe:	0.14	Ni:	0.00	Ag:	0.13		

St John's 14

Mus: CUM

Accession no: Z42832B

Overall length: 128.5

CM type: D 4

Reich: *Typ* West Stow Heath

Context: Grave

Assoc: see above

Refs: Fox pl XXVII, 3 (left); Reichstein no 778, Taf 95,3

Less good condition than above. Worn at tkb. Pitted.

AA analysis:

Cu:	82.50	Zn:	2.48	Pb:	2.43	Sn:	9.99
Fe:	0.14	Ni:	0.00	Ag:	0.12		

St John's 15

Mus: CUM

Accession no: 88.30.67A2

Overall length: 103.1

CM type: Large B 2

Åberg: Reich: *Typ* Stratford

Context: Grave

Assoc: with no 7

Refs: Reichstein no 776, Taf 92,1

Rev of casting flat except at bow and foot. Catch and pin lug placed off-centre. Three single point punch marks on animal head, decrease in size probably because of wear. Poor condition. Eroded at bow. Mended at lower bow with modern solder.

No chemical analysis available.

St John's 16

Mus: CUM

Accession no: 1904.534 A

Overall length: 67.4

CM type: A 1

Åberg: I Reich: *Typ* Hjelmhede

Context: Stray find

Assoc: none

Refs: Åberg 34, Fig 46; Reichstein no 777, Taf 115, 5

Bow cross-section solid and convex on both sides, angled at front, rounded at back. Rev of casting flat. Catch displaced slightly from central position, with slight indent on lhs, into foot. Possible flaw at rev of hpl. Worn throughout.

No chemical analysis available.

St John's 17

Mus: CUM Accession no: 1904.534 B  
Overall length: 65.7  
CM type: A 3 Åberg: I Reich: *Typ* St John's Coll  
Context: Stray find  
Assoc: none  
Refs: Fox 1923 Fig 33,2; Åberg, 34 Fig 47; Reichstein no 774, Taf 115, 3  
Tkb polyhedral. Iron pin extant. Bow solid. Small V punch marks on foot.  
Catch appears to run onto the bow, forming a spine. Worn smooth throughout,  
especially at tkb.  
No chemical analysis available.

Stapleford

Mus: Leicester Accession no: ?  
Overall length: not determined  
CM type: Z 3 Leeds and Pocock: Vk  
Context: none  
Assoc: none  
Refs: Leeds and Pocock 1971, 20, pl IIIB  
Not examined. Large, ornamented. Skbs cast with hpl. Prob. WM on kbs,  
lappets and animal head fan.  
No chemical analysis available.

Staxton

Mus: Yorks? Accession no: ?  
Overall length: not determined  
CM type: Z 4a Leeds and Pocock: Vf Leeds: C2  
Context: none  
Assoc: none  
Refs: Leeds 1949, no 131 (and plate); Leeds and Pocock, 32  
Not examined. Heavily ornamented. Large triangular punch mark (? with  
detail inside). Ridges notched.  
No chemical analysis available.

Stowting

Mus: private Accession no: none  
CM type: Associated with type B Åberg: II  
Context: none  
Assoc: none  
Refs: Hawkes 1987, fig 1  
Single pin lug. Semi-circular cross-section knob. Double semi-circle punch  
marks on hpl. Small proportion only extant.  
No chemical analysis available.

Swaffham G6

Mus: NCM Accession no: 314.976  
Overall length: 155.7  
CM type: Assoc with Z 1a Leeds and Pocock: Viii/Vf/Vgi  
Context: Grave 6  
Assoc: 2 small-long brooches (trefoil-headed), 4 glass and 7 amber beads,  
iron buckle, flint  
Refs: Plate 2; Hills and Wade-Martins 1976, EAA 2, fig 8 (6c), pl IV  
Skbs reattached (?twice). Mended at catch with rivets. Possible mend at lhs  
lappet. Rev of casting flat except at foot. WM and gilding. Ridges notched.  
Circular punch marks. Faults in casting. Fair condition.  
AA analysis:  
Cu: 86.00 Zn: 6.15 Pb: 1.90 Sn: 7.26  
Fe: 0.23 Ni: 0.10 Ag: 0.21

Toddington

Mus: North  
Overall length: 139  
CM type: D 5a  
Context: none, Cooper-Cooper coll.  
Assoc: none  
Refs: Kennett D H, Med Arch 1969, XIII, fig 61; Leeds and Pocock, 27, fig 3f  
Petal decoration on hpl. Worn at rhs skb fan.  
No chemical analysis available.

Trumpington 1

Mus: CUM  
Overall length: not determined  
CM type: Assoc A  
Context: none  
Assoc: none  
Refs: Åberg 1926, fig 45; Reichstein no 801  
Not examined. Broken at foot. Pin lug attached to tkb.  
No chemical analysis available.

Trumpington 2

Mus: CUM  
Overall length: not determined  
CM type: Assoc C  
Context: none  
Assoc: none  
Refs: Åberg 1926, fig 60; Reichstein no 802, Taf 116,9  
Not examined. Punch marks. Extra tkb collar. Skbs cast separately. Animal head has loop terminal with attached CA tab (pierced).  
No chemical analysis available.

Trumpington 3

Mus: CUM  
Overall length: 89  
CM type: Small type B2  
Context: none  
Assoc: none  
Refs: Jessop 1950, Anglo-Saxon Jewellery, pl XIII (upper)  
Not examined. Neat casting. Notches in hpl, upper and lower edges.  
No chemical analysis available.

Tuddenham 1

Mus: CUM  
Overall length: 143.0  
CM type: D 5  
Context: Grave group, suggested by Kennett  
Assoc: Beads, silver bracelets (mended), square-headed brooch (gilt), 2 annular brooches  
Refs: Kennett 1977, fig 1  
Rev of casting flat except at tkb, bow and foot. Single point punch mark.  
Fair condition.  
AA analysis:  
Cu: 83.00 Zn: 2.43 Pb: 3.90 Sn: 10.16  
Fe: 0.23 Ni: 0.03 Ag: 0.20

Tuddenham 2

Mus: CUM  
Overall length: 130.1  
CM type: D 1  
Context: none  
Assoc: none  
Refs: Kennett 1977  
Skbs cast with hpl. Rev casting hollow at kbs and foot. Two pin lugs. Skbs not symmetrical. Circular and Y-shaped punch mark. Not very worn.  
AA analysis:  
Cu: 83.50      Zn: 5.25      Pb: 2.97      Sn: 6.49  
Fe: 0.21      Ni: 0.02      Ag: 0.28

Tuddenham 3

Mus: CUM  
Overall length: 137.2  
CM type: D 5a  
Context: none  
Assoc: none  
Refs: Fig 2.43  
Rev of casting flat, except at kbs, foot. Casting not symmetrical. Semi-circular and single point punch marks. Worn.  
No chemical analysis available.

Tuddenham 4

Mus: CUM  
Overall length: 128.0  
CM type: D 5  
Context: not known  
Assoc: Possibly tweezers, small-long brooch  
Refs: Kennett 1977  
Tkb circular with extension and front tab, placed on a spike rising from hpl. Probably loop at end of animal head. Rev of casting hollow at foot. Segmented Y and triangular punch marks. Condition fair.  
AA analysis:  
Cu: 84.00      Zn: 4.12      Pb: 2.95      Sn: 8.14  
Fe: 0.19      Ni: 0.02      Ag: 0.19

Undley

Mus: CUM  
Overall length: 120.1  
CM type: Associated C  
Context: none  
Assoc: none  
Refs: Reichstein no 871, fig 119,2  
Tkb circular, cast with hpl. Small circular and V-shaped punch marks. Punch marks stop at area of skbs.  
AA analysis:  
Cu: 70.00      Zn: 0.68      Pb: 13.84      Sn: 10.81  
Fe: 0.13      Ni: 0.02      Ag: 0.08

Unknown 1

Mus: BM Accession no: OA 267  
Overall length: 119.4  
CM type: Associated with A or B  
Context: none  
Assoc: none  
Refs: none  
Neat casting. Tkb circular with flattened reverse. Pin lug on a ridge. Rev of casting flat, except at foot and bow. Semi-circular and possibly triangular punch marks. Worn at tkb.  
AA analysis:  
Cu: 75.00 Zn: 16.95 Pb: 3.07 Sn: 2.78  
Fe: 0.12 Ni: 0.04 Ag: 0.17

Unknown 2

Mus: BM Accession no: 1912,5-28,34  
Overall length: 104.5  
CM type: B or C  
Context: none  
Assoc: none  
Refs: none  
Rev of casting flat except at bow and foot. Very poor surface remains.  
AA analysis:  
Cu: 78.00 Zn: 13.78 Pb: 3.62 Sn: 1.96  
Fe: 0.23 Ni: 0.02 Ag: 0.34

Unknown 3

Mus: BM Accession no: 56,7-1,5173A  
Overall length: broken  
CM type: Associated with D Åberg: IV  
Context: none, possibly from West Stow Heath  
Assoc: none  
Refs: none  
Decorated tkb. Ring-and-dot decoration used throughout. Small V and short straight line punch marks. Skbs cast with hpl. Rev of casting hollow behind kbs, rough behind bow. Surface condition very variable.  
AA analysis:  
Cu: 76.50 Zn: 0.83 Pb: 4.62 Sn: 8.88  
Fe: 0.74 Ni: 0.02 Ag: 0.14  
Probe analysis  
Zn: 2.24 Pb: 0.57 Sn: 4.71  
Fe: 0.13 Ni: 0.10 Ag: 0.15 Au: 0.00  
As: 0.28 Sb: 0.05 Bi: 0.01 Co: 0.00

Unknown 4

Mus: BM Accession no: 78,11-1,283  
Overall length: 160.0  
CM type: Z 3  
Context: none  
Assoc: none  
Refs: Plate 4  
Silvered (possibly as foil, soldered on, tested by XRF) and gilt. Rev of casting flat. Short catch on a long ridge. Two pin lugs. Small circular punch marks, erratically placed. Worn at tops of detail and on silvering.

Unknown 4 cont/

AA analysis:

Cu: 92.00      Zn: 2.32      Pb: 2.22      Sn: 5.44  
Fe: 0.14      Ni: 0.09      Ag: 0.13

Probe analysis

Zn: 0.80      Pb: 4.39      Sn: 9.85  
Fe: 0.72      Ni: 0.05      Ag: 0.14      Au: 0.00  
As: 0.18      Sb: 0.07      Bi: 0.00      Co: 0.00

Unknown provenance 6

Mus: Alnwick Castle      Accession no: ?  
Overall length: not determined  
CM type: Associated Z 4      Leeds and Pocock: Vf  
Context: none  
Assoc: none  
Refs: YAJ XLII 1970, 407-9; Leeds and Pocock 32  
Not examined.  
No chemical analysis available.

Unknown provenance 8

Mus: IPS      Accession no: 1935.158.15  
Overall length: 107.4  
CM type: Large B 1  
Context: none, Suffolk or Essex?  
Assoc: none  
Refs: Ex Wilkes Collection.  
Rev of casting hollow at bow and foot. CA rivets through catch for repair.  
Triangular and circular punch marks. Poor condition, worn at bow.  
No chemical analysis available.

Upton Snodsbury, Worcs

Mus: Worcester      Accession no: ?  
Overall length: broken  
CM type: Z1a      Leeds and Pocock: Va  
Context: none  
Assoc: beads  
Refs: Baldwin Brown III, pl xlv, 4; Leeds and Pocock, 17  
Not examined. Missing below foot. Ridges notched. Zoomorphic panel at hpl.  
No chemical analysis available.

Wakerley G1 (1)

Mus: North      Accession no: AS90.1  
Overall length: broken      Weight (g) : 54  
CM type: B or C  
Context: Grave 1  
Assoc: with G1 (2) and (3)  
Refs: excav 1968 and 1970, publication awaited.  
Rev of casting hollow at bow and kbs. Casting flaws probable. Semi-circular  
punch marks. Prob cleaned. Worn at kbs and foot.  
No chemical analysis available.

Wakerley G1(2)

Mus: North  
Overall length: 79.0                                  Accession no: AS90.1  
CM type: Small B 2                                    Weight (g) : 14  
Context: Grave 1                                        Åberg:  
Assoc: With it's pair (3) and one other cb (1)  
Refs: see above  
Rev of casting hollow at kbs, foot and bow. Semi-circular punch marks.  
Worn, especially at lower edge of rhs skb.  
No chemical analysis available.

Wakerley G1(3)

Mus: North    Accession no: AS90.1  
Overall length: broken                                Weight (g): 16  
CM type: Small B 2                                    Åberg:  
Context: Grave 1  
Assoc: See Wakerley G1(1) and (2)  
Refs: see above  
As above, only more worn. Not an exact pair.  
No chemical analysis available.

Wakerley G25 (1)

Mus: North    Accession no: AS90.6  
Overall length: 78.7                                  Weight (g): 28  
CM type: Small B 3                                    Åberg:  
Context: Grave 25  
Assoc: not known  
Refs: see above  
Loop at end of animal head. Poor condition. Probably worn.  
No chemical analysis available.

Wakerley G25 (2)

Mus: North    Accession no: AS90.6  
Overall length: 91.1                                  Weight (g): 12  
CM type: Small B 2                                    Åberg:  
Context: Grave 25  
Assoc: not known  
Refs: see above  
Lhs skb projects back from hpl, tkb projects forward from hpl. Both skbs  
worn at underside, but rhs worn more. Casting flaw at rev of bow.  
No chemical analysis available.

Wakerley G28c

Mus: North    Accession no: AS90.6  
Overall length: 127.5                                 Weight (g) : 60  
CM type: C 1    Åberg:  
Context: Grave 28c  
Assoc: not known  
Refs: see above  
Hollow rev of bow and foot. Worn.  
No chemical analysis available.

Wakerley G31

Mus: North  
Overall length: 118.0  
CM type: D?  
Context: Grave 31  
Assoc: not known  
Refs: see above  
Rev of casting flat, except at kbs and foot? Single point punch marks. Rhs skb small and worn.  
No chemical analysis available.

Accession no: AS91.2  
Weight (g) : 50  
Åberg:

Wakerley G42

Mus: North  
Overall length: broken  
CM type: Z3  
Context: Grave 42  
Assoc: not known  
Refs: Pair disc brooches, beads  
Made using plates, rivets etc. Catch on a long ridge. WM rivetted on apparently in thin sheets. Ridges notched. Fair condition.  
No chemical analysis available.

Accession no: AS91.3  
Weight (g): 102  
Åberg:

Wakerley G74

Mus: North  
Overall length: 136.5  
CM type: Z1  
Context: Grave 74  
Assoc: not known  
Refs: see above, See Sporle 2, Snape 1  
Lhs skb with textile through holes. Double semi-circular punch marks. Ridges notched. Fair condition.  
No chemical analysis available.

Accession no: AS93.1  
Weight (g):  
Åberg:

Walsingham

Mus: NCM  
Overall length: 132.8  
CM type: Associated D 2  
Context: Grave  
Assoc: annular brooch  
Refs: Clarke R 1939, Nf Arch XXVII, pl 10  
Rev of casting hollow at tkb and tkb collar, bow and foot. Ring and dot decoration. V-shaped punch mark with further detail inside. Ridges notched. Cleaned, worn at bow.  
AA analysis:  
Cu: 83.50      Zn: 9.23      Pb: 3.40      Sn: 5.20  
Fe: 0.42      Ni: 0.08      Ag: 0.46

Accession no: 143.931  
Åberg:

Welbeck Hill

Mus: ?private coll  
Overall length: not determined  
CM type: Z 1b  
Context: none  
Assoc: none  
Refs: Leeds and Pocock 1971, 31  
Not examined.  
No chemical analysis available.

Accession no: ?  
Åberg: Vc

West Garth Gardens G7 (1)

Mus: B St E    Accession no:  
Overall length:    not determined  
CM type: spatulate foot  
Context: Grave 7  
Assoc: 2 amber beads  
Refs: West 1982, fig 59, 7A  
Simple form.  
No chemical analysis available.

West Garth Gardens G7 (2)

Mus: B St E    Accession no:  
Overall length:    not determined  
CM type: spatulate foot  
Context: Grave 7  
Assoc: see above  
Refs: West 1982, fig 59, 7E  
As above but catch opens opposite sense.  
No chemical analysis available.

West Garth Gardens G52

Mus: B St E    Accession no:  
Overall length:    not determined  
CM type: Large B 2                                  Åberg II  
Context: Grave 52  
Assoc: CA rings, wrist clasp Hines type B18d, pair annular brooches, iron knives, 9 beads  
Refs: West 1982, fig 77A  
Un-identifiable punch marks. Skbs cast separately. Worn.  
No chemical analysis available.

West Garth Gardens G55

Mus: B St E    Accession no:  
Overall length:    not determined  
CM type: Small B 2                                  Åberg II  
Context: Grave 55  
Assoc: small-long brooch (trefoil-headed), iron knife, equal-armed brooch (gilt, zoomorphic dec)  
Refs: West 1982, fig 78B  
Semi-circular punch mark with central dot.  
No chemical analysis available.

West Garth Gardens G61 (1)

Mus: B St E    Accession no:  
Overall length:    not determined  
CM type: C 2  
Context: Grave 61  
Assoc: Cb (2) and (3), silver ring or band with iron knife, wrist clasp, iron buckle, 2 rings, c 6 beads.  
Refs: West 1982, fig 80B  
Hole in end of animal head plugged by CA. Semi-circular punch marks with central dot. Ring and dot decoration.  
No chemical analysis available.



West Stow Heath 2

AA analysis:

Cu: 87.00      Zn: 1.28      Pb: 2.95      Sn: 12.86  
Fe: 0.27      Ni: 0.00      Ag: 0.25

West Stow Heath 3

Mus: Ashm

Accession no: 1909.433

Overall length: 87.0      Weight (g): 29

CM type: Small B 2      Åberg: II      Reich: *Einzelformen*

Context: none

Assoc: none

Refs: Coll Ant II pl XL; Åberg no 19; Reichstein no 872, pl 119,1; West 1985, fig 256, 4

Rev of casting flat. Small circular punch marks. Worn.

AA analysis:

Cu: 85.00      Zn: 1.00      Pb: 8.77      Sn: 10.58  
Fe: 0.32      Ni: 0.00      Ag: 0.59

West Stow Heath 5

Mus: CUM

Accession no: Z 20454

Overall length: 114.1

CM type: Large B 3

Reich: *Typ Krefeld-Gellep*

Context: none

Assoc: none

Refs: Reichstein no 873, Taf 90, 2; West 1985, fig 257, 1

Rev of casting hollow at bow, foot, tkb. Casting flaw at tkb. Furrow at the 'inside' of the catch.

AA analysis:

Cu: 82.00      Zn: 0.38      Pb: 5.01      Sn: 11.71  
Fe: 0.11      Ni: 0.05      Ag: 0.16

West Stow Heath 6

Mus: BM

Accession no: 56,7-1,5174

Overall length: 115.5

CM type: Associated C

Åberg: II

Context: none

Assoc: none

Refs: West 1985, fig 256, 6

Rev of casting flat, incl bow. Ridges notched. Double semi-circular punch marks. Notches cut on upper edge of hpl wings. Worn.

AA analysis:

Cu: 77.50      Zn: 0.88      Pb: 4.92      Sn: 13.26  
Fe: 0.29      Ni: 0.03      Ag: 0.13

West Stow Heath 7

Mus: B St E

Accession no: ?

Overall length: not determined

CM type: Small B 2

Context: none

Assoc: none

Refs: West 1985, fig 256, 5

Not examined. Upright, rectangular catch.

No chemical analysis available.



West Stow Heath 14

Mus: B St E    Accession no:  
Overall length:   not determined  
CM type: Z 1a                                        Leeds and Pocock: Vg  
Context: none  
Assoc: none  
Refs: West 1985, fig 259,2  
Not examined. Pierced several times at bow. Skbs attached with triangular  
formation, probably for strengthening. Stepped catch.  
No chemical analysis available.

Wigston Magna

Mus: Not known                                      Accession no: ?  
Overall length:   not determined  
CM type: Associated Z 4                            Leeds: C2  
Context: none  
Assoc: none  
Refs: VCH I, 229, fig 3; Åberg no 229; Leeds 1949) no 136  
Not examined.  
No chemical analysis available.

Willoughby-on-the Wolds 1

Mus: Notts    Accession no: ?  
Overall length:   not determined  
CM type: Z?    Leeds and Pocock: Vi  
Context: not known  
Assoc: not known  
Refs: Leeds and Pocock, 33  
Not examined.  
No chemical analysis available.

Willoughby-on-the-Wolds 2

Mus: Notts    Accession no: ?  
Overall length:   not determined  
CM type: Z?    Leeds and Pocock: Vj  
Context: not known  
Assoc: not known  
Refs: Leeds and Pocock, 33  
Not examined  
No chemical analysis available.

Willoughby-on-the-Wolds 2

Mus: Notts    Accession no: ?  
Overall length:   not determined  
CM type: Z?    Leeds and Pocock: V1  
Context: not known  
Assoc: not known  
Refs: Leeds and Pocock, 33  
Not examined.  
No chemical analysis available.

Woodstone 1

Mus: BM  
Overall length: 95.0  
CM type: Associated D 3  
Context: none  
Assoc: none  
Refs: Fig 2.41; VCH I, fig 18  
Rev of casting hollow at bow, kbs. ?punch marks. Worn and cleaned.  
AA analysis:  
Cu: 84.00 Zn: 0.93 Pb: 3.87 Sn: 10.47  
Fe: 0.17 Ni: 0.03 Ag: 0.12

Accession no: 73,6-2,108

Åberg: IV

Woodstone 2

Mus: BM  
Overall length: 95.7  
CM type: Associated D 1  
Context: Grave  
Assoc: Iron blade  
Refs: VCH I, fig 17  
Pin lug on ridge, running into the bow. Rev of casting hollow at kbs, bow and foot. ? punch mark. Worn.  
AA analysis:  
Cu: 87.50 Zn: 1.24 Pb: 1.59 Sn: 10.31  
Fe: 0.13 Ni: 0.04 Ag: 0.10

Accession no: 73,6-2,109

Åberg: IV

Woodstone 3

Mus: Pete  
Overall length: 132.1  
CM type: Z 2a  
Context: none  
Assoc: none  
Refs: VCH I, fig 13  
Rev of casting flat. Short, rectangular catch. WM. Double V and circular punch marks.  
No chemical analysis available.

Accession no: L494

Weight (g): 78

Woodstone 4

Mus: Pete  
Overall length: 123.6  
CM type: D 2  
Context: none  
Assoc: none  
Refs: Fig 2.29; VCH I, fig 19 (lower right)  
Rev of casting flat. Short catch. Skbs not symmetrical. Single point punch mark. Worn (?esp at rhs skb), rather poorly preserved.  
No chemical analysis available.

Accession no: L495

Weight (g): 48

Woodstone 5

Mus: Pete  
Overall length: 122.6  
CM type: B 3  
Context: none  
Assoc: none  
Refs: VCH I, fig 9  
Rev of casting flat, except at bow and foot. Semi-circular and ?double semi-circular punch marks. Worn.  
No chemical analysis available.

Accession no: L503

Weight (g): 60

Woodstone 6

Mus: Pete                                      Accession no: L504  
Overall length: 133.3                      Weight (g): 64  
CM type: C 1  
Context: none  
Assoc: none  
Refs: VCH I, fig 7  
Rev of casting flat, except at bow. Casting flaw at hpl. Decoration (lines) on catch. Worn.  
No chemical analysis available.

Woodstone 7

Mus: Pete                                      Accession no: L505  
Overall length: 124.8                      Weight (g): 80  
CM type: D 2  
Context: none  
Assoc: none  
Refs: VCH I, fig 2  
Rev of casting hollow at kbs, bow and foot. Catch on slight ridge. Flaw at rev of hpl. Semi-circular punch marks. Worn, especially at rhs skb.  
No chemical analysis available.

Woodstone 8

Mus: Pete                                      Accession no: L1025  
Overall length: 138.9                      Weight (g): 80  
CM type: D 3  
Context: none  
Assoc: none  
Refs: VCH I, fig 16  
Rev of casting flat, except at hpl, kbs, bow and foot. Casting not symmetrical. Casting fault at bow? Short catch. Double V punch marks. Worn, but not very.  
No chemical analysis available.

Woodstone 9

Mus: Pete                                      Accession no: L1022  
Overall length: 129.5                      Weight (g): 68  
CM type: D 3  
Context: New Fletton Pits  
Assoc: none  
Refs: none  
Rev of casting flat, except at kbs, foot. Pin lug on slight spine which runs to bow. Skbs cast lopsided. Lappets unequal. Triangular punch marks. Worn.  
No chemical analysis available.

Woodstone 10

Mus: Pete                                      Accession no: L1024  
Overall length: 151.3                      Weight (g): 122  
CM type: Associated Z3  
Context: New Fletton Pits  
Assoc: none  
Refs: Plate 3; VCH Hunts 1, fig 1  
Very flat casting. Two pin lugs. Neither skbs or lappets identical. Catch placed low on foot. Gilding throughout, WM on kbs and foot. Segmentation of ridged decoration. Worn on gilding.  
No chemical analysis available.

Woodstone 11

Mus: Pete  
Overall length: 118.6  
CM type: D 1  
Context: Palmerston Road  
Assoc: none  
Refs: VCH Hunts p 272 and fig 11  
Flat rev to casting, slight indents rev of kbs and foot. Short catch ?on a ridge. Two pin lugs. Slightly messy casting at rev. ?WM on kb fans. No chemical analysis available.

Woolsthorpe-by-Belvoir 1

Mus: Lin  
Overall length: 143.0  
CM type: D 5  
Context: Ironstone workings  
Assoc: none  
Refs: Grantham Public Library Museum Annual Report 1929-30, plate on page 14  
Two pin lugs. Rev of casting hollow at bow, kbs and kb collars. Short and upright catch. Semi-circular punch marks. Very worn.  
Probe analysis  
Zn: 6.69 Pb: 1.86 Sn: 7.20  
Fe: 0.12 Ni: 0.03 Ag: 0.58 Au: 0.06  
As: 0.21 Sb: 0.10 Bi: 0.01 Co: 0.00

Woolsthorpe-by-Belvoir 2

Mus: Lin  
Overall length: broken  
CM type: Associated D  
Context: Ironstone workings  
Assoc: see above  
Refs: See above  
Rev of casting very hollow at kbs, also behind bow and foot. Small triangular punch marks. Ring and dot decoration. Worn, especially at rhs skb, lower edge.  
Probe analysis  
Zn: 1.03 Pb: 2.75 Sn: 10.70  
Fe: 0.07 Ni: 0.03 Ag: 0.14 Au: 0.00  
As: 0.19 Sb: 0.03 Bi: 0.03 Co: 0.00

Wychnor

Mus: Burton upon Trent  
Overall length: not determined  
CM type: Z 3  
Context: Burial discovered in gravel digging  
Assoc: none  
Refs: Leahy 1979, 7, Pl 1a  
Not examined. Kbs made separately from hpl, rivetted on. Gilt and silvered. No chemical analysis available.

Catalogue of Norwegian brooches examined

Museums C = Oslo                      T = Trondheim              B = Bergen  
           S = Stavanger                Ts = Tromsø

Province Øf Østfold              Bu Buskerud              Ro Rogaland  
           Vf Vestfold              Te Telemark              Ho Hordaland  
           Hed Hedmark            AA Aust-Agder            SF Sogn og Fjordane  
           Opp Oppland            VA Vest-Agder            MR Møre og Romsdal  
           ST Sør-Trondelag        NT Nord-Trøndelag        No Nordland

Sitename: Åk, Grytten pgd, M R  
 Accession no: C 6200                      Overall length:              96.7  
 Reichstein (1975) *Typ: Nygard R279 Taf 17,1/2*

Sitename: Åk, Grytten pgd, M R  
 Accession no: C 6201                      Overall length:              103.0  
 Reichstein (1975) *Typ: Nygard R279 Taf 17,1/2*  
 Microprobe analysis (Percentage)  
 Sn:            12.63    Pb:            1.44    Zn:            0.03  
 Sb:            0.000    Ag:            0.060    Fe:            0.030  
 Ni:            0.030    Co:            0.000    Au:            0.020  
 Bi:            0.000    As:            0.030

Sitename: Ålgard, Gjestal pgd, Ro  
 Accession no: S 2035                      Overall length:              103.0  
 Reichstein (1975) *Typ: Ålgard R129 Taf 113,4*

Sitename: Alstahaug, Belsvåg pgd, Helgelund, No  
 Accession no: T 2845                      Overall length:              90.7  
 Reichstein (1975) *Typ: Witmarsum R292*

Sitename: Åmli, Åmli pgd, AA  
 Accession no: C 21439A                      Overall length:              89.8  
 Reichstein (1975) *Typ: Tveitane-Hunn R70*

Sitename: Arsvall, VA  
 Accession no: S 1985/19A                      Overall length:              83.2  
 Reichstein (1975) *Typ: New find*

Sitename: Arsvall, VA  
 Accession no: S 1985/19B                      Overall length:              77.5  
 Reichstein (1975) *Typ: New find*

Sitename: Aurland-Kirke, Aurland pgd, SF  
 Accession no: B 7790                      Overall length:              63.4  
 Reichstein (1975) *Typ: Kvassheim R250*  
 Microprobe analysis (Percentage)  
 Sn:            3.42    Pb:            0.67    Zn:            8.86  
 Sb:            0.130    Ag:            0.090    Fe:            0.210  
 Ni:            0.030    Co:            0.000    Au:            0.040  
 Bi:            0.030    As:            0.120

Sitename: Ballebakke av Helgeland, Vikedal pgd, Ro  
 Accession no: S 5491A                      Overall length:              broken  
 Reichstein (1975) *Typ: Einzelformen R215 Taf 142,2*  
 Microprobe analysis (Percentage)  
 Sn:            7.38    Pb:            1.58    Zn:            7.67  
 Sb:            0.030    Ag:            0.150    Fe:            0.190  
 Ni:            0.020    Co:            0.000    Au:            0.030  
 Bi:            0.030    As:            0.060

Sitename: Berlgi und Nedenes, Øyestad pgd, AA  
 Accession no: C 29034I                      Overall length:              118.5  
 Reichstein (1975) *Typ: Foldvik-Empingham R69*

Sitename: Bø, Hå pgd, Ro  
 Accession no: S 828 Overall length: 77.8  
 Reichstein (1975) Typ: Fristad R163 Taf 114,8

Sitename: Bø, Hå pgd, Ro  
 Accession no: C 7530 Overall length: 118.6  
 Reichstein (1975) Typ: *Einzelformen* R164

Sitename: Bråstein, Høyland pgd, Ro  
 Accession no: C 1286 Overall length: 100.6  
 Reichstein (1975) Typ: Mundheim Variant 3 R159 Taf 45,5

Sitename: Bråstein, Høyland pgd, Ro  
 Accession no: C 1287 Overall length: 116.5  
 Reichstein (1975) Typ: Mundheim Variant 1 R159 Taf 45,4  
 Microprobe analysis (Percentage)  
 Sn: 3.25 Pb: 2.20 Zn: 9.12  
 Sb: 0.030 Ag: 0.250 Fe: 0.380  
 Ni: 0.040 Co: 0.010 Au: 0.070  
 Bi: 0.070 As: 0.370

Sitename: Bråstein, Høyland pgd, Ro  
 Accession no: C 1288 Overall length: 68.0  
 Reichstein (1975) Typ: *Einzelformen* R159 Taf 45,6

Sitename: Bråstein, Høyland pgd, Ro  
 Accession no: B 2476 Overall length: 109.1  
 Reichstein (1975) Typ: *Einzelformen* R160

Sitename: Bremnes, Sortland pgd, No  
 Accession no: Ts 1344 Overall length: 91.0  
 Reichstein (1975) Typ: Røssøy R328 Taf 17,8  
 Microprobe analysis (Percentage)  
 Sn: 7.01 Pb: 2.68 Zn: 2.41  
 Sb: 0.060 Ag: 0.230 Fe: 0.120  
 Ni: 0.020 Co: 0.000 Au: 0.020  
 Bi: 0.010 As: 0.090

Sitename: Bremnes, Sortland pgd, No  
 Accession no: Ts 1345 Overall length: 77.3  
 Reichstein (1975) Typ: *Einzelformen* R328 Taf 17,7  
 Microprobe analysis (Percentage)  
 Sn: 4.46 Pb: 0.90 Zn: 1.72  
 Sb: 0.030 Ag: 0.190 Fe: 0.120  
 Ni: 0.030 Co: 0.000 Au: 0.010  
 Bi: 0.020 As: 0.140

Sitename: Brinsdal, Holme pgd, VA  
 Accession no: C8960 Overall length: 108.2  
 Reichstein (1975) Typ: *Einzelformen* R80

Sitename: Brinsdal, Holme pgd, VA  
 Accession no: C8961 Overall length: 104.8  
 Reichstein (1975) Typ: *Einzelformen* R83

Sitename: Brusand, Egersund pgd, Ro  
 Accession no: S4890A Overall length: 116.8  
 Reichstein (1975) Typ: Mundheim Variant 3 R110

Sitename: Buraya, Storborg, Levanger pgd, NT  
 Accession no: T12917 Overall length: broken  
 Reichstein (1975) Typ: *Einzelformen* R289 Taf 144,1

Sitename: Byrkje, Ardal, Hjelmeland pgd, Ro  
 Accession no: S5068A Overall length: 163.4  
 Reichstein (1975) Typ: Byrkje R142

Sitename: Dirdal, Høgsfjord, Høle pgd, Ro  
 Accession no: S2435A Overall length: 121.7  
 Reichstein (1975) *Typ: Mundheim Variant 1 R157*

Sitename: Dirdal, Høgsfjord, Høle pgd, Ro  
 Accession no: S2435B Overall length: 115.6  
 Reichstein (1975) *Typ: Mundheim Variant 1 R157*

Sitename: Edland, Gjestal pgd, Ro  
 Accession no: S5853 Overall length: 127.5  
 Reichstein (1975) *Typ: Mundheim Variant 2 R128*

Sitename: Eidbukten, Meløy pgd, Helgeland, No  
 Accession no: TS2815 Overall length: 131.3  
 Reichstein (1975) *Typ: Eidbukten R296 Taf 114,2*

Sitename: Eidsten, Brunlanes pgd, Vf  
 Accession no: C19237 Overall length: 98.3  
 Reichstein (1975) *Typ: Einzelformen R10*

Sitename: Eine, Vang pgd, He  
 Accession no: C15682 Overall length: 95.6  
 Reichstein (1975) *Typ: Lunde ? R41*

Sitename: Eine, Vang pgd, He  
 Accession no: C15688 Overall length: 97.8  
 Reichstein (1975) *Typ: Eine ? R41*

Sitename: Fen, Stokke pgd, Vf  
 Accession no: C20154A Overall length: 111.4  
 Reichstein (1975) *Typ: Einzelformen R32*

Sitename: Finsland, Bjelland pgd, VA  
 Accession no: S2377A Overall length: 94.9  
 Reichstein (1975) *Typ: Ak R73*

Sitename: Fossan, Høgsfjord pgd, Ro  
 Accession no: S4082A Overall length: broken  
 Reichstein (1975) *Typ: Mundheim ?R153*  
 Microprobe analysis (Percentage)  
 Sn: 12.55 Pb: 1.00 Zn: 0.00  
 Sb: 0.010 Ag: 0.060 Fe: 0.030  
 Ni: 0.030 Co: 0.000 Au: 0.030  
 Bi: 0.040 As: 0.040

Sitename: Fosse, Indre, Alversund pgd, Ho  
 Accession no: B11475A Overall length: 83.5  
 Reichstein (1975) *Typ: Tveitane-Hunn R223*  
 Microprobe analysis (Percentage)  
 Sn: 12.23 Pb: 1.16 Zn: 0.33  
 Sb: 0.010 Ag: 0.140 Fe: 0.460  
 Ni: 0.020 Co: 0.000 Au: 0.010  
 Bi: 0.020 As: 0.190

Sitename: Fristad, Klepp pgd, Ro  
 Accession no: S3548 Overall length: 68.4  
 Reichstein (1975) *Typ: Fristad R184 Taf 114,9*

Sitename: Fuskeland, Holme pgd, AA  
 Accession no: C4048 Overall length: 96.9  
 Reichstein (1975) *Typ: Lunde R75*

Sitename: Gjeisfjell, Hjelmeland pgd, Ro  
 Accession no: S7300B Overall length: 103.0  
 Reichstein (1975) *Typ: Einzelformen R143*

Sitename: Gjerforden, Hamre pgd, Ho  
 Accession no: B728 Overall length: 82.9  
 Reichstein (1975) *Typ: Røssøy R230*

Sitename: Gjervik, Hamre pgd, Ho  
 Accession no: B2266 Overall length: 82.9  
 Reichstein (1975) *Typ: Røssøy R230*

Sitename: Gjervik, Hamre pgd, Ho  
 Accession no: B2267 Overall length: 102.5  
 Reichstein (1975) *Typ: Groß Siemß R230*

Sitename: Gjone, Hedrum pgd, Vf  
 Accession no: C20165A Overall length: 100.9  
 Reichstein (1975) *Typ: Einzelformen R20*

Sitename: Gjone, Hedrum pgd, Vf  
 Accession no: C20165B Overall length: 106.5  
 Reichstein (1975) *Typ: Einzelformen R20*

Sitename: Grunnes, Vardø pgd, Finn  
 Accession no: TS4307 Overall length: 115.2  
 Reichstein (1975) *Typ: Mundheim Variant 1 R342*  
 Microprobe analysis (Percentage)  
 Sn: 8.64 Pb: 4.83 Zn: 2.24  
 Sb: 0.060 Ag: 0.170 Fe: 0.130  
 Ni: 0.050 Co: 0.010 Au: 0.040  
 Bi: 0.000 As: 0.250

Sitename: Grytten, Grytten pgd, MR  
 Accession no: T2071 Overall length: 55.4  
 Reichstein (1975) *Typ: Einzelformen R278 Taf 144,2+3*

Sitename: Grytten, Grytten pgd, MR  
 Accession no: B444 Overall length: broken  
 Reichstein (1975) *Typ: Eidbukten R281 Taf 113,2*

Sitename: Grytten, Grytten pgd, MR  
 Accession no: B445 Overall length: broken  
 Reichstein (1975) *Typ: Unbestim. R281*

Sitename: Hagbartsholmen, Steigen pgd, No  
 Accession no: TS1436 Overall length: 77.2  
 Reichstein (1975) *Typ: Skogøya R312*

Sitename: Hagbartsholmen, Steigen pgd, No  
 Accession no: TS1435 Overall length: 76.8  
 Reichstein (1975) *Typ: Skogøya R312*

Sitename: Harr, Hå pgd, Ro  
 Accession no: C21251 Overall length: 110.2  
 Reichstein (1975) *Typ: Mundheim Variant 4 R166*

Sitename: Helle, Høgsfjord pgd, Ro  
 Accession no: S3564A Overall length: broken  
 Reichstein (1975) *Typ: Mundheim R154*

Sitename: Helle, Høgsfjord pgd, Ro  
 Accession no: S3564B Overall length: broken  
 Reichstein (1975) *Typ: Einzelformen R154 Taf 41,3*

Sitename: Helle, Høgsfjord pgd, Ro  
 Accession no: S3564C Overall length: broken  
 Reichstein (1975) *Typ: Sagland R154 Taf 41,1*

Sitename: Helstad, Bindal pgd, N T  
 Accession no: T20655 Overall length: 116.9  
 Reichstein (1975) *Typ*: not listed

Sitename: Hen, Romsdal pgd, MR  
 Accession no: T10114 Overall length: 115.6  
 Reichstein (1975) *Typ*: *Einzelformen* R276 *Taf* 32,4

Sitename: Hen, Romsdal pgd, MR  
 Accession no: T10115 Overall length: 124.3  
 Reichstein (1975) *Typ*: Mundheim Variant 6 R276 *Taf* 32,6

Sitename: Hillingan, Hannarøy pgd, No  
 Accession no: TS4320A Overall length: 122.7  
 Reichstein (1975) *Typ*: Skogøya R305 *Taf* 56,1  
 Microprobe analysis (Percentage)

Sn:	3.65	Pb:	1.33	Zn:	11.26
Sb:	0.060	Ag:	0.310	Fe:	0.330
Ni:	0.050	Co:	0.000	Au:	0.040
Bi:	0.010	As:	0.180		

Sitename: Hipplesbygda, Nordre Aurdal pgd, Op  
 Accession no: C15066 Overall length: 78.6  
 Reichstein (1975) *Typ*: Skjervum R43

Sitename: Hol, Hustad, Inderøy pgd, NT  
 Accession no: T9824 Overall length: 83.8  
 Reichstein (1975) *Typ*: Varhaug R286 *Taf* 39,5

Sitename: Hole, Grytten, Romsdal pgd, MR  
 Accession no: T2811 Overall length: 124.9  
 Reichstein (1975) *Typ*: Mundheim Variant 1 R277 *Taf* 31,11

Sitename: Hoyland, Nordre Undal, Ro  
 Accession no: C17990 Overall length: 93.9  
 Reichstein (1975) *Typ*: Lunde

Sitename: Hustad, Lødingen, No  
 Accession no: TS1252 Overall length: broken  
 Reichstein (1975) *Typ*: Skogøya R307

Sitename: Hvåle, Brunlanes pgd, Vf  
 Accession no: C19842 Overall length: 118.6  
 Reichstein (1975) *Typ*: Lunde R12  
 Microprobe analysis (Percentage)

Sn:	10.18	Pb:	0.86	Zn:	0.03
Sb:	0.020	Ag:	0.450	Fe:	0.070
Ni:	0.020	Co:	0.010	Au:	0.060
Bi:	0.050	As:	0.150		

Sitename: Hvåle, Brunlanes pgd, Vf  
 Accession no: C19843 Overall length: 98.2  
 Reichstein (1975) *Typ*: Sonderform R12

Sitename: Hvåle, Brunlanes pgd, Vf  
 Accession no: C19844 Overall length: 82.9  
 Reichstein (1975) *Typ*: Eine R12

Sitename: Hvitsen, Øvre Eiker pgd, Bu  
 Accession no: C24016A Overall length: 105.0  
 Reichstein (1975) *Typ*: *Einzelformen* R48

Sitename: Hvitsen, Øvre Eiker pgd, Bu  
 Accession no: C24016B Overall length: 79.4  
 Reichstein (1975) *Typ*: *Einzelformen* R48

Sitenam: Hvitsen, Øvre Eiker pgd, Bu  
 Accession no: C24016C Overall length: 78.4  
 Reichstein (1975) *Typ: Einzelformen R48*

Sitenam: Hvitsen, Øvre Eiker pgd, Bu  
 Accession no: C24016D Overall length: 44.5  
 Reichstein (1975) *Typ: Einzelformen R48*

Sitenam: Jarmunnen, Sømna pgd, No  
 Accession no: T13544B Overall length: 111.3  
 Reichstein (1975) *Typ: Skogøya R299 Taf 61,4*

Sitenam: Kleiveland, Hjelmeland pgd, Ro  
 Accession no: S2376 Overall length: 90.9  
 Reichstein (1975) *Typ: Mundheim Variant 8 R144 Taf 44,2*  
 Microprobe analysis (Percentage)  
 Sn: 3.29 Pb: 1.62 Zn: 0.13  
 Sb: 0.070 Ag: 0.200 Fe: 0.060  
 Ni: 0.020 Co: 0.000 Au: 0.000  
 Bi: 0.030 As: 0.250

Sitenam: Kolsland, Bjarkøy pgd, Sør-Troms, No  
 Accession no: TS2324 Overall length: 75.7  
 Reichstein (1975) *Typ: Skogøya R332*

Sitenam: Kolsland, Bjarkøy pgd, Sør-Troms, No  
 Accession no: TS2325 Overall length: 76.1  
 Reichstein (1975) *Typ: Skogøya R332*

Sitenam: Kolsland, Bjarkøy pgd, Sør-Troms, No  
 Accession no: TS2330 Overall length: 84.7  
 Reichstein (1975) *Typ: Røssøy R333*  
 Microprobe analysis (Percentage)  
 Sn: 9.54 Pb: 2.63 Zn: 0.20  
 Sb: 0.060 Ag: 1.590 Fe: 0.130  
 Ni: 0.030 Co: 0.000 Au: 0.120  
 Bi: 0.020 As: 0.060

Sitenam: Krågeland av Slettebø, Helleland pgd, Ro  
 Accession no: S5046B Overall length: 120.6  
 Reichstein (1975) *Typ: Mundheim Variant 1 R133*

Sitenam: Kvasshheim, Egersund pgd, Ro  
 Accession no: B5296 Overall length: 87.3  
 Reichstein (1975) *Typ: Unbestim R117*

Sitenam: Kvasshheim, Egersund pgd, Ro  
 Accession no: B5306 Overall length: 95.6  
 Reichstein (1975) *Typ: Einzelformen R119*

Sitenam: Kvasshheim, Egersund pgd, Ro  
 Accession no: B5306A Overall length: 92.8  
 Reichstein (1975) *Typ: Einzelformen R119*

Sitenam: Kvasshheim, Egersund pgd, Ro  
 Accession no: B5352 Overall length: broken  
 Reichstein (1975) *Typ: R120*

Sitenam: Kvasshheim, Egersund pgd, Ro  
 Accession no: B5358 Overall length: 68.5  
 Reichstein (1975) *Typ: Mundheim R121*

Sitenam: Kvasshheim, Egersund pgd, Ro  
 Accession no: B5362 Overall length: 82.2  
 Reichstein (1975) *Typ: Unbestim. R122*

Sitename: Kvasnheim, Egersund pgd, Ro  
 Accession no: B5363A Overall length: broken  
 Reichstein (1975) *Typ: Unbestim. R122*

Sitename: Kvasnheim, Egersund pgd, Ro  
 Accession no: B5363B Overall length: broken  
 Reichstein (1975) *Typ: Unbestim. R122*

Sitename: Kvasnheim, Egersund pgd, Ro  
 Accession no: B5984 Overall length: 98.0  
 Reichstein (1975) *Typ: Einzelformen R124*

Sitename: Kvasnheim, Egersund pgd, Ro  
 Accession no: B5988 Overall length: 68.7  
 Reichstein (1975) *Typ: Einzelformen R124*

Sitename: Kvasnheim, Egersund pgd, Ro  
 Accession no: B948 Overall length: 89.6  
 Reichstein (1975) *Typ: Einzelformen R127 Fig 141,4*

Sitename: Lindset, Vefsn pgd, No  
 Accession no: T18453 Overall length: 101.7  
 Reichstein (1975) *Typ: ? Mundheim R301*

Sitename: Lindset, Vefsn pgd, No  
 Accession no: 18354B Overall length: 68.3  
 Reichstein (1975) *Typ: Unbestim R301*

Sitename: Litleland, Håland pgd, Ro  
 Accession no: S2595G Overall length: 133.0  
 Reichstein (1975) *Typ:*

Sitename: Ljønes, Skjaerstad pgd, No  
 Accession no: TS1427 Overall length: 98.5  
 Reichstein (1975) *Typ: Skogøya R311*

Sitename: Ljønes, Skjaerstad pgd, No  
 Accession no: TS1426 Overall length: broken  
 Reichstein (1975) *Typ: Skogøya R311*

Sitename: Lunde, Lunde pgd, Te  
 Accession no: C21648A Overall length: 102.0  
 Reichstein (1975) *Typ: Lunde R54*

Sitename: Lunde, Lunde pgd, Te  
 Accession no: C21648B Overall length: 89.9  
 Reichstein (1975) *Typ: Lunde R54*

Sitename: Lunde, Lunde pgd, Te  
 Accession no: C21648C Overall length: 79.2  
 Reichstein (1975) *Typ: Tveitane-Hunn R54 Taf 9,8*

Sitename: Lunde, Lunde pgd, Te  
 Accession no: C21648D Overall length: 64.8  
 Reichstein (1975) *Typ: Tveitane-Hunn R54*

Sitename: Lyse, Høle pgd, Ro  
 Accession no: S2723A Overall length: 72.8  
 Reichstein (1975) *Typ: Einzelformen R158 Taf 141,8*

Sitename: Måge, Ullensvang pgd, Ho  
 Accession no: B5733A Overall length: 69.1  
 Reichstein (1975) *Typ: Lyminge R243*

Sitename: Måge, Ullensvang pgd, Ho  
 Accession no: B5733B Overall length: 75.2  
 Reichstein (1975) *Typ: Gjerla R243*

Sitename: Matland, Hå pgd, Ro  
Accession no: S6451 Overall length: broken  
Reichstein (1975) *Typ: Unbestim. R170*

Sitename: Near Stavanger, Ro  
Accession no: S1926 Overall length: 101.4  
Reichstein (1975) *Typ: Mundheim Variant 4 R212*

Sitename: Naerland, Hå pgd, Ro  
Accession no: S2061 Overall length: broken  
Reichstein (1975) *Typ: Mundheim R172*

Sitename: Njøs, Leikanger pgd, SF  
Accession no: B10090 Overall length: 115.5  
Reichstein (1975) *Typ: Skjervum R262*

Sitename: Nøding, Holme pgd, VA  
Accession no: C8891 Overall length: 164.8  
Reichstein (1975) *Typ: Mundheim Variant 5 R77*

Sitename: Øbrestad, Hå pgd, Ro  
Accession no: B4344 Overall length: 97.0  
Reichstein (1975) *Typ: Einzelformen R175*

Sitename: Øffersøy fra Vestøy, Lødingen pgd, No  
Accession no: TS3539A Overall length: 165.7  
Reichstein (1975) *Typ: Skogøya R308*

Sitename: Øffersøy fra Vestøy, Lødingen pgd, No  
Accession no: TS3539B Overall length: 161.4  
Reichstein (1975) *Typ: Skogøya R308*  
Microprobe analysis (Percentage)  
Sn: 9.64 Pb: 4.31 Zn: 0.03  
Sb: 0.150 Ag: 0.200 Fe: 0.010  
Ni: 0.040 Co: 0.010 Au: 0.030  
Bi: 0.000 As: 0.320

Sitename: Kvalbein, Egersund, Ro  
Accession no: B5550 Overall length: 76.6  
Reichstein (1975) *Typ: Einzelformen R112*

Sitename: Ølnes, Oyra, Sogndal pgd, Ho  
Accession no: B5968C Overall length: 44.3  
Reichstein (1975) *Typ: Einzelformen R265*

Sitename: Opedal, Ullensvang pgd, Ho  
Accession no: B6409A Overall length: 112.3  
Reichstein (1975) *Typ: Einzelformen R244*

Sitename: Orstad, Klepp pgd, Ro  
Accession no: S5791A Overall length: broken  
Reichstein (1975) *Typ: Mundheim R189*

Sitename: Øvre Mele, Ardal, Hjelmeland pgd, Ro  
Accession no: S2371A Overall length: 87.0  
Reichstein (1975) *Typ: Eine R147 Taf 15,7*  
Microprobe analysis (Percentage)  
Sn: 7.67 Pb: 2.84 Zn: 0.97  
Sb: 0.050 Ag: 0.500 Fe: 0.130  
Ni: 0.030 Co: 0.000 Au: 0.030  
Bi: 0.060 As: 0.430

Sitename: Øvre Mele, Ardal, Hjelmeland pgd, Ro  
Accession no: S2371B Overall length: 96.7  
Reichstein (1975) *Typ: Eine R147 Taf 15,5*

Sitename: Øvstebø, Etne pgd, Ho  
Accession no: B7767 Overall length: broken  
Reichstein (1975) Typ: Unbestim. R228

Sitename: Ramberg, Buøya, Bø, No  
Accession no: TS2049 Overall length: 170.8  
Reichstein (1975) Typ: Skogøya R321  
Microprobe analysis (Percentage)  
Sn: 12.91 Pb: 2.09 Zn: 0.04  
Sb: 0.010 Ag: 0.080 Fe: 0.030  
Ni: 0.010 Co: 0.000 Au: 0.060  
Bi: 0.010 As: 0.010

Sitename: Riskedal, Årdal, Hjelmeland pgd, Ro  
Accession no: S2587B Overall length: broken  
Reichstein (1975) Typ: Mundheim Variant 5 R219  
Microprobe analysis (Percentage)  
Sn: 8.47 Pb: 1.31 Zn: 3.87  
Sb: 0.030 Ag: 0.110 Fe: 0.150  
Ni: 0.040 Co: 0.000 Au: 0.070  
Bi: 0.010 As: 0.140

Sitename: Røldal pgd, Ho  
Accession no: B450 Overall length: broken  
Reichstein (1975) Typ: Mundheim Variant 5 R240

Sitename: Roneberg, Håland pgd, Ro  
Accession no: S2497 Overall length: 61.6  
Reichstein (1975) Typ: Einzelformen R180 Taf 143,1

Sitename: Røssøy, Steigen pgd, No  
Accession no: TS1197 Overall length: 95.2  
Reichstein (1975) Typ: Røssøy R314 Taf 18,9

Sitename: Røssøy, Steigen pgd, No  
Accession no: TS1198 Overall length: 95.2  
Reichstein (1975) Typ: Røssøy R314 Taf 18  
Microprobe analysis (Percentage)  
Sn: 0.48 Pb: 0.67 Zn: 19.60  
Sb: 0.010 Ag: 0.190 Fe: 0.960  
Ni: 0.030 Co: 0.020 Au: 0.000  
Bi: 0.050 As: 0.110

Sitename: Røssøy, Steigen pgd, No  
Accession no: TS1199 Overall length: 89.8  
Reichstein (1975) Typ: Røssøy R314 Taf 18,1

Sitename: Røssøy, Steigen pgd, No  
Accession no: TS1200 Overall length: 84.3  
Reichstein (1975) Typ: Røssøy R314 Taf 18,7  
Microprobe analysis (Percentage)  
Sn: 7.80 Pb: 0.65 Zn: 4.24  
Sb: 0.010 Ag: 0.030 Fe: 0.220  
Ni: 0.010 Co: 0.000 Au: 0.000  
Bi: 0.010 As: 0.020

Sitename: Røysland, Helleland pgd, Ro  
Accession no: S324 Overall length: 70.6  
Reichstein (1975) Typ: Einzelformen R134

Sitename: S Rollnes, Ibestad, No  
Accession no: TS1967,1 Overall length: broken  
Reichstein (1975) Typ: ?Mundheim

Sitename: Sagland, Helleland pgd, Ro  
Accession no: S6385A Overall length: 144.0  
Reichstein (1975) Typ: Mundheim Variant 1 R135

Sitename: Ser Sylte, Vestnes pgd, MR  
 Accession no: T13845A Overall length: 78.8  
 Reichstein (1975) Typ: Mundheim R283 Taf 33,1

Sitename: Skarstad, Lødingen pgd, No  
 Accession no: TS1240 Overall length: 80.2  
 Reichstein (1975) Typ: Røssøy R309

Sitename: Skeie, Klepp pgd, Ro  
 Accession no: B4426 Overall length: 65.3  
 Reichstein (1975) Typ: Einzelformen R180

Sitename: Skeie, Klepp pgd, Ro  
 Accession no: S7399 Overall length: 85.5  
 Reichstein (1975) Typ: Einzelformen R194

Sitename: Skjeipstad, Helleland pgd, Ro  
 Accession no: S3052 Overall length: 109.0  
 Reichstein (1975) Typ: Valandsmoen R136 Taf 26,2  
 Microprobe analysis (Percentage)  
 Sn: 9.77 Pb: 1.75 Zn: 0.09  
 Sb: 0.030 Ag: 0.480 Fe: 0.060  
 Ni: 0.030 Co: 0.010 Au: 0.020  
 Bi: 0.020 As: 0.260

Sitename: Skjervum, Vik pgd, SF  
 Accession no: B8830 Overall length: 126.2  
 Reichstein (1975) Typ: Skjervum R270

Sitename: Skogen, Hedrum, Vf  
 Accession no: C19769 Overall length: broken  
 Reichstein (1975) Typ: Trumpington R26  
 Microprobe analysis (Percentage)  
 Sn: 8.91 Pb: 1.85 Zn: 0.41  
 Sb: 0.040 Ag: 0.210 Fe: 0.120  
 Ni: 0.030 Co: 0.000 Au: 0.040  
 Bi: 0.030 As: 0.120

Sitename: Skogøya, Steigen pgd, No  
 Accession no: TS1118 Overall length: 133.3  
 Reichstein (1975) Typ: Skogøya R315

Sitename: Skogøya, Steigen pgd, No  
 Accession no: TS1119 Overall length: broken  
 Reichstein (1975) Typ: Mundheim Variant 1 R315

Sitename: Skogøya, Steigen pgd, No  
 Accession no: TS1120 Overall length: 127.7  
 Reichstein (1975) Typ: Skogøya R315  
 Microprobe analysis (Percentage)  
 Sn: 11.85 Pb: 1.70 Zn: 0.19  
 Sb: 0.040 Ag: 0.150 Fe: 0.060  
 Ni: 0.020 Co: 0.000 Au: 0.020  
 Bi: 0.010 As: 0.170

Sitename: Skogøya, Steigen pgd, No  
 Accession no: TS1122 Overall length: 139.0  
 Reichstein (1975) Typ: Skogøya R316

Sitename: Skogøya, Steigen pgd, No  
 Accession no: TS1123 Overall length: 153.8  
 Reichstein (1975) Typ: Skogøya R316

Sitename: Skogøya, Steigen pgd, No  
 Accession no: TS1124 Overall length: 72.1  
 Reichstein (1975) Typ: Einzelformen R316

Sitename: Skogøya, Steigen pgd, No  
 Accession no: TS1131 Overall length: 121.5  
 Reichstein (1975) Typ: Skogøya R317 Taf 62,4

Sitename: Skogøya, Steigen pgd, No  
 Accession no: TS1132 Overall length: 118.2  
 Reichstein (1975) Typ: Skogøya R317 Taf 62,2

Sitename: Skogøya, Steigen pgd, No  
 Accession no: TS1138 Overall length: broken  
 Reichstein (1975) Typ: Skogøya R318 Taf 61,1

Sitename: Skogøya, Steigen pgd, No  
 Accession no: TS1146 Overall length: broken  
 Reichstein (1975) Typ: Skogøya R319 Taf 60,7

Sitename: Skreros, Vegnsdal, Herefoss pgd, AA  
 Accession no: C21287 Overall length: 68.2  
 Reichstein (1975) Typ: Unbestim. R67

Sitename: Skreros, Vegnsdal, Herefoss pgd, AA  
 Accession no: C21287B Overall length: 130.8  
 Reichstein (1975) Typ: Unbestim. R67

Sitename: Skreros, Vegnsdal, Herefoss pgd, AA  
 Accession no: C21287C Overall length: 126.4  
 Reichstein (1975) Typ: Unbestim. R67

Sitename: Slimestad, Kvinesdal pgd, VA  
 Accession no: C15257 Overall length: 119.6  
 Reichstein (1975) Typ: Mundheim R84  
 Microprobe analysis (Percentage)  
 Sn: 10.09 Pb: 2.20 Zn: 0.22  
 Sb: 0.060 Ag: 0.520 Fe: 0.210  
 Ni: 0.030 Co: 0.010 Au: 0.050  
 Bi: 0.030 As: 0.050

Sitename: Søndre Gammelsrød, Råde, Of  
 Accession no: C6817 Overall length: 104.0  
 Reichstein (1975) Typ: ?R4

Sitename: Soppaland, Ardal, Hjelmeland pgd, Ro  
 Accession no: S4476A Overall length: 87.1  
 Reichstein (1975) Typ: Byrkje R145  
 Microprobe analysis (Percentage)  
 Sn: 6.27 Pb: 1.41 Zn: 11.55  
 Sb: 0.090 Ag: 0.200 Fe: 0.290  
 Ni: 0.040 Co: 0.010 Au: 0.000  
 Bi: 0.020 As: 0.060

Sitename: Stallemo, Øvrebo pgd, VA  
 Accession no: C23141C Overall length: 124.3  
 Reichstein (1975) Typ:

Sitename: Stallemo, Øvrebo pgd, VA  
 Accession no: C23141D Overall length: 109.5  
 Reichstein (1975) Typ:

Sitename: Stamnes, Levanger pgd, NT  
 Accession no: T13603A Overall length: 125.9  
 Reichstein (1975) Typ: Skogøya R293 Taf 62,1

Sitename: Staurnes, Borgund pgd, MR  
 Accession no: B719 Overall length: 151.0  
 Reichstein (1975) Typ: Foldvik-EMP R274

Sitename: Stene, Leko, NT  
 Accession no: T1227 Overall length: 66.9  
 Reichstein (1975) *Typ: Røssøy R288 Taf 17,6*

Sitename: Stokka, Høyland pgd, Ro  
 Accession no: S6392A Overall length: broken  
 Reichstein (1975) *Typ: Mundheim R162*

Sitename: Stokka, Høyland pgd, Ro  
 Accession no: S6392B Overall length: 60.5  
 Reichstein (1975) *Typ: Mundheim R162*

Sitename: Stokka, Høyland pgd, Ro  
 Accession no: S6392C Overall length: broken  
 Reichstein (1975) *Typ: Unbestim. R162*

Sitename: Stolpe, Vikedal pgd, Ro  
 Accession no: S3673 Overall length: 122.1  
 Reichstein (1975) *Typ: Einzelformen R216 Taf 142,5*

Sitename: Stolpe, Vikedal pgd, Ro  
 Accession no: S3673 Overall length: 122.1  
 Reichstein (1975) *Typ: R217*

Sitename: Stolpe, Vikedal pgd, Ro  
 Accession no: S6815B Overall length: broken  
 Reichstein (1975) *Typ: Mundheim Variant 1 R217*  
 Microprobe analysis (Percentage)  
 Sn: 10.73 Pb: 1.94 Zn: 3.04  
 Sb: 0.080 Ag: 0.110 Fe: 0.160  
 Ni: 0.030 Co: 0.000 Au: 0.030  
 Bi: 0.000 As: 0.150

Sitename: Augestadsanden, Strandelbarm pgd, Ho  
 Accession no: B4338 Overall length: broken  
 Reichstein (1975) *Typ: Einzelformen R241*

Sitename: Sveinsvoll, Bore, Klepp  
 Accession no: S5678A Overall length: broken  
 Reichstein (1975) *Typ: Skogøya R200*

Sitename: Svinøya, Bø pgd, No  
 Accession no: TS1513 Overall length: 55.6  
 Reichstein (1975) *Typ: Einzelformen R325 Taf 144,1*

Sitename: Vaersland, Helleland, Ro  
 Accession no: S1433 Overall length: 118.4  
 Reichstein (1975) *Typ: Mundheim Variant 7 R139*

Sitename: Vagehamn, Lødingen, No  
 Accession no: TS5253A Overall length: 127.6  
 Reichstein (1975) *Typ: Skogøya R310*

Sitename: Val, Bjugn, ST  
 Accession no: T5450 Overall length: 86.1  
 Reichstein (1975) *Typ: Einzelformen R284*

Sitename: Valandsmoen, Holme, VA  
 Accession no: C976 Overall length: 128.4  
 Reichstein (1975) *Typ: Noding R81*

Sitename: Varhaug, Hå pgd, Ro  
 Accession no: S1559 Overall length: 83.1  
 Reichstein (1975) *Typ: Varhaug R176 Taf 35,4*

Sitename: Veien, Norderhov, Bu  
 Accession no: C335 Overall length: 122.6  
 Reichstein (1975) *Typ: Einzelformen* R45

Sitename: Vemestad, Lyngdal, VA  
 Accession no: B4339 Overall length: 93.0  
 Reichstein (1975) *Typ: Lunde* R94

Sitename: Viblemo, Konnesmo, Mandal  
 Accession no: B3353 Overall length: 70.0  
 Reichstein (1975) *Typ: Lunde* R104

Sitename: Vik, Fjaere, AA  
 Accession no: C7072-82 ETC Overall length: 69.7  
 Reichstein (1975) *Typ: Einzelformen* R64

Sitename: Vik, Fjaere, AA  
 Accession no: C7077 Overall length: broken  
 Reichstein (1975) *Typ: Unbestim.* R63

Sitename: Vik, Fjaere, AA  
 Accession no: C7078 Overall length: broken  
 Reichstein (1975) *Typ: Unbestim* R63

Sitename: Unknown  
 Accession no: B451 Overall length: 133.3  
 Reichstein (1975) *Typ: Byrkje* R346

Sitename: Unknown  
 Accession no: B4640 Overall length: 120.7  
 Reichstein (1975) *Typ: Stedje* R266

Sitename: Unknown  
 Accession no: C1592 Overall length: broken  
 Reichstein (1975) *Typ:*

Sitename: Unknown  
 Accession no: C24491 Overall length: 85.6  
 Reichstein (1975) *Typ:*

Sitename: Unknown  
 Accession no: S UB13 Overall length: 91.0  
 Reichstein (1975) *Typ: new find*

Sitename: Unknown  
 Accession no: S UB19 Overall length: broken  
 Reichstein (1975) *Typ: new find*

Sitename: Unknown  
 Accession no: S9324 Overall length: 121.7  
 Reichstein (1975) *Typ: Stedje* R351 *Taf 115,2*  
 Microprobe analysis (Percentage)  
 Sn: 13.24 Pb: 1.92 Zn: 0.41  
 Sb: 0.020 Ag: 0.130 Fe: 0.040  
 Ni: 0.030 Co: 0.000 Au: 0.040  
 Bi: 0.020 As: 0.070

Sitename: Unknown  
 Accession no: S9325 Overall length: 63.5  
 Reichstein (1975) *Typ: Kvassheim* R221

Sitename: Unknown  
 Accession no: TS1474 Overall length: 121.6  
 Reichstein (1975) *Typ: ?Skogøya*

Sitename: Unknown  
Accession no: TS7370 Overall length: 70.9  
Reichstein (1975) *Typ: ?Røssøy*

Sitename: Unknown  
Accession no: C12216 Overall length: 126.1  
Reichstein (1975) *Typ: Einzelformen R343*

Sitename: Unknown, Varhaug  
Accession no: S1506 Overall length: 77.3  
Reichstein (1975) *Typ: Mundheim Variant 7 R178 Taf 45,7*  
Microprobe analysis (Percentage)  
Sn: 10.06 Pb: 2.90 Zn: 0.34  
Sb: 0.030 Ag: 0.150 Fe: 0.050  
Ni: 0.030 Co: 0.000 Au: 0.020  
Bi: 0.020 As: 0.230

Sitename: Unknown  
Accession no: T4882 Overall length: 102.6  
Reichstein (1975) *Typ: Mundheim Variant 1 R350 Taf 47,2*

Catalogue of Swedish cruciform brooches examined

SHM National Museum, Stockholm

Bo	Bohuslän	Skå	Skåne
Da	Dalarna	Små	Småland
Ha	Halland	Öl	Öland
Hl	Hälsingland	ÖG	Östergötland
Me	Medelpad	VG	Västergötland

Sitenam: Almgås, Lindås, Vg  
Accession no: SHM 6966 VG Overall length: 102.4  
Reichstein (1975) *Typ: Einzelformen* R400

Sitenam: Barang nr 18, Alno Sn, Med  
Accession no: SHM 22492 Overall length: broken  
Reichstein (1975) *Typ: Einzelformen* R381

Sitenam: Bergs Sn, Kampavall, VG  
Accession no: SHM 9489 VG Overall length: 84.9  
Reichstein (1975) *Typ: AK* R401

Sitenam: Bruarebacken, Jaggarden, VG  
Accession no: SHM 16501 VG Overall length: 111.2  
Reichstein (1975) *Typ: Götene* R430 *Taf* 74,4

Sitenam: Goingehom, Haglinde Sn, Skane  
Accession no: SHM 21058 Overall length: broken  
Reichstein (1975) *Typ: Einzelformen* R385

Sitenam: Gokhem Sn, VG  
Accession no: SHM 12518:2 Overall length: 95.2  
Reichstein (1975) *Typ: Lunde* R406 *Taf* 67,5

Sitenam: Götene Sn, VG  
Accession no: SHM 11706:5 Overall length: 121.1  
Reichstein (1975) *Typ: Götene* R407 *Taf* 73,6

Sitenam: Gudhem Sn, Bossgarden, VG  
Accession no: SHM 6261 VG Overall length: 94.3  
Reichstein (1975) *Typ: Götene* R405 *Taf* 73,1

Sitenam: Gudhems Sn, Bossgarden, VG  
Accession no: SHM 6261 VG A Overall length: 78.9  
Reichstein (1975) *Typ: Brunnhem* R405

Sitenam: Haggums Sn, Ranstad, VG  
Accession no: SHM 26214:15C:37 Overall length: 69.5  
Reichstein (1975) *Typ: ?* R410

Sitenam: Haggums Sn, Ranstad, VG  
Accession no: SHM 26214:15C:1 Overall length: 82.8  
Reichstein (1975) *Typ: ?* R410

Sitenam: Haller, Brastad Sn, Boh  
Accession no: SHM 1473 Overall length: 104.3  
Reichstein (1975) *Typ: Lunde* R355 *Taf* 67,4

Sitenam: Hammarnas, Stora Hammar Sn, Skå  
Accession no: SHM 19750:27-28 Overall length: broken  
Reichstein (1975) *Typ: Einzelformen* R390

Sitenam: Hanabo Bygge, Sjotoffa Sn, Vg  
Accession no: SHM 25591 VG Overall length: broken  
Reichstein (1975) *Typ: Unbestim* R415

Sitename: Helljom, Njurunda Sn, Med	
Accession no: SHM 1560 Overall length:	broken
Reichstein (1975) <i>Typ: Mundheim Var7 R382 Taf 70,4</i>	
Sitename: Holmstad Sn, VG	
Accession no: SHM 10391 VG Overall length:	85.3
Reichstein (1975) <i>Typ: Brunnhem R408</i>	
Sitename: Klockargarden, Eldsberga, Halla. Ha	
Accession no: SHM 8344 Overall length:	54.6
Reichstein (1975) <i>Typ: Einzelformen R371</i>	
Sitename: Nas, Troili? , VG	
Accession no: SHM 7591.4 VG Overall length:	56.0
Reichstein (1975) <i>Typ: Einzelformen R413</i>	
Sitename: Rude, Tuna Sn, Med	
Accession no: SHM 10940:1 Overall length:	74.3
Reichstein (1975) <i>Typ: Einzelformen R383</i>	
Sitename: Skortorps Sn, Trulsgarden, VG	
Accession no: SHM 11396:5 VG Overall length:	124.1
Reichstein (1975) <i>Typ: Götene R432 Taf 73,7</i>	
Sitename: Soderakra Sn, Torsas, Sma	
Accession no: SHM 27781:2 Overall length:	68.7
Reichstein (1975) <i>Typ: Einzelformen R397</i>	
Sitename: Solberg, Skie Sn, Bo	
Accession no: SHM 10128 Overall length:	141.5
Reichstein (1975) <i>Typ: Einzelformen R363</i>	
Sitename: Spanstad, Enslov, Halland	
Accession no: SHM 7331:597 Overall length:	67.3
Reichstein (1975) <i>Typ: Einzelformen R372</i>	
Sitename: Svansberg Sn, Bjorbym, Vm	
Accession no: SHM 3825:18 Overall length:	100.0
Reichstein (1975) <i>Typ: Einzelformen R399</i>	
Sitename: Svedala Sn, Skane	
Accession no: SHM 3217:23.2 Overall length:	63.4
Reichstein (1975) <i>Typ: Einzelformen R393</i>	
Sitename: Tingshomen, Horeda Sn, Sma	
Accession no: SHM 16219 Sma Overall length:	90.2
Reichstein (1975) <i>Typ: Einzelformen R396</i>	
Sitename: Tisjon, Lima Sn, Orviken	
Accession no: SHM 26485.4 Overall length:	74.0
Reichstein (1975) <i>Typ: Einzelformen R368 Taf 71,5</i>	
Sitename: Tisjon, Lima, Dalarna	
Accession no: SHM 26485:V Overall length:	110.2
Reichstein (1975) <i>Typ: Einzelformen R368 Taf 71,6</i>	
Sitename: Tolleby, Stenkyrka Sn, Bo	
Accession no: SHM 15058 Overall length:	92.2
Reichstein (1975) <i>Typ: Einzelformen R365 Taf 125,8</i>	
Sitename: Tolleby, Stenkyrka Sn, Bo,	
Accession no: SHM 15058 Overall length:	69.5
Reichstein (1975) <i>Typ: Einzelformen R365 Taf 125,7</i>	

Sitename: Tolleby, Stenkyrka Sn, Bo	
Accession no: SHM 15058	Overall length: 72.7
Reichstein (1975) <i>Typ: Einzelformen</i> R365 <i>Taf</i> 125,7	
Sitename: Torp, Gardby Sn, Ol	
Accession no: SHM 7041:7	Overall length: 62.4
Reichstein (1975) <i>Typ: Einzelformen</i> R441	
Sitename: Ulfstorp, Sparlose Sn, Vg	
Accession no: SHM 7578:10	Overall length: broken
Reichstein (1975) <i>Typ: Unbestim</i> R419	
Sitename: Unknown, Vg	
Accession no: SHM 8233 VG	Overall length: 64.4
Reichstein (1975) <i>Typ: Gjerla</i> R427 <i>Taf</i> 101,2	
Sitename: Unknown, Sarestad Sn, Vg	
Accession no: SHM 7578:11	Overall length: broken
Reichstein (1975) <i>Typ: Unbestim</i> R424	
Sitename: Unknown, Ska	
Accession no: SHM 2549	Overall length: 97.2
Reichstein (1975) <i>Typ: Einzelformen</i> R395	
Sitename: Unknown, Vg	
Accession no: SHM 6765:7 Vg	Overall length: 70.4
Reichstein (1975) <i>Typ: Stoveland</i> R421 <i>Taf</i> 68,3	
Sitename: Unknown, Boda Sn, Ol	
Accession no: SHM 11178	Overall length: 66.5
Reichstein (1975) <i>Typ: Einzelformen</i> R439 <i>Taf</i> 125,6	
Sitename: Unknown, Bo	
Accession no: SHM 13992	Overall length: broken
Reichstein (1975) <i>Typ: Einzelformen</i> R356	
Sitename: Unknown, Vg	
Accession no: SHM 14292	Overall length: 89.8
Reichstein (1975) <i>Typ: Unbestim</i> R434	
Sitename: Vadersholm, Sodra Ving Sn, Vg	
Accession no: SHM 22474 VG	Overall length: broken
Reichstein (1975) <i>Typ: Einzelformen</i> R426	
Sitename: Varnhems, Nygard, Vg	
Accession no: SHM 8823.1 Vg	Overall length: 99.9
Reichstein (1975) <i>Typ: Lunde</i> R428 <i>Taf</i> 67,7	

Danish brooches examined and sampled.

Copenhagen Museum

MA Maribo Amt                      Rk Ringkøbing Amt  
Ri Ribe Amt                         Vi Viborg Amt  
RA Randers Amt                      Th Thisted Amt  
Had Haderslev Amt                  Ål Ålborg Amt  
Hj Hjørring Amt

Sitename: Bei Irgenshøj, Bei Frederikssund, Frederisborg Amt  
Accession no: C 27186                      Overall length: 83.0  
Reichstein *Typ: Einzelformen R446 No fig*  
Microprobe analysis (percentage)  
Sn:            8.32    Pb:            0.52    Zn:            0.070  
Sb:            0.03    Ag:            0.07    Fe:            0.180  
Ni:            0.02    Co:            0.00    Au:            0.000  
Bi:            0.02    As:            0.170

Sitename: Bei Randers, Randers Amt  
Accession no: C 2817                      Overall length: 119.2  
Reichstein *Typ: Einzelformen D3? R467 Taf 144,11*  
Microprobe analysis (percentage)  
Sn:            12.80    Pb:            2.84    Zn:            1.340  
Sb:            0.00    Ag:            0.16    Fe:            0.940  
Ni:            0.03    Co:            0.01    Au:            0.040  
Bi:            0.00    As:            0.290

Sitename: Bejsebakken, Hasseris s, Hornum h, Alborg Amt  
Accession no: 4685/82 No.3                Overall length: broken  
Reichstein *Typ: Stufe D3?*  
Microprobe analysis (percentage)  
Sn:            10.32    Pb:            5.40    Zn:            0.260  
Sb:            0.05    Ag:            0.21    Fe:            0.220  
Ni:            0.03    Co:            0.00    Au:            0.070  
Bi:            0.02    As:            0.220

Sitename: Bejsebakken, Hasseris s, Hornum h, Alborg Amt  
Accession no: 4685/82 No.4                Overall length: broken  
Reichstein *Typ: Stufe D3?*  
Microprobe analysis (percentage)  
Sn:            11.42    Pb:            3.91    Zn:            3.270  
Sb:            0.07    Ag:            0.12    Fe:            0.090  
Ni:            0.03    Co:            0.00    Au:            0.000  
Bi:            0.04    As:            0.350

Sitename: Bejsebakken, Hasseris s, Hornum h, Alborg Amt  
Accession no: 4685/82 No.5                Overall length: 58.5  
Reichstein *Typ: Not cruciform*

Sitename: Bejsebakken, Hasseris s, Hornum h, Alborg Amt  
Accession no: 4685/82 No.6                Overall length: broken  
Reichstein *Typ: Stufe D3?*  
Microprobe analysis (percentage)  
Sn:            14.83    Pb:            2.32    Zn:            0.520  
Sb:            0.14    Ag:            0.39    Fe:            0.230  
Ni:            0.02    Co:            0.00    Au:            0.050  
Bi:            0.02    As:            0.100

Sitename: Bejsebakken, Hasseris s, Hornum h, Alborg Amt  
Accession no: C 30731                      Overall length: broken  
Reichstein *Typ: Stufe D3?*  
Microprobe analysis (percentage)  
Sn:            11.06    Pb:            4.90    Zn:            2.160  
Sb:            0.03    Ag:            0.47    Fe:            1.040  
Ni:            0.03    Co:            0.00    Au:            0.030  
Bi:            0.02    As:            0.120

Sitename: Bejsebakken, Hasseris s, Hornum h, Alborg Amt  
Accession no: C 30766 Overall length: broken  
Reichstein Typ: Stufe D3?  
Microprobe analysis (percentage)  
Sn: 9.95 Pb: 4.50 Zn: 2.690  
Sb: 0.08 Ag: 0.54 Fe: 0.320  
Ni: 0.04 Co: 0.00 Au: 0.000  
Bi: 0.005 As: 0.250

Sitename: Bejsebakken, Hasseris s, Hornum h, Alborg Amt  
Accession no: C 30772 Overall length: broken  
Reichstein Typ: Stufe D3?  
Microprobe analysis (percentage)  
Sn: 8.28 Pb: 5.48 Zn: 9.390  
Sb: 0.09 Ag: 0.12 Fe: 0.180  
Ni: 0.03 Co: 0.00 Au: 0.060  
Bi: 0.00 As: 0.080

Sitename: Bejsebakken, Hasseris s, Hornum h, Alborg Amt  
Accession no: 4685/82 No.2 Overall length: 64.0  
Reichstein Typ: Stufe D3?  
Microprobe analysis (percentage)  
Sn: 8.11 Pb: 3.19 Zn: 2.320  
Sb: 0.07 Ag: 0.24 Fe: 0.280  
Ni: 0.00 Co: 0.00 Au: 0.000  
Bi: 0.02 As: 0.180

Sitename: Ejlkskov, Harslev sn, Skovby h, Odense Amt  
Accession no: C 1806 Overall length: 101.8  
Reichstein Typ: Groß Siemß R459 Taf 81,4

Sitename: Giver, Giver sn, Ars h, Alborg Amt  
Accession no: C 12858 Overall length: 109.4  
Reichstein Typ: None - Stufe D3? R506 Taf 120,8  
Microprobe analysis (percentage)  
Sn: 13.57 Pb: 0.94 Zn: 0.000  
Sb: 0.00 Ag: 0.05 Fe: 0.060  
Ni: 0.04 Co: 0.00 Au: 0.000  
Bi: 0.00 As: 0.090

Sitename: Gudme, Odense Amt  
Accession no: MD X282 Overall length: 69.8  
Reichstein Typ: Not known

Sitename: Gudme, Odense Amt  
Accession no: MD X77 Overall length: broken  
Reichstein Typ: Not known  
Microprobe analysis (percentage)  
Sn: 12.04 Pb: 1.20 Zn: 1.120  
Sb: 0.06 Ag: 0.14 Fe: 0.160  
Ni: 0.02 Co: 0.00 Au: 0.000  
Bi: 0.04 As: 0.160

Sitename: Gunderup, Vreilser sn, Hjørring Amt  
Accession no: C 7431 Overall length: 118.9  
Reichstein Typ: *Einzelformen* Stufe D3? R449  
Microprobe analysis (percentage)  
Sn: 10.25 Pb: 3.45 Zn: 0.600  
Sb: 0.08 Ag: 0.08 Fe: 0.120  
Ni: 0.02 Co: 0.00 Au: 0.000  
Bi: 0.02 As: 0.240

Sitename: Hardenbergmoserne, Radsted s, Musse h, MA  
Accession no: C 25413 Overall length: 112.3  
Reichstein Typ: Witmarsum R458 Taf 80,3  
Microprobe analysis (percentage)  
Sn: 1.26 Pb: 3.94 Zn: 18.900  
Sb: 0.01 Ag: 0.13 Fe: 0.300  
Ni: 0.03 Co: 0.00 Au: 0.000  
Bi: 0.00 As: 0.090

Sitename: Hedeliskjaer mose, Skødstrup s, Øster Lisbjerg Ri  
Accession no: C 393 Overall length: 117.8  
Reichstein Typ: Butzfleht R466 Taf 117,6  
Microprobe analysis (percentage)  
Sn: 4.61 Pb: 0.75 Zn: 6.970  
Sb: 0.10 Ag: 0.07 Fe: 0.230  
Ni: 0.025 Co: 0.00 Au: 0.000  
Bi: 0.01 As: 0.170

Sitename: Hjelmhede, Sevels s, Ginding h, Rk  
Accession no: C 16842 Overall length: 70.5  
Reichstein Typ: Hjelmhede R473 Taf 115,6  
Microprobe analysis (percentage)  
Sn: 11.78 Pb: 2.41 Zn: 1.220  
Sb: 0.05 Ag: 0.10 Fe: 0.180  
Ni: 0.03 Co: 0.00 Au: 0.000  
Bi: 0.00 As: 0.190

Sitename: Holmslund, Nysogns s, Hind h, Rk  
Accession no: C 2771 Overall length: 135.2  
Reichstein Typ: Butzfleht R474 Taf 117,7  
Microprobe analysis (percentage)  
Sn: 3.12 Pb: 0.86 Zn: 19.530  
Sb: 0.09 Ag: 0.29 Fe: 0.310  
Ni: 0.06 Co: 0.01 Au: 0.000  
Bi: 0.00 As: 0.100

Sitename: Kjaergardsmose, Hunderup s, Gørding h, Ri  
Accession no: C 4097 Overall length: 119.7  
Reichstein Typ: Stufe D3 R469 Taf 144,7  
Microprobe analysis (percentage)  
Sn: 5.08 Pb: 4.53 Zn: 11.570  
Sb: 0.09 Ag: 0.13 Fe: 0.330  
Ni: 0.02 Co: 0.01 Au: 0.030  
Bi: 0.00 As: 0.110

Sitename: Krejberg, Krejberg s, Rødding h, Vi  
Accession no: C 5411 Overall length: 134.3  
Reichstein Typ: Stufe D2/D3 R490 Taf 72,8  
Microprobe analysis (percentage)  
Sn: 5.66 Pb: 0.79 Zn: 10.520  
Sb: 0.09 Ag: 0.21 Fe: 0.260  
Ni: 0.08 Co: 0.00 Au: 0.000  
Bi: 0.00 As: 0.180

Sitename: Lindholm Høje, Vest  
Accession no: C30583 Overall length: broken  
Reichstein Typ:

Sitename: Lindholm Høje, Vest  
Accession no: C30587 Overall length: broken  
Reichstein Typ:

Sitename: Lindholm Høje, Vest  
Accession no: C30596 Overall length: broken  
Reichstein Typ: Stufe D3?  
Microprobe analysis (percentage)  
Sn: 12.46 Pb: 10.90 Zn: 0.290  
Sb: 0.07 Ag: 0.30 Fe: 0.770  
Ni: 0.015 Co: 0.01 Au: 0.000  
Bi: 0.00 As: 0.020

Sitename: Lindholm Høje, Vest  
Accession no: 4684/82 NO.1 Overall length: broken  
Reichstein Typ:

Sitename: Lindholm Høje, Vest  
Accession no: C 30581 Overall length: broken  
Reichstein Typ: Stufe D3?  
Microprobe analysis (percentage)  
Sn: 11.77 Pb: 3.73 Zn: 0.700  
Sb: 0.05 Ag: 0.13 Fe: 0.210  
Ni: 0.03 Co: 0.00 Au: 0.000  
Bi: 0.015 As: 0.150

Sitename: Lindholm Høje, Nord  
Accession no: C30711 Overall length: broken  
Reichstein Typ: Stufe D3?  
Microprobe analysis (percentage)  
Sn: 8.43 Pb: 4.55 Zn: 2.090  
Sb: 0.09 Ag: 0.15 Fe: 0.290  
Ni: 0.04 Co: 0.00 Au: 0.080  
Bi: 0.02 As: 0.000

Sitename: Nebble, Boeslunde, Slogelse, Soro  
Accession no: 4970/83 Overall length: 71.5  
Reichstein Typ: Stufe D3?  
Microprobe analysis (percentage)  
Sn: 8.57 Pb: 9.59 Zn: 2.750  
Sb: 0.11 Ag: 0.16 Fe: 0.290  
Ni: 0.04 Co: 0.01 Au: 0.010  
Bi: 0.013 As: 0.170

Sitename: Nebstrup, Vindblaes s, Gjerslev h, RA  
Accession no: C 1684 Overall length: 93.4  
Reichstein Typ: Stufe D3 R462 Taf 144,8  
Microprobe analysis (percentage)  
Sn: 12.05 Pb: 2.77 Zn: 0.730  
Sb: 0.02 Ag: 0.10 Fe: 0.080  
Ni: 0.02 Co: 0.005 Au: 0.020  
Bi: 0.013 As: 0.140

Sitename: Øster-Assels, Øster-Assels s, Th  
Accession no: C 7258 Overall length: 128.6  
Reichstein Typ: None given Stufe D2/D3 R461 Taf 72,9  
Microprobe analysis (percentage)  
Sn: 7.87 Pb: 6.54 Zn: 0.260  
Sb: 0.09 Ag: 0.13 Fe: 0.070  
Ni: 0.03 Co: 0.00 Au: 0.130  
Bi: 0.00 As: 0.300

Sitename: Peterheises, Kvabter, Bronderslev  
Accession no: 6639/87 Overall length: 63.3  
Reichstein Typ: Stufe D2?  
Microprobe analysis (percentage)  
Sn: 11.08 Pb: 2.30 Zn: 0.130  
Sb: 0.09 Ag: 0.07 Fe: 0.030  
Ni: 0.025 Co: 0.00 Au: 0.000  
Bi: 0.005 As: 0.230

Sitename: Ribe, Ri  
Accession no: DK 1335 Overall length: 89.3  
Reichstein *Typ*: Midlum?  
Microprobe analysis (percentage)  
Sn: 11.94 Pb: 15.98 Zn: 0.050  
Sb: 0.13 Ag: 0.07 Fe: 0.190  
Ni: 0.025 Co: 0.01 Au: 0.000  
Bi: 0.00 As: 0.570

Sitename: Ribe, Ri  
Accession no: DK 213 Overall length: 69.3  
Reichstein *Typ*: Midlum?  
Microprobe analysis (percentage)  
Sn: 2.76 Pb: 1.66 Zn: 16.220  
Sb: 0.05 Ag: 0.05 Fe: 0.240  
Ni: 0.02 Co: 0.00 Au: 0.050  
Bi: 0.00 As: 0.150

Sitename: Sebbersund, Sebber, Slet, Alborg Amt  
Accession no: 6636/87 Overall length: broken  
Reichstein *Typ*: *Stufe* D3?  
Microprobe analysis (percentage)  
Sn: 9.93 Pb: 2.23 Zn: 3.730  
Sb: 0.095 Ag: 1.03 Fe: 1.420  
Ni: 0.025 Co: 0.00 Au: 0.040  
Bi: 0.03 As: 0.200

Sitename: Sønder Andrup, Ramsing s, Rødding h  
Accession no: C 5776 Overall length: 116.2  
Reichstein *Typ*: None given - *Stufe* D2/D3 ? R491 *Taf* 120,7  
Microprobe analysis (percentage)  
Sn: 10.51 Pb: 1.13 Zn: 0.460  
Sb: 0.05 Ag: 0.21 Fe: 0.290  
Ni: 0.05 Co: 0.00 Au: 0.000  
Bi: 0.00 As: 0.120

Sitename: Stolpedaplsvej  
Accession no: C 30614 Overall length: 46.3  
Reichstein *Typ*: Not cruciform - small-long style foot

Sitename: Stolpedalsvej  
Accession no: C 30689 Overall length: broken  
Reichstein *Typ*: *Stufe* D2/D3?

Sitename: Store Stensingmark, Understed  
Accession no: C 26076 Overall length: broken  
Reichstein *Typ*: None given - D3? R451 *Taf* 120,6

Sitename: Strandelhjorn, Bevtoft s, Nørre Rangstrup, Had  
Accession no: C 3636 Overall length: 91.4  
Reichstein *Typ*: *Stufe* D3? R448 *Taf* 125,12  
Microprobe analysis (percentage)  
Sn: 5.14 Pb: 6.96 Zn: 10.630  
Sb: 0.19 Ag: 0.05 Fe: 0.220  
Ni: 0.01 Co: 0.00 Au: 0.050  
Bi: 0.02 As: 0.330

Sitename: Tudemark, Nørre Skast s, Skast h, Ri  
Accession no: C 10207 Overall length: 125.3  
Reichstein *Typ*: Krefeld-Gellep R471 *Taf* 89,4  
Microprobe analysis (percentage)  
Sn: 11.53 Pb: 2.18 Zn: 0.060  
Sb: 0.00 Ag: 0.06 Fe: 0.070  
Ni: 0.04 Co: 0.00 Au: 0.030  
Bi: 0.005 As: 0.240

Sitename: Tudemark, Norre Skast s, Skast h, Ri  
Accession no: C 10209 Overall length: 72.0  
Reichstein Typ: Krefeld-Gellep R471 Taf 89,6  
Microprobe analysis (percentage)  
Sn: 11.19 Pb: 2.83 Zn: 1.050  
Sb: 0.04 Ag: 0.14 Fe: 0.770  
Ni: 0.02 Co: 0.01 Au: 0.020  
Bi: 0.01 As: 0.260

Sitename: Unknown provenance  
Accession no: C 8414 Overall length: 83.0  
Reichstein Typ: Stufe D2 R511 Taf 144,10  
Microprobe analysis (percentage)  
Sn: 12.87 Pb: 1.91 Zn: 0.330  
Sb: 0.06 Ag: 1.47 Fe: 0.140  
Ni: 0.00 Co: 0.00 Au: 0.000  
Bi: 0.05 As: 0.150

Sitename: Unknown provenance  
Accession no: C 6394 Overall length: 106.6  
Reichstein Typ: Groß Siemß R512 Taf 81,6  
Microprobe analysis (percentage)  
Sn: 15.03 Pb: 1.26 Zn: 0.060  
Sb: 0.02 Ag: 0.07 Fe: 0.030  
Ni: 0.02 Co: 0.00 Au: 0.000  
Bi: 0.01 As: 0.200

Sitename: Unknown provenance  
Accession no: C 6396 Overall length: 80.0  
Reichstein Typ: Midlum R514 Taf 84,2  
Microprobe analysis (percentage)  
Sn: 10.85 Pb: 1.98 Zn: 1.030  
Sb: 0.03 Ag: 0.21 Fe: 0.140  
Ni: 0.03 Co: 0.00 Au: 0.000  
Bi: 0.02 As: 0.070

Sitename: Unknown provenance  
Accession no: C 7472 Overall length: broken  
Reichstein Typ: Einzelformen - D2/D3? R515  
Microprobe analysis (percentage)  
Sn: 10.05 Pb: 13.38 Zn: 0.060  
Sb: 0.11 Ag: 0.07 Fe: 0.015  
Ni: 0.04 Co: 0.01 Au: 0.035  
Bi: 0.01 As: 0.130

Sitename: Unknown provenance  
Accession no: C 7473 Overall length: 105.7  
Reichstein Typ: Witmarsum R516 Taf 80,4  
Microprobe analysis (percentage)  
Sn: 16.22 Pb: 2.25 Zn: 0.000  
Sb: 0.02 Ag: 0.00 Fe: 0.120  
Ni: 0.03 Co: 0.00 Au: 0.000  
Bi: 0.00 As: 0.170

Sitename: Unknown provenance  
Accession no: MDCXVI Overall length: 102.8  
Reichstein Typ: Groß Siemß R510 Taf 81,5  
Microprobe analysis (percentage)  
Sn: 13.91 Pb: 3.20 Zn: 0.540  
Sb: 0.00 Ag: 0.10 Fe: 0.030  
Ni: 0.02 Co: 0.00 Au: 0.000  
Bi: 0.007 As: 0.240

Sitename: Unknown provenance  
Accession no: None Overall length: 89.1  
Reichstein Typ: Stufe D3? ?R520

Sitename: Unknown site, Ods  
Accession no: C 17845 Overall length: 98.9  
Reichstein *Typ: Stufe D3 R454 Taf 125,14*  
Microprobe analysis (percentage)  
Sn: 12.44 Pb: 2.62 Zn: 0.050  
Sb: 0.05 Ag: 0.17 Fe: 0.035  
Ni: 0.035 Co: 0.00 Au: 0.000  
Bi: 0.03 As: 0.390

Sitename: Vestervig, Vester s, Refs h, Th  
Accession no: C 4411 Overall length: 134.4  
Reichstein *Typ: Stufe D3 R482 Taf 72,10*  
Microprobe analysis (percentage)  
Sn: 12.86 Pb: 1.44 Zn: 0.240  
Sb: 0.05 Ag: 0.25 Fe: 0.130  
Ni: 0.03 Co: 0.01 Au: 0.000  
Bi: 0.00 As: 0.130

Sitename: Vindblaes, Vindblaes s, Slet h, Ål  
Accession no: C 8719 Overall length: 93.2  
Reichstein *Typ: Stufe D3 R504 Taf 144,9*  
Microprobe analysis (percentage)  
Sn: 11.15 Pb: 3.87 Zn: 0.830  
Sb: 0.06 Ag: 0.13 Fe: 0.130  
Ni: 0.04 Co: 0.00 Au: 0.080  
Bi: 0.04 As: 0.140

Sitename: Vorsa, Albaek, Dronninglund h, Hj  
Accession no: C 26624 Overall length: broken  
Reichstein *Typ: R450 Stufe D2?*

Sitename: Yttrup Holmgard, Ryberg s, Salling Nørre, Vi  
Accession no: C 5995 Overall length: 89.0  
Reichstein *Typ: Midlum R492 Taf 84,1*  
Microprobe analysis (percentage)  
Sn: 7.40 Pb: 7.92 Zn: 0.150  
Sb: 0.14 Ag: 0.21 Fe: 0.030  
Ni: 0.04 Co: 0.00 Au: 0.110  
Bi: 0.00 As: 0.270

Catalogue of German brooches examined

Schloss Gottorf, Schleswig

Sitename: Bordesholm, Kr Rendsburg  
Accession no: KS10323 Overall length: 72.0  
Reichstein 1975, *Typ*: Dorchester R 532 *Taf* 75,1  
Microprobe analysis (percentage)  
Sn: 13.41 Pb: 1.82 Zn: 0.50  
Sb: 0.03 Ag: 0.29 Fe: 0.16  
Ni: 0.02 Co: 0.00 Au: 0.04  
Bi: 0.01 As: 0.07

Sitename: Bordesholm, Kr Rendsburg  
Accession no: KS10338A Overall length: Not complete  
Reichstein 1975, *Typ*: Stratford R534 *Taf* 91,7  
Microprobe analysis (percentage)  
Sn: 6.74 Pb: 1.81 Zn: 5.18  
Sb: 0.08 Ag: 0.38 Fe: 0.22  
Ni: 0.04 Co: 0.00 Au: 0.00  
Bi: 0.01 As: 0.29

Sitename: Borgestedt, Kr Rensburg, Kr Eckernforde  
Accession no: 3903 B or D Overall length: 66.5  
Reichstein 1975, *Typ*: Groß Siemß Variant R546 *Taf* 82,7

Sitename: Borgestedt, Kr Rensburg, Kr Eckernforde  
Accession no: 3903 O Overall length: 72.0  
Reichstein 1975, *Typ*: Westerwana R547 No fig

Sitename: Borgestedt, Kr Rensburg, Kr Eckernforde  
Accession no: 4022 C Overall length: Not complete  
Reichstein 1975, *Typ*: Dorchester R548 *Taf* 75,17

Sitename: Borgestedt, Kr Rensburg, Kr Eckernforde  
Accession no: 4024 B Overall length: 68.0  
Reichstein 1975, *Typ*: With *Typ* Borgestedt brooch, R541

Sitename: Borgestedt, Kr Rensburg, Kr Eckernforde  
Accession no: 4024 e1 Overall length: 93.2  
Reichstein 1975, *Typ*: Borgestedt R540 No Fig  
Microprobe analysis (percentage)  
Sn: 13.36 Pb: 0.15 Zn: 0.02  
Sb: 0.00 Ag: 0.04 Fe: 0.05  
Ni: 0.03 Co: 0.00 Au: 0.00  
Bi: 0.03 As: 0.09

Sitename: Borgestedt, Kr Rensburg, Kr Eckernforde  
Accession no: 4024 p a Overall length: 94.4  
Reichstein 1975, *Typ*: Borgestedt R541 No Fig  
Microprobe analysis (percentage)  
Sn: 11.67 Pb: 0.49 Zn: 0.17  
Sb: 0.16 Ag: 0.09 Fe: 0.06  
Ni: 0.02 Co: 0.01 Au: 0.00  
Bi: 0.02 As: 0.21

Sitename: Borgestedt, Kr Rensburg, Kr Eckernforde  
Accession no: 4024 P C Overall length: Not complete  
Reichstein 1975, *Typ*: Stufe D2/D3? R541 No Fig

Sitename: Borgestedt, Kr Rensburg, Kr Eckernforde  
Accession no: 4025 B Overall length: Not complete  
Reichstein 1975, Typ: Groß Siemß R542 Fig 81,8  
Microprobe analysis (percentage)  
Sn: 12.30 Pb: 2.00 Zn: 0.41  
Sb: 0.03 Ag: 0.11 Fe: 0.055  
Ni: 0.03 Co: 0.005 Au: 0.00  
Bi: 0.005 As: 0.00

Sitename: Borgestedt, Kr Rensburg, Kr Eckernforde  
Accession no: 4026 A Overall length: 75.6  
Reichstein 1975, Typ: Groß Siemß R552 Fig 82,10  
Microprobe analysis (percentage)  
Sn: 3.05 Pb: 3.04 Zn: 12.11  
Sb: 0.05 Ag: 0.19 Fe: 0.21  
Ni: 0.06 Co: 0.00 Au: 0.00  
Bi: 0.01 As: 0.200

Sitename: Borgestedt, Kr Rensburg, Kr Eckernforde  
Accession no: 4026 B1 Overall length: 106.2  
Reichstein 1975, Typ: Witmarsum R553 Fig 80,6  
Microprobe analysis (percentage)  
Sn: 3.54 Pb: 1.93 Zn: 9.210  
Sb: 0.02 Ag: 0.09 Fe: 1.040  
Ni: 0.04 Co: 0.01 Au: 0.030  
Bi: 0.03 As: 0.210

Sitename: Borgestedt, Kr Rensburg, Kr Eckernforde  
Accession no: 4026 B15 Overall length: 77.3  
Reichstein 1975, Typ: Dorchester F559 Fig 75,2  
Microprobe analysis (percentage)  
Sn: 12.05 Pb: 5.87 Zn: 0.090  
Sb: 0.16 Ag: 0.08 Fe: 0.030  
Ni: 0.03 Co: 0.007 Au: 0.020  
Bi: 0.01 As: 0.050

Sitename: Borgestedt, Kr Rensburg, Kr Eckernforde  
Accession no: 4026 B24 Overall length: 74.3  
Reichstein 1975, Typ: Pritzier R563 Fig 79,3  
Microprobe analysis (percentage)  
Sn: 9.65 Pb: 5.16 Zn: 2.15  
Sb: 0.085 Ag: 0.11 Fe: 0.12  
Ni: 0.035 Co: 0.01 Au: 0.00  
Bi: 0.015 As: 0.320

Sitename: Borgestedt, Kr Rensburg, Kr Eckernforde  
Accession no: 4041 B2 Overall length: Not complete  
Reichstein 1975, Typ: Groß Siemß R573 Taf 82,11

Sitename: Borgestedt, Kr Rensburg, Kr Eckernforde  
Accession no: 4044 G Overall length: 65.1  
Reichstein 1975, Typ: Unknown

Sitename: Borgestedt, Kr Rensburg, Kr Eckernforde  
Accession no: Unknown Overall length: Not complete  
Reichstein 1975, Typ: Groß Siemß R587 Taf 81,9

Sitename: Borgestedt, Kr Rensburg, Kr Eckernforde  
Accession no: Unknown Overall length: Not complete  
Reichstein 1975, Typ: Groß Siemß R588 Taf 81,10

Sitename: Borgstedt, Kr Rensburg, Kr Eckernforde  
Accession no: Unknown Overall length: 75.5  
Reichstein 1975, Typ: Groß Siemß Variant R584 Taf 82,9  
Microprobe analysis (percentage)  
Sn: 9.52 Pb: 1.44 Zn: 0.20  
Sb: 0.095 Ag: 0.09 Fe: 0.02  
Ni: 0.02 Co: 0.005 Au: 0.00  
Bi: 0.00 As: 0.05

Sitename: Hammoor, Kr. Stormarn  
Accession no: KS8051 A Overall length: 78.8  
Reichstein 1975, Typ: Dorchester R627 Taf 75,4  
Microprobe analysis (percentage)  
Sn: 13.48 Pb: 2.72 Zn: 0.00  
Sb: 0.05 Ag: 0.13 Fe: 0.04  
Ni: 0.05 Co: 0.01 Au: 0.00  
Bi: 0.02 As: 0.21

Sitename: Hammoor, Kr Stormarn  
Accession no: KS 10115 A Overall length: 94.4  
Reichstein 1975, Typ: Witmarsum R612 Taf 80,7  
Microprobe analysis (percentage)  
Sn: 7.39 Pb: 3.96 Zn: 0.055  
Sb: 0.01 Ag: 0.07 Fe: 0.050  
Ni: 0.035 Co: 0.01 Au: 0.025  
Bi: 0.00 As: 0.250

Sitename: Hammoor, Kr Stormarn  
Accession no: KS 10983 E Overall length: Not complete  
Reichstein 1975, Typ: Dorchester R620 Taf 75,11  
Microprobe analysis (percentage)  
Sn: 9.26 Pb: 1.18 Zn: 0.02  
Sb: 0.01 Ag: 0.055 Fe: 0.10  
Ni: 0.015 Co: 0.00 Au: 0.00  
Bi: 0.00 As: 0.09

Sitename: Hammoor, Kr Stormarn  
Accession no: KS 11835/28 B Overall length: 73.4  
Reichstein 1975, Typ: Pritzler R628 Taf 79,2  
Microprobe analysis (percentage)  
Sn: 10.15 Pb: 0.63 Zn: 0.00  
Sb: 0.05 Ag: 0.30 Fe: 0.06  
Ni: 0.02 Co: 0.00 Au: 0.00  
Bi: 0.03 As: 0.170

Sitename: Hammoor, Kr Stormarn  
Accession no: KS 11835/33 Overall length: 68.3  
Reichstein 1975, Typ: Midlum R629 Taf 84,4  
Microprobe analysis (percentage)  
Sn: 12.61 Pb: 0.61 Zn: 0.02  
Sb: 0.03 Ag: 0.13 Fe: 0.03  
Ni: 0.03 Co: 0.01 Au: 0.00  
Bi: 0.03 As: 0.15

Sitename: Hammoor, Kr Stormarn  
Accession no: KS 11835/34 Overall length: 73.4  
Reichstein 1975, Typ: Stoveland R630 Taf 81,7  
Microprobe analysis (percentage)  
Sn: 2.66 Pb: 3.08 Zn: 18.88  
Sb: 0.03 Ag: 0.15 Fe: 0.38  
Ni: 0.03 Co: 0.00 Au: 0.00  
Bi: 0.00 As: 0.15

Sitename: Hammoor, Kr Stormarn  
Accession no: KS 12084/14 Overall length: Not complete  
Reichstein 1975, *Typ*: Groß Siemß R622 No *Taf*  
Microprobe analysis (percentage)  
Sn: 10.59 Pb: 0.50 Zn: 1.38  
Sb: 0.04 Ag: 0.33 Fe: 0.78  
Ni: 0.05 Co: 0.00 Au: 0.03  
Bi: 0.01 As: 0.08

Sitename: Hammoor, Kr Stormarn  
Accession no: KS 12084/15 Overall length: Not complete  
Reichstein 1975, *Typ*: St Johns R623 *Taf* 115,4  
Microprobe analysis (percentage)  
Sn: 5.95 Pb: 2.04 Zn: 1.05  
Sb: 0.045 Ag: 0.15 Fe: 0.22  
Ni: 0.05 Co: 0.01 Au: 0.045  
Bi: 0.015 As: 0.14

Sitename: Hammoor, Kr Stormarn  
Accession no: KS 12084/23 C Overall length: 69.1  
Reichstein 1975, *Typ*: Midlum R624 *Taf* 84,6  
Microprobe analysis (percentage)  
Sn: 6.78 Pb: 1.96 Zn: 5.85  
Sb: 0.09 Ag: 0.21 Fe: 0.38  
Ni: 0.05 Co: 0.00 Au: 0.00  
Bi: 0.00 As: 0.13

Sitename: Hammoor, Kr Stormarn  
Accession no: KS 12084/5 Overall length: Not complete  
Reichstein 1975, *Typ*: Butzfleht R621 No *Taf*

Sitename: Hammoor, Kr Stormarn  
Accession no: KS7403 Overall length: 108.5  
Reichstein 1975, *Typ*: Witmarsum R625 *Taf* 80,9  
Microprobe analysis (percentage)  
Sn: 8.17 Pb: 1.92 Zn: 0.26  
Sb: 0.045 Ag: 0.16 Fe: 0.17  
Ni: 0.04 Co: 0.005 Au: 0.02  
Bi: 0.015 As: 0.33

Sitename: Hammoor, Kr Stormarn  
Accession no: KS8051 B Overall length: 79.6  
Reichstein 1975, *Typ*: Dorchester R627 *Taf* 75,4

Sitename: Peißen, Kr Steinburg  
Accession no: KS 18231.36 A Overall length: 90.0  
Reichstein 1975, *Typ*: Hjelmhede R635 *Taf* 79,7  
Microprobe analysis (percentage)  
Sn: 5.95 Pb: 1.21 Zn: 5.69  
Sb: 0.07 Ag: 0.10 Fe: 0.32  
Ni: 0.03 Co: 0.01 Au: 0.02  
Bi: 0.005 As: 0.40

Sitename: Peißen, Kr Steinburg  
Accession no: KS 18231.51 Overall length: Not complete  
Reichstein 1975, *Typ*: ? Stufe D2/D3 R637 *Taf* 77,19

Sitename: Peißen, Kr Steinburg  
Accession no: KS 18231.67 Overall length: Not complete  
Reichstein 1975, *Typ*: Dorchester R638 *Taf* 77,13-14

Sitename: Schmalstede, Kr Rendesburg  
Accession no: Urn 132 Overall length: Not complete  
Reichstein 1975, Typ: Groß Siemß  
Microprobe analysis (percentage)  
Sn: 13.12 Pb: 1.71 Zn: 0.37  
Sb: 0.05 Ag: 0.10 Fe: 0.28  
Ni: 0.045 Co: 0.005 Au: 0.00  
Bi: 0.005 As: 0.290

Sitename: Schmalstede, Kr Rendesburg  
Accession no: Urn 148 Overall length: Not complete  
Reichstein 1975, Typ: Midlum  
Microprobe analysis (percentage)  
Sn: 13.76 Pb: 1.92 Zn: 0.16  
Sb: 0.025 Ag: 0.125 Fe: 0.08  
Ni: 0.055 Co: 0.00 Au: 0.00  
Bi: 0.00 As: 0.110

Sitename: Schmalstede, Kr Rendesburg  
Accession no: Urn 155 Overall length: Not complete  
Reichstein 1975, Typ: Stufe D3  
Microprobe analysis (percentage)  
Sn: 9.17 Pb: 1.71 Zn: 2.16  
Sb: 0.075 Ag: 0.24 Fe: 0.16  
Ni: 0.03 Co: 0.00 Au: 0.00  
Bi: 0.01 As: 0.07

Sitename: Schmalstede, Kr Rendesburg  
Accession no: Urn 250 Overall length: Not complete  
Reichstein 1975, Typ: Midlum  
Microprobe analysis (percentage)  
Sn: 11.09 Pb: 0.36 Zn: 0.47  
Sb: 0.035 Ag: 0.135 Fe: 0.06  
Ni: 0.03 Co: 0.00 Au: 0.00  
Bi: 0.01 As: 0.41

Sitename: Schmalstede, Kr Rendesburg  
Accession no: Urn 255 Overall length: Not complete  
Reichstein 1975, Typ: Groß Siemß  
Microprobe analysis (percentage)  
Sn: 2.74 Pb: 0.99 Zn: 13.86  
Sb: 0.08 Ag: 0.07 Fe: 0.40  
Ni: 0.05 Co: 0.01 Au: 0.00  
Bi: 0.005 As: 0.20

Sitename: Schmalstede, Kr Rendesburg  
Accession no: Urn 272 Overall length: 78.0  
Reichstein 1975, Typ: Groß Siemß  
Microprobe analysis (percentage)  
Sn: 11.45 Pb: 1.80 Zn: 0.49  
Sb: 0.02 Ag: 0.30 Fe: 0.10  
Ni: 0.025 Co: 0.00 Au: 0.04  
Bi: 0.00 As: 0.34

Sitename: Schmalstede, Kr Rendesburg  
Accession no: Urn 32 Overall length: Not complete  
Reichstein 1975, Typ: Witmarsum  
Microprobe analysis (percentage)  
Sn: 3.56 Pb: 2.06 Zn: 14.72  
Sb: 0.055 Ag: 0.135 Fe: 0.24  
Ni: 0.035 Co: 0.00 Au: 0.03  
Bi: 0.005 As: 0.42

Sitename: Schmalstede, Kr Rendesburg  
Accession no: Urn 77 Overall length: Not complete  
Reichstein 1975, *Typ*: Witmarsum  
Microprobe analysis (percentage)  
Sn: 13.52 Pb: 2.89 Zn: 0.025  
Sb: 0.035 Ag: 0.16 Fe: 0.060  
Ni: 0.05 Co: 0.00 Au: 0.030  
Bi: 0.00 As: 0.10

Sitename: Schmalstede, Kr Rendesburg  
Accession no: Urn 89 Overall length: 75.00  
Reichstein 1975, *Typ*: Witmarsum or Groß Siemß?  
Microprobe analysis (percentage)  
Sn: 12.41 Pb: 2.33 Zn: 0.13  
Sb: 0.095 Ag: 0.06 Fe: 0.05  
Ni: 0.04 Co: 0.00 Au: 0.00  
Bi: 0.00 As: 0.21

Sitename: Seedorf (-Berlin), Kr Segeberg  
Accession no: KS 16970/39 Overall length: 101.3  
Reichstein 1975, *Typ*: Witmarsum R646 No *Taf*  
Microprobe analysis (percentage)  
Sn: 10.37 Pb: 0.24 Zn: 0.24  
Sb: 0.09 Ag: 0.10 Fe: 0.64  
Ni: 0.04 Co: 0.00 Au: 0.00  
Bi: 0.01 As: 0.13

Sitename: Suderbrarup, Kr Schleswig  
Accession no: KS 18185.757 Overall length: 73.4  
Reichstein 1975, *Typ*: Dorchester R648 *Taf* 75,6

Sitename: Suderbrarup, Kr Schleswig  
Accession no: KS 18185.815 Overall length: 55.1  
Reichstein 1975, *Typ*: Dorchester R649 *Taf* 75,19

Sitename: Tolkwade, Kr Schleswig  
Accession no: KS 4013 Overall length: 85.2  
Reichstein 1975, *Typ*: Pritzler R651 *Taf* 79,4  
Microprobe analysis (percentage)  
Sn: 0.19 Pb: 3.04 Zn: 15.24  
Sb: 0.00 Ag: 0.06 Fe: 0.09  
Ni: 0.06 Co: 0.00 Au: 0.00  
Bi: 0.00 As: 0.21

Catalogue of Dutch brooches examined and sampled

FM Fries Museum, Leeuwarden  
Gron Biologisch-Archaeologisch Instituut, Groningen  
P Private

Site: Achlum, Kerkterp, Gem. Franekeradeel  
Accession no: FM 74B-8  
Overall length: 100.3 Reichstein *Typ*: Krefeld-Gellep R734  
*Taf* 89,7

Site: Achlum, Terp Groot Ludum, Gem. Franekeradeel  
Accession no: FM 74c-233  
Overall length: 128.8 Reichstein *Typ*: Achlum R733  
*Taf* 88,2

Site: Beetgum, Terp bei Besseburen, Gem. Menaldumadeel  
Accession no: FM 46A-947  
Overall length: 103.3 Reichstein *Typ*: Achlum R735 *Taf* 88,3  
Microprobe results

Zn:	16.90	Sn:	1.37	Pb:	4.32
Fe:	0.13	Ni:	0.03	Ag:	0.49
Sb:	0.06	As:	0.11	Co:	0.01
Bi:	0.01	Au:	0.04		

Site: Bornwird, Ferwerd, Gem. Ferwerderadeel  
Accession no: Gron. new find  
Overall length: 70.7 Reichstein *Typ*: *Stufe* D3 ?  
Microprobe results

Zn:	0.07	Sn:	8.77	Pb:	10.49
Fe:	0.00	Ni:	0.03	Ag:	0.11
Sb:	0.13	As:	0.06	Co:	0.01
Bi:	0.00	Au:	0.00		

Site: Bornwird, Ferwerd, Gem. Ferwerderadeel  
Accession no: Gron. new find  
Overall length: 81.1 Reichstein *Typ*: *Stufe* D3 ?  
Microprobe results

Zn:	1.49	Sn:	11.27	Pb:	4.09
Fe:	0.47	Ni:	0.03	Ag:	0.13
Sb:	0.07	As:	0.14	Co:	0.00
Bi:	0.01	Au:	0.00		

Site: Cornjum, Kerkterp, Gem. Leeuwarderadeel  
Accession no: FM 20-102  
Overall length: broken Reichstein: R737

Site : Ferwerd, Burmania, Gem. Ferwerderadeel  
Accession no: FM 101-426  
Overall length: broken Reichstein: R739 *Taf* 88,5 ? Achlum

Site: Ferwerd, Burmania, Gem. Ferwerderadeel  
Accession no: FM 101bis -1526  
Overall length: 59.8 Reichstein: Ferwerd R739 *Taf* 117,5

Site: Ferwerd, Burmania, Gem. Ferwerderadeel  
 Accession no: FM 101 bis - 1776  
 Overall length: 88.4 Reichstein *Typ*: Achlum R739 *Taf* 88,6  
 Microprobe results

Zn:	13.83	Sn:	4.32	Pb:	2.92
Fe:	0.28	Ni:	0.05	Ag:	0.16
Sb:	0.08	As:	0.09	Co:	0.00
Bi:	0.02	Au:	0.00		

Goutum, Teeghiem, Gem Leeuwarderadeel  
 Accession no: FM 16c - 6  
 Overall length: 78.2 Reichstein *Typ*: Goutum R740 *Taf* 117,3

Site: Hallum, Terp Bei Tsigera Zathe, Gem Ferwerderadeel  
 Accession no: FM 26D-2  
 Overall length: broken Reichstein *Typ*: ?Stufe D3 R743  
 Microprobe results

Zn:	1.70	Sn:	10.22	Pb:	3.06
Fe:	0.22	Ni:	0.05	Ag:	0.22
Sb:	0.08	As:	0.25	Co:	0.01
Bi:	0.00	Au:	0.00		

Site: Hallum, Terp Mariengarde, Gem Ferwerderadeel  
 Accession no: FM 26f-32  
 Overall length: 69.7 Reichstein no: ?Achlum R742

Site: Hallum, Terp Jousumburen, Gem. Ferwerderadeel  
 Accession no: FM 111-172  
 Overall length: broken Reichstein: R741

Site: Hiaure, Lutkelaard, Gem. Westdongeradeel  
 Accession no: FM 32-14  
 Overall length: 112.5 Reichstein *Typ*: Gross-Siemss  
 R744 *Taf* 82,4  
 Microprobe results

Zn:	20.18	Sn:	2.07	Pb:	0.90
Fe:	0.32	Ni:	0.03	Ag:	0.06
Sb:	0.10	As:	0.12	Co:	0.00
Bi:	0.00	Au:	0.00		

Site: Holwerd, Gem Westdongeradeel  
 Accession no: FM 30-1  
 Overall length: 127.7 Reichstein: R745

Site: Hoogebeintum, Kerkterp, Gem. Ferwerderadeel  
 Accession no: FM 28- 699  
 Overall length: 74.6 Reichstein *Typ*: Midlum R747 *Taf* 83,4

Site: Hoogebeintum, Kerkterp, Gem. Ferwerderadeel  
 Accession no: FM 28-700  
 Overall length: 128.6 Reichstein *Typ*: Hoogebeintum  
 R747 *Taf* 83,5  
 Microprobe results

Zn:	9.22	Sn:	6.07	Pb:	6.15
Fe:	0.18	Ni:	0.06	Ag:	0.10
Sb:	0.04	As:	0.00	Co:	0.00
Bi:	0.00	Au:	0.00		

Site: Midlum, Gem Franekeradeel

Accession no: P 43A/43B

Overall length: broken

Reichstein *Typ*: ? Stufe D3

Microprobe results

Zn:	17.25	Sn:	1.24	Pb:	7.48
Fe:	0.40	Ni:	0.03	Ag:	0.11
Sb:	0.03	As:	0.04	Co:	0.00
Bi:	0.00	Au:	0.00		

Site: Midlum, Hooge Terp, Gem. Franekeradeel

Accession no: FM 69A-45

Overall length: 91.4

Reichstein *Typ*: Midlum R749 *Taf* 84,7

Microprobe results

Zn:	0.02	Sn:	6.56	Pb:	20.93
Fe:	0.02	Ni:	0.01	Ag:	0.04
Sb:	0.06	As:	0.03	Co:	0.00
Bi:	0.01	Au:	0.00		

Site: Midlum, Terp Middelstein, Gem. Franekeradeel

Accession no: FM 126-34

Overall length: 60.6

Reichstein *Typ*: Einzel. R750

Site: Oostum, Dorpswierde, Gem Ezinge

Accession no: Gron. 1916/VI 4

Overall length: 104.3

Reichstein *Typ*: ? Krefeld-Gellep R752

Microprobe results

Zn:	6.83	Sn:	6.56	Pb:	5.77
Fe:	0.15	Ni:	0.09	Ag:	0.16
Sb:	0.65	As:	0.01	Co:	0.00
Bi:	0.02	Au:	0.00		

Site: Westerwijtwerd, Oosterambt, Gem Middelstum

Accession no: Gron. 1884/I 5

Overall length: 130.5

Reichstein *Typ*: Assoc. Byrkje  
R753 *Taf* 72,1

Microprobe results

Zn:	0.27	Sn:	11.60	Pb:	3.37
Fe:	0.47	Ni:	0.05	Ag:	0.80
Sb:	0.03	As:	0.00	Co:	0.01
Bi:	0.00	Au:	0.03		

Site: Wirdum, Terp Tjaard, Gem. Leeuwarden

Accession no: FM 17B-20

Overall length: 79.2

Reichstein *Typ*: Achlum R754 *Taf* 88,4

Two English brooch forms found in France

Dep. Aisne

Museum: St Germaine-en-Laye                      Accession no:  
Overall length: not determined  
CM type: A3  
Context: none  
Assoc: none  
Ref: none  
Rev of casting flat, including nearly so at bow. Polyhedral tkb. Double  
semi-circular punch marks. Worn.  
No chemical analysis available.

Castelnaudry (Dep. Aude)

Museum: not known                                      Accession no:  
Overall length: not determined  
CM type: Associated with C                      Reichstein: *Typ Achlum*  
Context: none  
Assoc: none  
Ref: Salin (1935), 72 f, fig 158; Reichstein no 760 and others quoted in  
Reichstein.  
Not examined.  
No chemical analysis available.

## Appendices

## Appendix 1.1 - Proforma sheets

The following sheets were filled out for each brooch examined personally and the data put into the INGRES database system.

Site:  
Museum:  
Acc. no:  
Context:

Classifications, Reichstein:

Aberg:

Pocock:

Date of discovery:  
References:

CM:

Description:

Measurements (mm): overall length  
width (hpl)  
length (hpl)  
thickness (hpl)  
width (wing)  
length (wing)  
width (bow mid.)  
width (bow top.)  
thickness (bow)  
depth (bow)  
length (bow)

width (cplate)  
length (cplate)  
thickness (cplate)  
length (catch)  
width (foot)  
length (foot)  
thickness (foot)  
height (topkb)  
width (topkb)  
  
weight

Manufacturing details:

Decoration (extent, position, standard):

Condition:

Chemical composition

Sample taken (date):  
Association details:

RB

Date:  
Photos:

Drawings:

Site name											Mus											Accno			
Code																									
Area	Description																								
-----																									
Headplate	E	S	1	3	D	LM																			
Tkb	C	H	HF	F	SQ	FAN	Z	L	C	R	kbs pres.			F	H	N	Hollow?								
											1	2	3				H	S							
Top collar	C	H	HF	F	SQ	1	2	3																	
Central Hplate	N	W	P	D	P																				
Pin attach	S	D	O	Cu	Fe																				
Side knobs	C	H	HF	F	SQ	FAN	Z	L	C	R	F	H	N	H	S	Cu	Fe								
Wings	E	T	N	SB	IL	D	P	RC	SE																
Bow	Spine		Sides				Decor			Arch			Solid												
	Fl	S	Fr	B	SS	ET	EB	TAP	D	P	Pan	L	S	N	F	A	S	H							
Cplate	Decor		Shape				Facet		Extent		Style														
	D	P	L	NL	SC	SQ	Z	O	D	P	Fac	N	W	LHO	SQ	DIAG									
Catch	E	B	M	L	S	R	P	S	IMM	N															
Fcollar	1	2	3	0	S	D	T	ORN																	
Eyes	Bulg	Prot	Stalks	Fl/Hat	RLines											Projecting	Out	Not							
Nostrils	O	C	S	COM	ORN	SL	U	Z	D	P	Out	Not													
Nose	F	P	C	M	S	D	P																		

## Appendix 1.2 INGRES database system

Physical and chemical measurements, typological, technical, archaeological and geographical data were recorded in several tables in an INGRES database 'CRUCIF'. This is a relational database management system, maintained on a Vax cluster by the Oxford University Computer Centre (OUCS), Banbury Road. INGRES provides a variety of methods of inputting and retrieving data and can be used for either numerical or non-numerical data.

It is possible to put all data relating to a brooch into one table but the large number of attributes for each individual recorded for this project means that the table would be rather unwieldy. Each category of data was therefore put into separate tables and the tables joined as necessary, within QBF (Query By Forms), ISQL or SQL (query languages, involving miniature programs) functions. After a little practise the system is reasonably easy to understand and it was possible to output most of the data in the catalogue from various tables, with only modest amounts of word-processing (by Word Perfect, also supported by OUCS) to finish the entry. The database system is also an ideal method of research. Hence it is a simple matter to retrieve, for example the zinc content determined by atomic absorption of every early (type A) brooch from Norfolk, by the following SQL request:

SQL command	Meaning
Select distinct a.refno,a.zn	Select columns to be printed out
from aas a,plot b,gen2 g	Tables to be used in search and their shortened codes
where a.refno=b.refno	) Columns to link the three
and a.refno=g.refno	) tables
and b.county=2	Coding for Norfolk in the table
and g.class3='*A*'	Selection of type A brooches
;	End of request

This will produce a file with the request listed at the top, followed by two columns - the reference coding and the relevant zinc content. The file can then be stored, printed out or used in statistical investigation using packages supported on the Vax cluster.

## Appendix 1.3

### Chemical analysis - Methodology and comparison

#### Sampling

The sampling site was normally behind the bow, being the thickest part of most brooches. The area was first scraped clear of corrosion with a surgical scalpel. Sampling was carried out using a hand powered drill with a drill bit of 1mm diameter and samples were sealed in small plastic boxes with laboratory film. Penetration was less than 3 mm in most cases. Sample weights were normally in the range 5-10 mg, samples smaller than 3 mg are unlikely to be representative.

#### 1) Atomic absorption (AA)

##### Preparation

The recommendations of Hughes et al 1977 were generally followed. The samples were weighed to  $\pm 0.05$  mg and placed in small crucibles. Dissolution was achieved using 2 ml aqua regia (4:1 HCl:HNO<sub>3</sub>). No heating was required and the acid appeared clear after 6 hours or less. The exceptions were two silver-rich samples from Mucking G843 (not from cruciform brooches) which showed black residues. The acid solutions were diluted to volume with distilled water in a 20 ml flask and transferred to polythene bottles.

##### Standard preparation

Four BNF copper alloy standards, C71\*04, C71\*08, C50\*20, BCS207 were drilled and prepared in the same way as the samples and run at the beginning and end of each analysis batch. A further four bronze standards also held by the laboratory were analysed with Batch 3. The results of their analysis are shown below.

A range of standard solutions was prepared for each element, using 1000ppm stock solution from BDH Chemicals. Mixed standards were also made, with copper, zinc, tin, lead, iron, nickel and arsenic present in proportions similar to those of the samples being analysed (50ml copper, 2ml zinc and tin, 0.5ml iron, nickel and silver in a 250ml flask). These were also diluted to give a range of concentrations.

##### Analysis

The equipment at the Research Laboratory is a Pye Unicam SP1950 model. This is an early model, providing a printed output of the absorption readings, which must then be processed by hand (using calibration graphs or computer regressions) into percentages. For details of the AA method, the manufacturer's booklets may be referred to (Philips Scientific, Analytical Division, York Street, Cambridge CB1 2PX).

The samples were run using the following conditions:

	Line (nm)	Lamp current (mA)	Strength
Copper	324.5	4	x40 dilution
Zinc	213.9	8	x40 dilution
Tin	286.3	8	Full
Lead	283.3	6	Full
Iron	248.3	12	Full
Nickel	231.9	12	Full
Silver	328.1	4	Full

All elements were run using an air/acetylene flame, except tin which requires nitrous oxide. Tin should also be measured as soon as possible after sample preparation, as it tends to come out of solution easily. Samples with high concentrations of elements can be run by turning the burner head, adjusting the bead, by selecting weakly absorbing lines or by diluting both samples and standards.

The single element and mixed standards were run at the beginning and end of each analysis sequence and after every twenty samples, as was distilled water. The single element standards were used to construct a calibration line and data from mixed element standards proved to be quite similar.

The following measurements were made on the BNF copper alloy standards in a two year period of analysis:

#### % Copper

Std	No of determinations	AAS value (s.d.)	Quoted value	Difference
C71*04	14	85.5 ± 4	86.98	-1.48
C71*08	11	82.5 ± 2	84.45	-1.95
C50*20	9	77.5 ± 2	78.41	-0.91
BCS207	10	84.0 ± 4	86.84	-2.84

#### **Comment**

Since copper is the major element, the process of calculating the percentages involves large factors of multiplication. This means that, in one example investigated, two atomic absorption readings of 0.197 and 0.199 produce ppm values of 4.75 and 4.80 and final percentages of 84.07 - 84.96, a spread of nearly 1%. Low levels of precision are therefore appropriate for this element (0.5% is used here).

Although the atomic absorption values lie within one standard deviation of the quoted values, all the atomic absorption values are too low. Since copper percentages are not used widely in the text, or only as a ratio, this factor does not effect the overall discussion of composition.

### % Zinc

Std	No of determinations	AAS value (s.d.)	Quoted value	Difference
C71*04	17	1.3 ± 0.13	1.1	+0.2
C71*08	13	4.4 ± 0.14	4.5	+0.1
C50*20	14	0.5 ± 0.11	0.5	-
BCS207	13	2.6 ± 0.16	2.5	+0.1

### **Comment**

Agreement between standards and AA results is good, although the AA figures may be a little high.

### % Tin

Std	No of determinations	AAS value (s.d.)	Quoted value	Difference
C71*04	14	8.2 ± 0.3	8.0	+0.2
C71*08	12	5.2 ± 0.2	5.0	+0.2
C50*20	11	9.1 ± 0.2	9.0	+0.1
BCS207	9	10.2 ± 0.4	9.8	+0.4

### **Comment**

Agreement is fair, although the AA may be a little high.

### % Lead

Std	No of determinations	AAS value (s.d.)	Quoted value	Difference
C71*04	17	2.5 ± 0.14	2.5	-
C71*08	14	5.1 ± 0.20	5.0	+0.1
C51*20	13	10.9 ± 0.44	11.0	-0.1
BCS207	14	0.4 ± 0.10	0.41	-

### **Comment**

Agreement is very good.

### % Silver

Only one regularly analysed standard, BCS207 contains silver. The quoted content is 0.02% and AA results show good agreement. The four other bronze standards available have silver present at trace levels and AA showed reasonable results:

Standard	Percentage		Difference
	AA	Quoted	
A	0.91	0.95	+0.04
C	0.26	0.30	-0.04
D	0.03	0.05	+0.02
G	0.24	0.31	-0.07

### % Nickel

Std	No of determinations	AAS value (s.d.)	Quoted value	Difference
C71*04	11	0.97 ± 0.02	0.93	+0.04
C71*08	9	0.99 ± 0.02	1.0	-0.01
C50*20	9	0.53 ± 0.03	0.52	+0.01
BCS207	7	0.10 ± 0.05	0.09	+0.01

Agreement appears to be fair, although accuracy is poor in samples with low levels of nickel. Unfortunately, most of the archaeological samples proved to have low levels of nickel.

### % Iron

Std	No of determinations	AAS value (s.d.)	Quoted value	Difference
C71*04	7	0.19 ± 0.02	0.16	+0.03
C71*08	7	0.03 ± 0.03	n.d.	Unknown
C50*20	8	0.14 ± 0.02	0.15	+0.01
BCS207	7	0.11 ± 0.05	0.06	+0.05

Agreement appears to be fair, although again, accuracy is poor in samples with low concentration.

### Antimony and arsenic

Neither of these elements were routinely analysed for, since the laboratory does not have AA lamps for these elements, nor a graphite furnace which is required for suitable detection and quantification. In fact, AA is a very good method of determining trace elements, but larger sample weights are necessary. An attempt to determine these elements using the AA equipment at the British Museum Research Laboratory was not successful, as the concentrations were low.

### Total weight percentage

Since a full set of elements was not analysed, many trace elements may have been present in addition to those investigated and these could contribute more than 0.5% weight. The total weight percentages calculated for four batches of samples (excluding values from standards) show that less than 100% is indeed detected frequently.

Batch	Number of samples	Average total percentage weight and s.d.
4	44	98.1 ± 1.4
5	39	98.8 ± 1.4
6	48	101.1 ± 2.2
7	61	98.7 ± 2.5

### Conclusions

Atomic absorption is confirmed as a good method of determining concentrations of major and minor elements in these copper alloys, although there are clearly some problems. The large standard deviations in copper determination, caused by dilution factors are of most concern here.

## Camebax Electron Microprobe

The discussion above noted the likelihood of trace elements forming a significant proportion of the composition of ancient copper alloys. The microprobe method of analysis can detect traces of antimony, arsenic, cobalt, bismuth, gold, in addition to those elements detected by AA, in most cases down to 0.01% levels.

The equipment used in this project consists of a Camebax microprobe, maintained by the Department of Metallurgy and Materials Science, Oxford University. Dr Peter Northover and Dr Chris Salter kindly performed the analyses.

Samples are taken in the same manner as that described for AA and up to 25 individual samples mounted together in a block of conductive acrylic thermoplastic resin compound with copper powder using a mounting press (6 minutes heating at 120 degree C and 2.5 minutes cooling under 1 - 2 tonnes psi). The block was then cleaned and polished.

Areas for analysis are selected and entered into the memory. Two methods were used to overcome the problems caused by the overlap of two peaks in the copper alloy spectra, those for As and Pb. In the first method, with a voltage of 20 kV, K alpha lines were used to determine iron, cobalt, nickel, copper and zinc contents, L alpha lines for antimony, tin and silver contents, M alpha lines for bismuth, lead and gold contents. The detection limits were around 0.01-0.03%. Assuming that no lead was present in the solid solution, arsenic concentration was measured at a number of points, using the arsenic K alpha peak.

The second alternative is to determine all the elements at the same time, running at 25kV, thus ensuring good excitation of the arsenic K beta peak (at 11.72 KeV). Although the detection limit is probably somewhat higher in this case (0.04-0.05%) this enables arsenic concentrations to be determined in the main analysis.

In both cases three 50 micron squares were used for each sample and counting took 10 seconds per element.

A sample was taken from the laboratory standard C71\*04 and the microprobe analyses were as follows:

	Percentages (average on four areas within the sample)					
	Sn	Sb	Pb	Ni	Fe	Zn
Microprobe	8.89	0.13	1.91	0.93	0.17	1.36
s.d.	0.86	0.03	0.81	0.02	0.01	0.12
Quoted	8.0	0.12	2.5	0.93	0.16	1.1

Not present: cobalt, gold, bismuth.

The arsenic content calculated varied from below detection limits to 0.14% (n.d., 0.01, 0.02, 0.14), the latter value only corresponding to the stated value of 0.11%. Arsenic is not very

mobile in copper alloys and will therefore remain poorly distributed.

The large standard deviation associated with lead content suggests there are a few problems. The important factors in this case are the degree of dispersion of lead within the structure of the cast standard and the sample size. Since the microanalysis only takes place on a small area any non-uniformity will have a significant effect. Three samples appears to be the minimum to give a reasonable estimate of lead content. Both the zinc and tin contents appear to be slightly overestimated in this sample. It should be noted that the metal standards (supplied by British Non-ferrous Metals) are of a considerable age and may have been analysed at the time of casting by wet chemistry or optical emission spectroscopy. A degree of latitude may therefore be acceptable.

#### Comparison of the methods

The selection of these two methods has a number of advantages. AA involves chemical dissolution, whereas microprobe work is done on solid samples. AA therefore gives an overall impression of the concentrations of elements and microprobe analysis illustrates the variation over small areas (an average of three sampling points is normally taken for each sample). Microprobe work is especially suitable for the analysis of highly corroded metals since the solid metal areas alone can be selected. AA is liable to a wide range of errors introduced by sample weighing, dissolution, dilution and standard preparation. Since the whole sample is dissolved, the composition may be effected by corrosion products from the surface. Microprobe analysis is only liable to errors introduced by mis-selection of metal fragments in the block and by inhomogeneity in the metal itself.

Both AA and microprobe analysis were used on 48 samples from this project. Many of the samples used for microprobe analyses were small, as they were those portions left over after 5mg had been taken for AA analysis. The results are shown over:

Atomic absorption results, followed by microprobe results

Cu	Zn	Sn	Pb	Fe	Ni	Ag	Co	Au	Bi	Sb	As
<b>Bergh Apton G6(1)</b>											
84.0	0.78	10.80	3.17	0.46	0.07	0.14					
	0.68	10.95	1.30	0.13	0.04	0.10	0.01	0.00	0.01	0.06	0.18
<b>Bergh Apton G6(3)</b>											
84.0	5.64	5.58	3.53	0.21	0.05	0.20					
	6.48	5.39	3.42	0.13	0.02	0.17	0.00	0.05	0.00	0.05	0.14
<b>Barrington A 1</b>											
82.0	4.62	7.84	2.89	0.16	0.04	0.31					
	4.19	5.96	2.18	0.13	0.0	0.31	0.00	0.00	0.00	0.07	0.02
<b>Barrington A 2</b>											
78.5	17.90	1.58	3.63	0.16	0.03	0.09					
	17.02	1.60	2.35	0.12	0.03	0.10	0.00	0.00	0.00	0.09	0.00
<b>Barrington A 14</b>											
77.0	1.05	7.43	13.27	0.13	0.04	0.16					
	0.26	6.57	12.90	0.04	0.02	0.12	0.00	0.03	0.00	0.04	0.05
<b>Barrington B 1</b>											
85.5	1.89	6.03	5.99	0.11	0.03	0.17					
	2.12	6.38	3.28	0.17	0.03	0.16	0.00	0.06	0.00	0.08	0.02
<b>Barrington B G82</b>											
82.5	2.62	9.15	3.38	0.42	0.05	0.30					
	3.14	7.94	1.94	0.45	0.04	0.20	0.00	0.00	0.00	0.03	0.02
<b>Barrington 3</b>											
87.0	1.49	7.36	3.18	0.14	0.03	0.32					
	1.30	7.29	1.53	0.09	0.04	0.33	0.00	0.00	0.00	0.03	0.00
<b>Colchester 1</b>											
90.0	3.81	4.97	2.95	0.35	0.06	0.44					
	2.42	7.93	5.10	0.12	0.04	0.44	0.00	0.07	0.02	0.07	0.21
<b>Girton G2</b>											
86.0	1.93	8.95	4.19	0.30	n.a.	0.35					
	2.15	8.54	5.30	0.36	0.03	0.32	0.00	0.00	0.00	0.06	0.00
<b>Girton G5</b>											
86.0	6.22	5.31	1.57	0.35	n.a.	0.44					
	6.44	5.04	0.90	0.04	0.02	0.41	0.00	0.00	0.00	0.04	0.0
<b>Girton G39(1)</b>											
85.5	1.48	9.74	3.71	0.15	n.a.	0.14					
	1.55	9.45	3.35	0.12	0.03	0.10	0.00	0.00	0.00	0.03	0.00
<b>Girton G39(2)</b>											
86.0	1.90	10.04	2.69	0.14	n.a.	0.10					
	1.94	10.47	2.53	0.13	0.13	0.11	0.00	0.04	0.05	0.08	0.01
<b>Girton G53</b>											
83.5	3.77	8.06	4.20	0.13	n.a.	0.14					
	4.27	8.14	3.05	0.11	0.03	0.17	0.00	0.03	0.00	0.07	0.00
<b>Girton 1</b>											
87.0	0.47	11.63	3.17	0.16	n.a.	0.12					
	0.42	11.99	2.48	0.12	0.03	0.11	0.00	0.03	0.00	0.05	0.01
<b>Girton 2</b>											
81.5	9.70	6.62	3.62	0.24	n.a.	0.14					
	10.50	5.56	4.35	0.23	0.03	0.11	0.00	0.00	0.03	0.05	0.00
<b>Girton 3</b>											
74.0	8.49	6.95	11.11	0.42	n.a.	0.11					
	9.00	7.79	9.23	0.42	0.03	0.12	0.01	0.00	0.00	0.14	0.02
<b>Holme Pierpoint 1</b>											
83.0	13.39	2.06	3.30	0.56	0.03	0.13					
	14.25	2.11	3.70	0.31	0.03	0.15	0.01	0.00	0.00	0.06	0.09

<b>Holme Pierpoint 2</b>												
78.5	12.76	1.91	3.35	0.34	0.03	0.13						
	15.65	2.45	4.29	0.31	0.02	0.17	0.00	0.09	0.04	0.04	0.17	
<b>Holme Pierpoint 3</b>												
85.5	3.21	9.23	3.53	0.43	0.04	0.32						
	0.76	10.22	1.49	0.69	0.04	0.15	0.00	0.00	0.00	0.07	0.30	
<b>Howletts G1(1)</b>												
88.0	3.92	6.89	3.29	0.52	0.05	0.17						
	4.36	7.49	2.11	0.46	0.04	0.18	0.02	0.00	0.00	0.08	0.37	
<b>Hunstanton 2</b>												
88.0	2.08	8.08	3.80	0.22	0.02	0.20						
	1.93	6.90	2.79	0.16	0.03	0.19	0.00	0.00	0.00	0.05	0.21	
<b>Icklingham 1</b>												
76.5	16.34	2.89	3.39	0.44	0.04	0.12						
	19.19	3.61	2.24	0.45	0.04	0.09	0.01	0.00	0.02	0.05	0.00	
<b>Kempston 3</b>												
88.5	1.36	7.30	3.71	0.07	0.03	0.22						
	1.34	8.07	2.04	0.08	0.04	0.25	0.01	0.00	0.02	0.09	0.08	
<b>Kenninghall 10</b>												
85.0	1.54	9.61	3.99	0.00	n.a.	0.19						
	1.53	10.42	3.65	0.17	0.05	0.17	0.01	0.00	0.00	0.06	0.25	
<b>Lakenheath 2</b>												
86.5	1.34	7.90	2.85	0.23	n.a.	0.21						
	1.16	8.27	2.19	0.16	0.03	0.23	0.00	0.00	0.00	0.07	0.01	
<b>Lakenheath 7</b>												
84.5	4.61	7.62	3.43	0.32	n.a.	0.13						
	2.25	8.25	2.84	0.26	0.04	0.20	0.00	0.00	0.00	0.08	0.00	
<b>Little Wilbraham G73(1)</b>												
83.0	8.42	3.36	4.72	0.51	0.04	0.12						
	7.94	3.43	4.28	0.49	0.02	0.13	0.00	0.00	0.00	0.12	0.00	
<b>Little Wilbraham G73(2)</b>												
84.5	0.62	7.14	3.42	0.07	0.03	1.03						
	0.62	7.35	3.33	0.03	0.03	2.50	0.00	0.00	0.00	0.08	0.07	
<b>Little Wilbraham G79</b>												
82.5	1.03	8.36	5.04	0.23	0.04	0.14						
	1.11	8.32	2.45	0.16	0.05	0.11	0.00	0.00	0.02	0.08	0.00	
<b>Little Wilbraham G95(2)</b>												
75.0	2.15	8.20	12.10	0.22	0.02	0.18						
	1.87	8.79	8.34	0.19	0.03	0.19	0.00	0.00	0.00	0.08	0.02	
<b>Little Wilbraham G105(1)</b>												
83.0	1.49	10.38	2.70	0.12	0.03	0.17						
	1.49	10.57	3.64	0.11	0.04	0.14	0.00	0.00	0.00	0.07	0.00	
<b>Little Wilbraham G105(2)</b>												
83.5	1.35	10.49	2.90	0.10	0.04	0.17						
	1.28	10.83	3.88	0.06	0.05	0.15	0.00	0.00	0.00	0.07	0.00	
<b>Little Wilbraham G133</b>												
87.5	0.63	9.38	1.49	0.11	0.05	0.36						
	0.56	9.41	1.07	0.07	0.06	0.32	0.00	0.00	0.00	0.04	0.00	
<b>Little Wilbraham G173-4(1)</b>												
84.0	0.89	10.40	3.78	0.10	0.04	0.18						
	0.89	9.97	2.06	0.04	0.06	0.16	0.00	0.00	0.00	0.06	0.01	
<b>Little Wilbraham G173-4(2)</b>												
83.0	2.70	8.77	3.23	0.25	0.04	0.20						
	2.55	8.37	2.83	0.25	0.07	0.22	0.00	0.00	0.00	0.05	0.00	
<b>Little Wilbraham 2</b>												
84.0	0.43	8.87	5.47	0.18	0.07	0.10						
	0.48	9.30	3.64	0.16	0.08	0.11	0.00	0.00	0.00	0.15	0.00	

**Longbridge**

90.0 6.44 3.37 0.88 0.28 0.14 0.11  
2.67 4.31 1.30 0.11 0.08 0.10 0.00 0.00 0.00 0.08 0.04

**Rudston 1**

87.5 0.99 10.16 1.54 0.23 0.03 0.12  
6.72 2.81 0.26 0.23 0.14 0.12 0.01 0.00 0.00 0.02 0.15

**Sleaford G79**

85.0 2.84 6.58 4.00 0.27 0.03 0.20  
2.04 7.56 1.15 0.14 0.05 0.20 0.00 0.00 0.04 0.11 0.09

**Sleaford G116**

87.0 0.01 9.69 1.67 0.06 0.03 0.14  
0.03 9.98 1.50 0.02 0.05 0.14 0.00 0.00 0.01 0.04 0.17

**Sleaford G143**

85.5 5.49 4.18 3.13 0.14 0.02 0.67  
6.26 4.36 1.22 0.13 n.d. 0.62 0.00 0.00 0.00 0.10 0.21

**Sleaford G223**

84.0 1.17 8.27 7.83 0.19 0.12 0.14  
1.16 8.08 4.21 0.21 0.04 0.14 0.00 0.00 0.00 0.07 0.14

**Soham G1**

77.0 1.05 7.43 13.27 0.13 0.04 0.16  
0.26 12.90 6.57 0.04 0.02 0.12 0.00 0.03 0.00 0.04 0.05

**St Johns G38**

85.0 2.00 8.38 4.39 0.11 n.a. 0.23  
1.90 9.94 3.19 0.15 0.04 0.22 0.00 0.00 0.00 0.06 0.00

**St Johns 5**

86.5 6.67 5.42 2.16 0.24 n.a. 0.22  
7.44 5.38 2.53 0.21 0.04 0.17 0.00 0.00 0.01 0.12 0.00

**St Johns 6**

83.0 2.87 6.42 8.14 0.31 n.a. 0.31  
3.16 6.49 4.60 0.22 0.05 0.25 0.00 0.00 0.00 0.09 0.00

**Unknown provenance 3**

76.5 0.83 8.88 4.62 0.74 0.02 0.14  
2.24 4.71 0.57 0.13 0.10 0.15 0.00 0.00 0.01 0.05 0.28

**Unknown provenance 4**

92.0 2.32 5.44 2.22 0.14 0.09 0.13  
0.80 9.85 4.39 0.72 0.05 0.14 0.00 0.00 0.00 0.07 0.18

Most of the analysis pairs show good agreement between the two methods in the set of six overlapping elements. A small proportion of these pairs of analyses shows very strong disparity in more than one element, noticeably Colchester 1, Holme Pierpoint 3, Rudston 1, Soham G1, Unknown provenance 3 and Unknown provenance 4. The sources of error may be as follows:

**Colchester 1** Observations on the microprobe printout note the existence of inclusions in the sample. AA analysis would be unable to detect these as such.

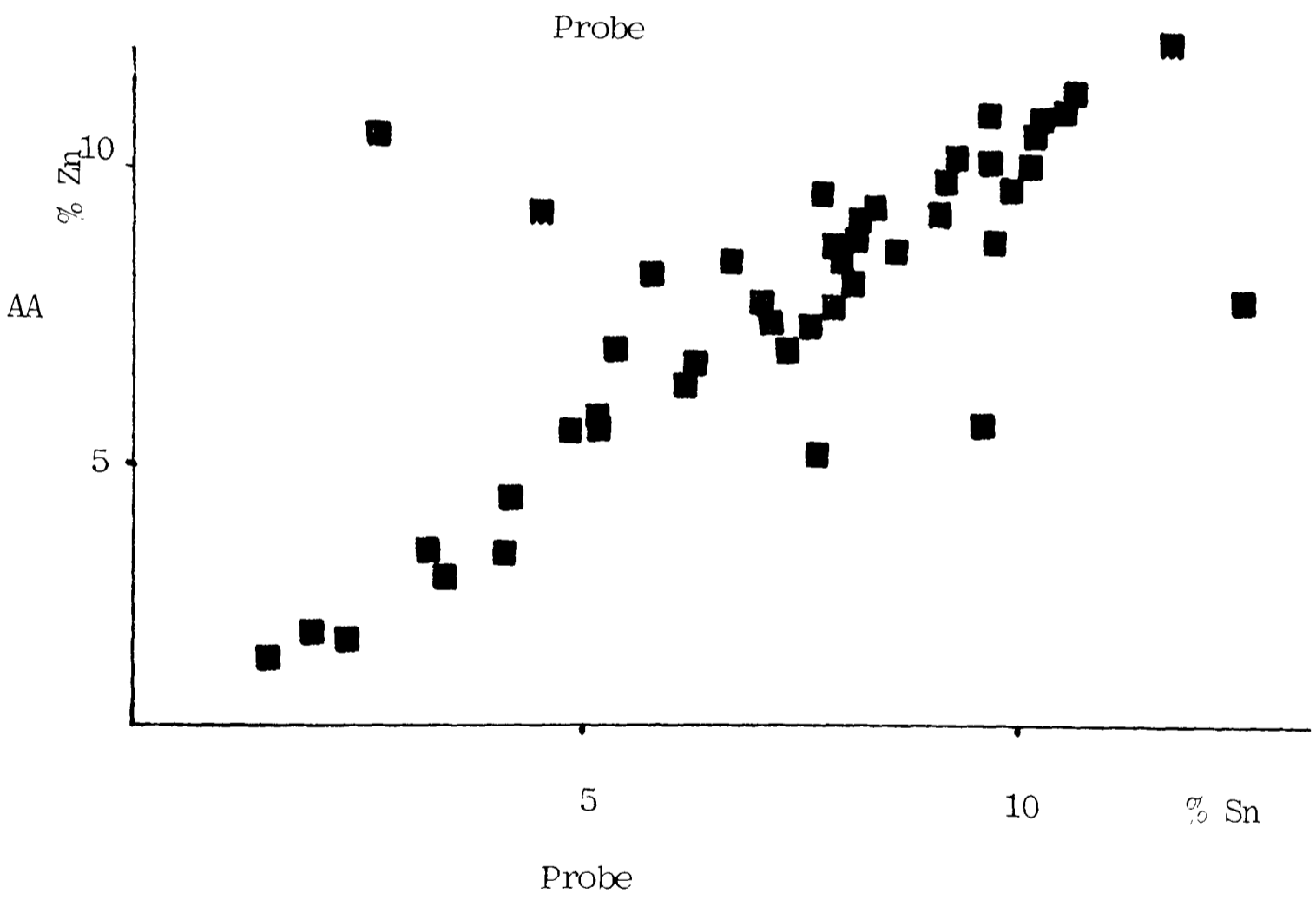
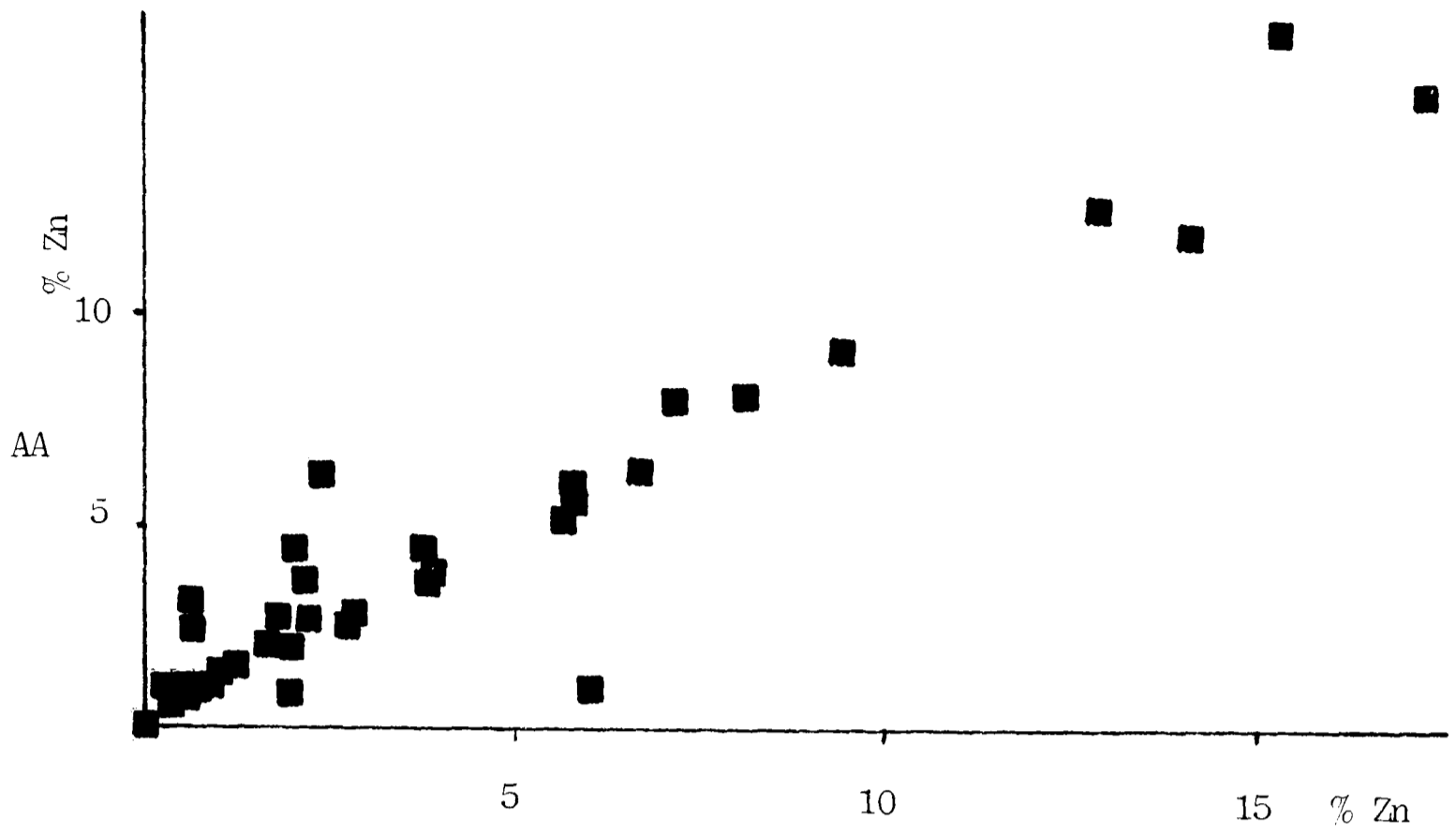
**Rudstone 1** The most likely source is wrong attribution of a fragment to the sample, where filings from another sample accidentally fell into the area. This can be suggested as the composition attributed to this sample is very close to that of a neighbouring sample in the mounting block. In addition, the AA results on the Rudstone pair are very similar in composition, to each other which tends to confirm the suggestion that the microprobe analysis is in error.

**Unknown provenance 3 and 4** The most likely explanation here is that the two samples were reversed in the microprobe analyses.

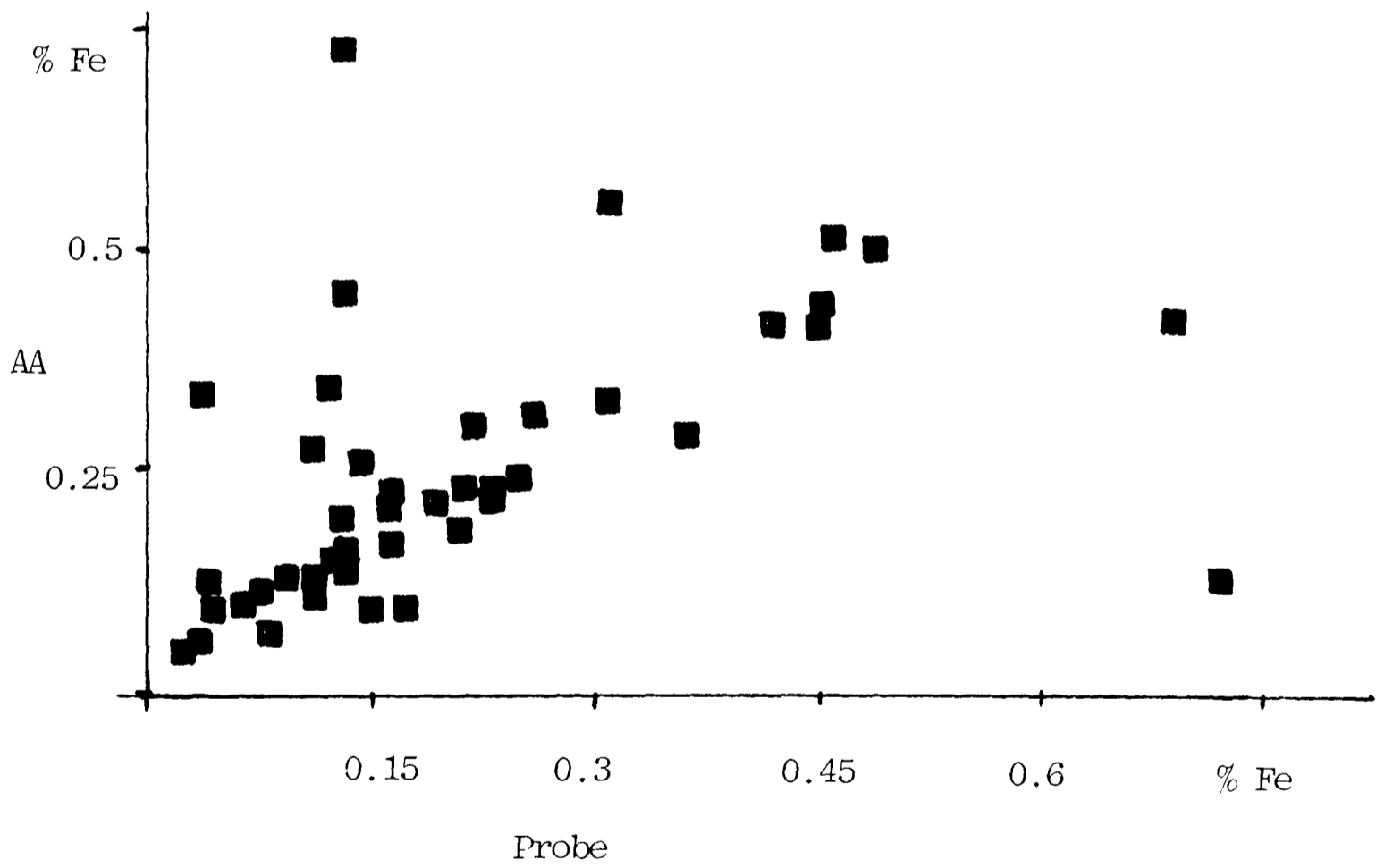
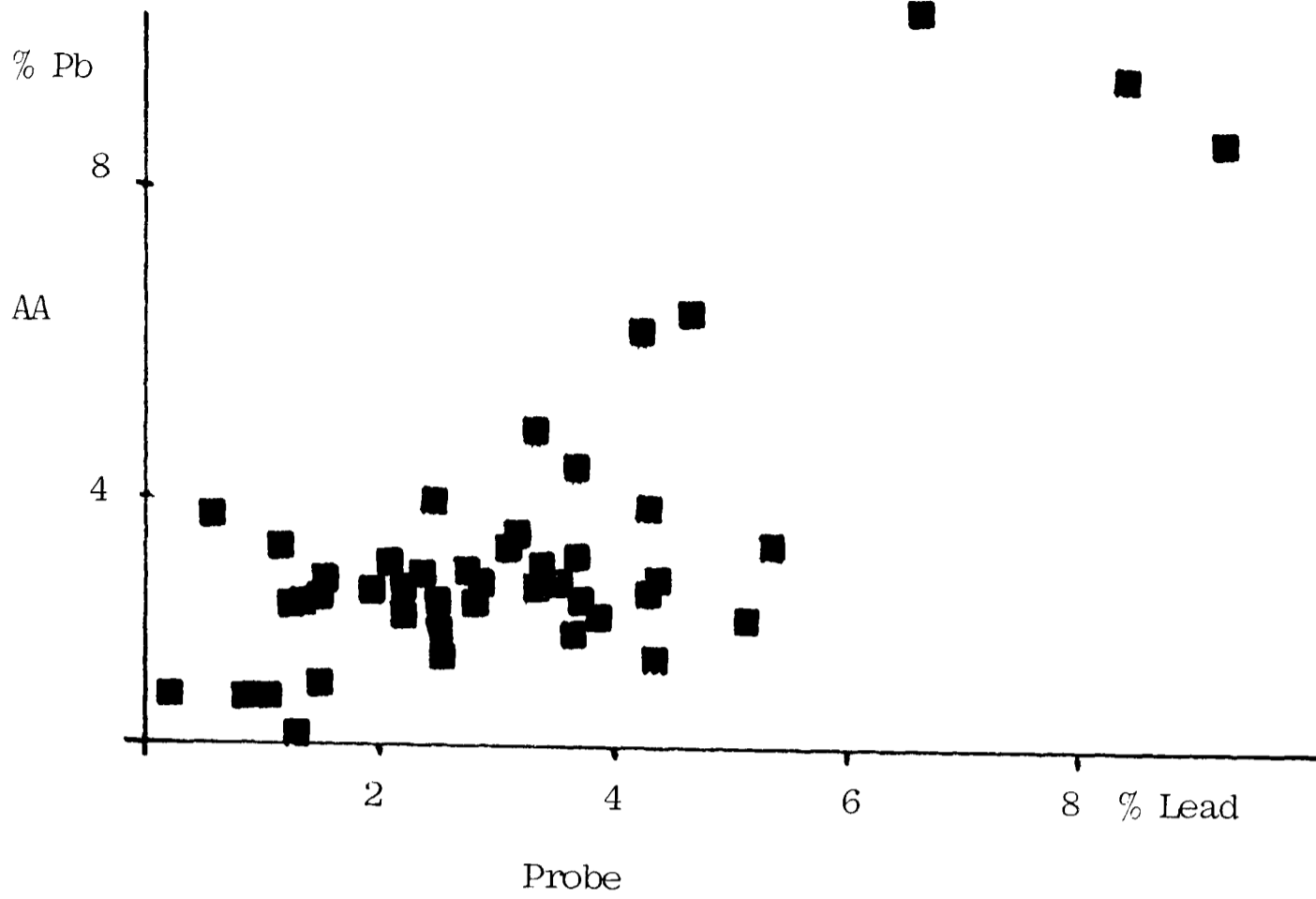
**Soham G1** The microprobe analyses are close to the AA analysis of Soham G7 and handwriting on the sample box label may have been misread.

**Holme Pierpoint 3** The AA results add up to more than 102%, suggesting some or all of the element concentrations are in error.

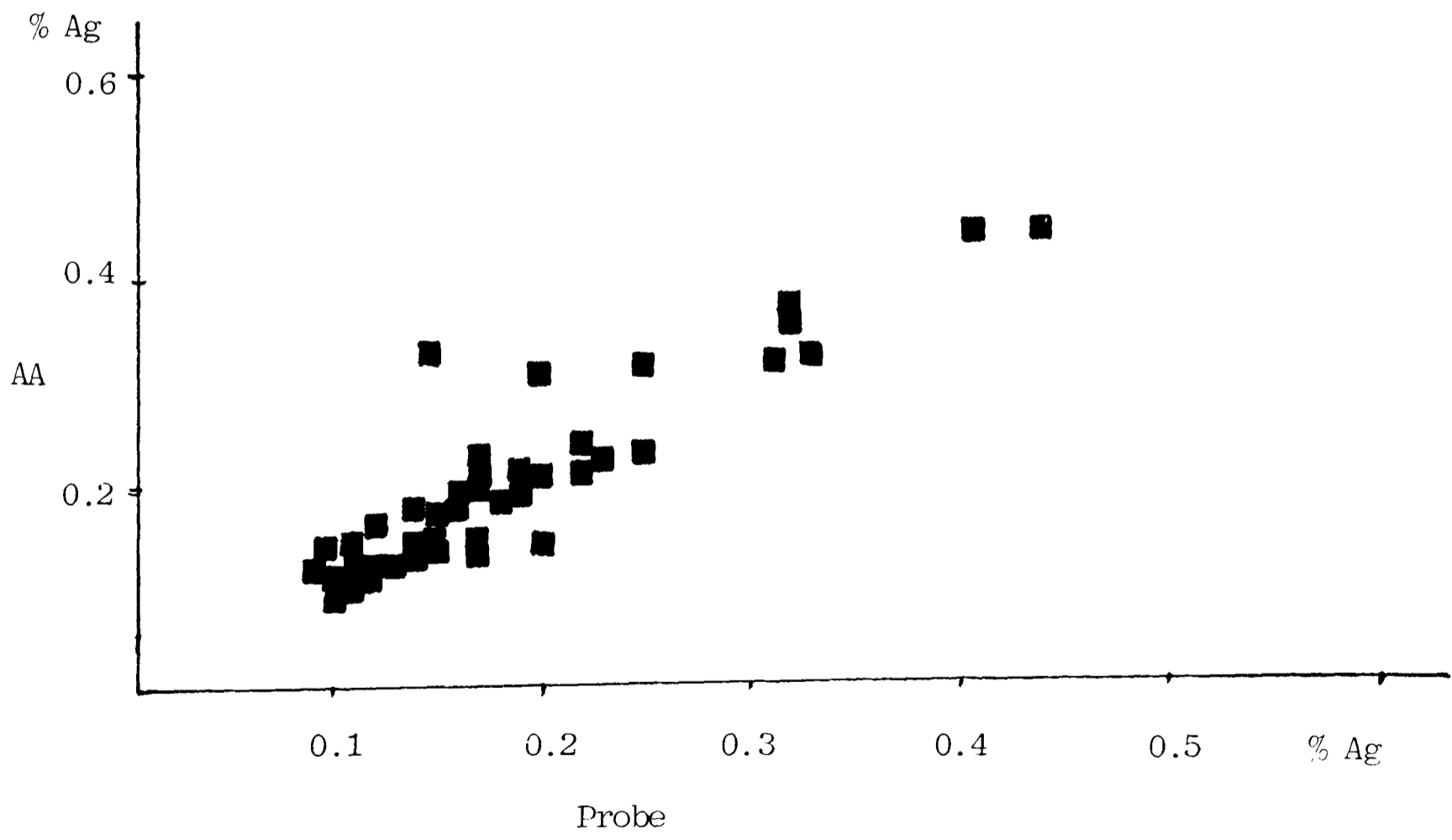
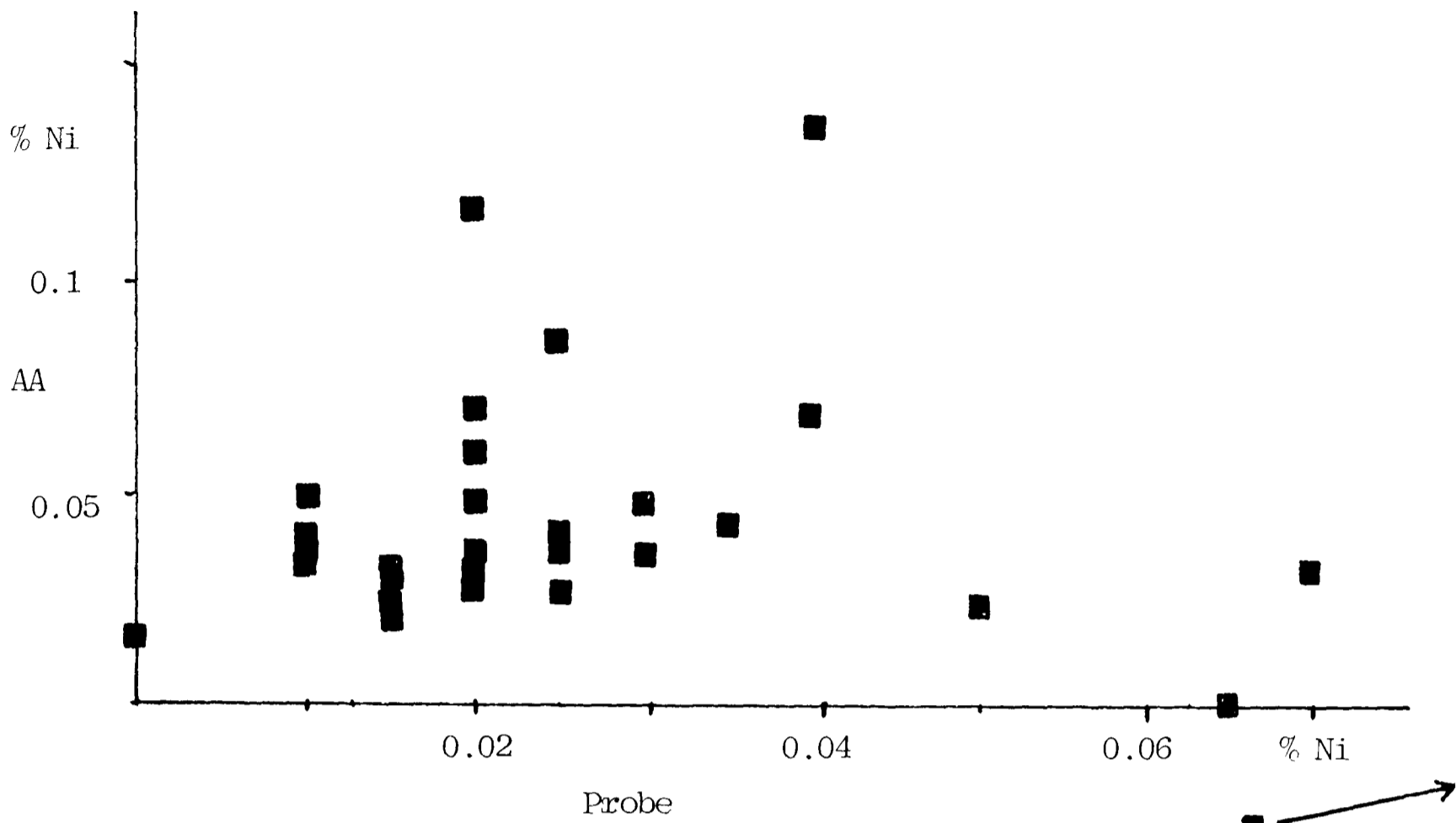
Analysis of the overall comparison of the two methods is best illustrated by plots comparing all results for each of the 6 elements analysed by both methods, shown over;



Comparison of analytical methods - zinc and tin



Comparison of analytical methods - lead and iron results



Comparison of analytical methods - nickel and silver

The correlation for nickel content is very poor, probably due to it being present at near the limits of detection. It was noted above that AA determinations for less than 0.5% nickel were less precise than those at 0.5-1.0% concentration. Much of the scatter around the ideal  $y=x$  axis seen in the remaining plots can be explained by the preceding discussions concerning problems in analysis. Data points for the pairs of analyses which were shown to be suspect are omitted. The Minitab statistical package (supported on the Oxford University VAX cluster) was used to find the correlations between AA and microprobe analyses:

Zinc %	0.980	Iron %	0.834
Tin %	0.923	Nickel %	0.316
Lead %	0.824	Silver %	0.961*

\* Silver value calculated omitting the results from the high silver sample, Little Wilbraham G73 (2), which is well away from the main axis of correlation. The AA calibration may be at fault here since the standards prepared did not cover such high silver concentrations.

Hence it can be seen strong correlation is found in analyses by the two methods for all elements except nickel. The AA results for zinc, lead and iron are mostly slightly higher than those given by the microprobe method, whereas the reverse is true for tin. Some inaccuracy in the AA determination of high zinc and lead values may be concealed as the laboratory standards tested did not include alloys with very high levels of zinc and lead.

#### Possible explanations

Non-uniform lead distribution may account for the poor correlation between AA and microprobe analyses in 12 samples where none of the other elements show major disagreement. Iron compounds are a common type of corrosion product in copper alloys which may have been included accidentally in some of the AA samples. Iron may also be distributed in a non-uniform manner, causing problems when comparing methods using solid samples and solutions.

Corroded samples would cause the AA totals to be substantially less than 100% (although it appears that this is not a common occurrence) and in these cases tin concentrations may also be higher by AA than by probe analyses. Zinc determination is least likely to be disturbed by corrosion processes. Sulphur was not analysed for by either method, but again this is likely to have been present at trace levels only. A small amount of bias may be introduced into the AA determination as noted above in the discussion of the analysis of laboratory standards. The microprobe analyses were based on the analysis of three points within a sample and a number of analyses show that inhomogeneity, especially in lead and iron, may be considerable (e.g. Soham G1 percentage lead contents calculated = 6.40, 6.64, 2.66).

In conclusion, the analyses of copper alloys by atomic absorption spectroscopy and by microprobe analysis are reasonably comparable and may be said to give good representation of the internal chemical composition of archaeological copper alloys.

Where both AA and microprobe analyses are available, unless the microprobe results are suspect, the microprobe analysis is used in statistical treatments and discussion since more trace element concentrations were determined by this method.

#### Appendix 1.4

I reproduce here a list kindly collated by Andrew Rogerson (Norfolk Archaeology Unit, Gressenhall, Dereham) of all known cruciform brooches (or fragments) from Norfolk, both in museums and private hands. The staggering total clearly shows the ubiquity of the form and the relatively few brooches kept in museum collections. There must be yet more examples, which are not known to the Unit.

Site name	Description (and ÅbergLocation group)	
Brancaster	II	NCM
Bergh Apton	Several	NCM
North Elmham	Several	NCM
Wretham (Illington)	?	NCM
Kenninghall	Several	BM, NCM, Ashmolean
Kettlestone	Frag	NCM?
Rocklands	Catch pin	NCM?
East Walton	3 Frags	Private
Morningthorpe	Several	NCM
Old Hunstanton	3 examples III	NCM
Little Walsingham	2 examples IV	NCM
Congham	3 and frags	Private
Castle/West Acre	Several	NCM, Newcastle
South Acre	II or II	NCM
Beachamwell	2 frags and sideknob	Private
Sporle-with-Palgrave	several	NCM
Northwold	1 or more	BM
Methwold	IV	Same site as above?
Mundford	III and frags	Private
Merton	sideknob	Private
Feltwell	III	NCM
Hockwold-cum-Wilton	1, sideknob	Private
Costessey	frags	Private
Weeting-with-Broomhill	2 examples I	NCM
Brettenham/Bridgham		Private
Field Dalling	Several	Private
Swafeld	Several frags	NCM
Billingford	Frag	Private
Aylsham	Sideknob	Private
South Walsham	Frag	Private
Carbrooke	Frag I?	Private
Garvestone	Florid	Private
Wicklewood	Frag	NCM
Caistor St Edmund	4 frags	Private
?Howe (Brooke)	Several	NCM and private
Holme Hale	Several	BM
Fincham	Frag	KLM
	1	Private

Site name	Description (and Aberg number)	Location
Carleton Rode	?frag	NCM
Burlingham	Several	NCM or private
Needham	Frag	NCM
Ingoldisthorpe	Frag	NCM
Roudham	Frag	Private
Hellesdon	Several	NCM
Sheringham	Florid	Private
Grimston	Frag	Private
Gunthorpe	Frag	NCM
Skeyton	Frag	Private
Bradwell	I	Private
Hethersett	Frag	Private
Colney	Frag	Private
Bawsey	Florid frags	KLM
Gayton	?florid frags	Private
Gooderstone	Frag	Private
Quidenham	1	Private
Felthorpe	Florid frags	Private
Aslacton	Sideknob and frag	Private
Sedgeford	1	Unknown
Barford	Frag	Private
Gillingham	Frag	Private
Taverham	Florid frags	Private
North Pickenham	Frag	NCM

The list is complete up to March 1988.

## Appendix 3.1

### Casting experiments were carried out with Steve Hurst at the Tithe Barn Studio, Church Hanborough, Oxfordshire

Two cruciform brooches were made using a simple version of the lost-wax process, as used in traditional Italian bronze-casting workshops. The wax models were made in beeswax (gelatin was also traditionally sometimes used where mass-production was needed) and the moulds were made from a plaster and grog mixture. The metal used for casting was a 85:5:5:5 bronze, commonly used for casting art works.

1) Beeswax has very pleasant working qualities. It is easy to handle with a low melting point but is quite hard enough to keep a good surface at room temperature. If a more vigorous moulding technique was used, such as a clay mould, pressed around the wax model, the stability may have been affected. The surface did tend to take finger print impressions but these could be removed by smoothing or after casting if necessary. The tools used were a flat surface, a ruler, a scapel, a pin, a hotplate and a beaker.

2) To form the headplate, bow and catchplate, a batch of wax was warmed and a thin layer poured onto a sheet of tin foil. Suitable alternatives available in primitive technologies might be flat stones, pieces of metal sheet, clean animal skins etc. It was comparatively simple to make a flat thin sheet of wax, 1-2 mm thick, although it was more difficult to get it even.

3) Forming and joining the topknob to the headplate is one of the more difficult parts of the model making process. It is not a simple matter to produce a perfectly semi-circular knob and collar. In the end, it proved easiest to take a cast from an existing cruciform brooch. In the majority of English cruciform brooches, there is little variety in the style of the knobs and a limited set of knobs, cut or turned from any appropriate material ( wood, bone etc) could be kept to impress into the front half of a damp clay mould in the manner described in 8) below, after the main brooch parts had been invested. Alternatively, a separate mould could have been made for the knobs, using the wood or bone models to make impressions, casting a wax model and then attaching it to the headplate later.

4) The central area of the headplate is often thicker than the wings on either side. This may have partly been a result of sticking the flattened top end of the bow down on top of the headplate area (see drawings). This would give more strength to the bow as well.

5) The bow was formed from a flat piece of wax, given a central longitudinal ridge and then shaped over a former. The edges would need warming to remove the buckling, but beeswax is quite amenable to this sort of treatment. The resultant bows were rather smooth compared to the sharp edges on most of the artefacts.

6) Using a scapel and other basic tools, simple cruciform brooch shapes could be made without any problems. More elaborate mouldings, and zoomorphic shapes would need practise and time which could not be afforded in this experiment.

7) The models were quite small, compared to the normal output of the Tithe Barn Studio and the two brooch models were made into one mould. The front half of the mould was formed by placing the brooch models flat side down ( the catch and pin lugs were attached later) next to each other, on a layer of polythene. Again, suitable traditional materials would have been flat stones, metal sheets and prepared skins. A fine mixture of the mould mixture was carefully painted on to avoid creating bubbles around the features. Then a thicker layer was heaped over the model. The mixture of 2:1 grog and plaster slurry sets quickly (within 10 minutes) and is ideal for making moulds quickly and simply. The Anglo-Saxon equivalent would have been to paint on a clay slurry or slip, allow it to dry slightly and then add layers of succesively slightly thicker clay mixtures with more grog or tempering. The clay would not have dried as quickly as the plaster and would probably have needed baking to achieve full hardness. The strength of clay moulds would also be less assured, as the different layers of slip would have different drying qualities and might be prone to crack off.

8) The mould was turned over and the polythene removed. The back of the wax was cleaned up, removing the mould material from areas where it had seeped under the wax and where it might cause air pockets, e.g. under the bow. At this point it would be easy to remove wax from any areas to reduce the thickness of casting, and thus save metal. It would be possible to remove the first wax model entirely and then use a far smaller quantity of molten wax, by running it round the impression, coating it rather than completely filling it (thin-casting). Wax tends to shrink back slightly on cooling, forming small depressions. A thinner casting would be more susceptible to other problems though, for instance warping.

With a firm block behind the model, it was now much easier to add detail to the reverse of the model without causing damage to the wax surfaces. The pin lug and catch were cut from flat pieces of wax and attached using heated implements for good bonding to the model. For this first attempt, I was advised to fix the catch on already curved to accept the pin. It was quite simple to paint the first layer of moulding slurry into the inside, although one of the brooch moulds must have had an air pocket inside the catch since the casting was quite thick there. This has not been seen in any Anglo-Saxon brooch examined by the author. Although Mr Hirst does not usually bend any parts of his cast objects, it seems likely that the catches could have been cast straight and bent into shape later.

9) The runners and risers were attached, using thin rods of wax cut to length. The runners (to feed the metal in) went to the top and foot of the brooch and then attached to a sprue

cap, at the foot of the brooch. The risers (to allow excess gases and metal out) were attached to the catch and to the foot of the brooch, using quite thin wax rods. The back of the mould was then added in a similar way to the front half. Casting from the foot end seemed satisfactory in this case, but casting from the head would be equally possible. Marks from runners and risers have not been observed on any of cruciform brooches to confirm either, but cleaning and abrasion during wear may have removed the evidence.

10) When both halves were dry, the whole mould was covered again by another layer of plaster and grog mixture and allowed to dry thoroughly.

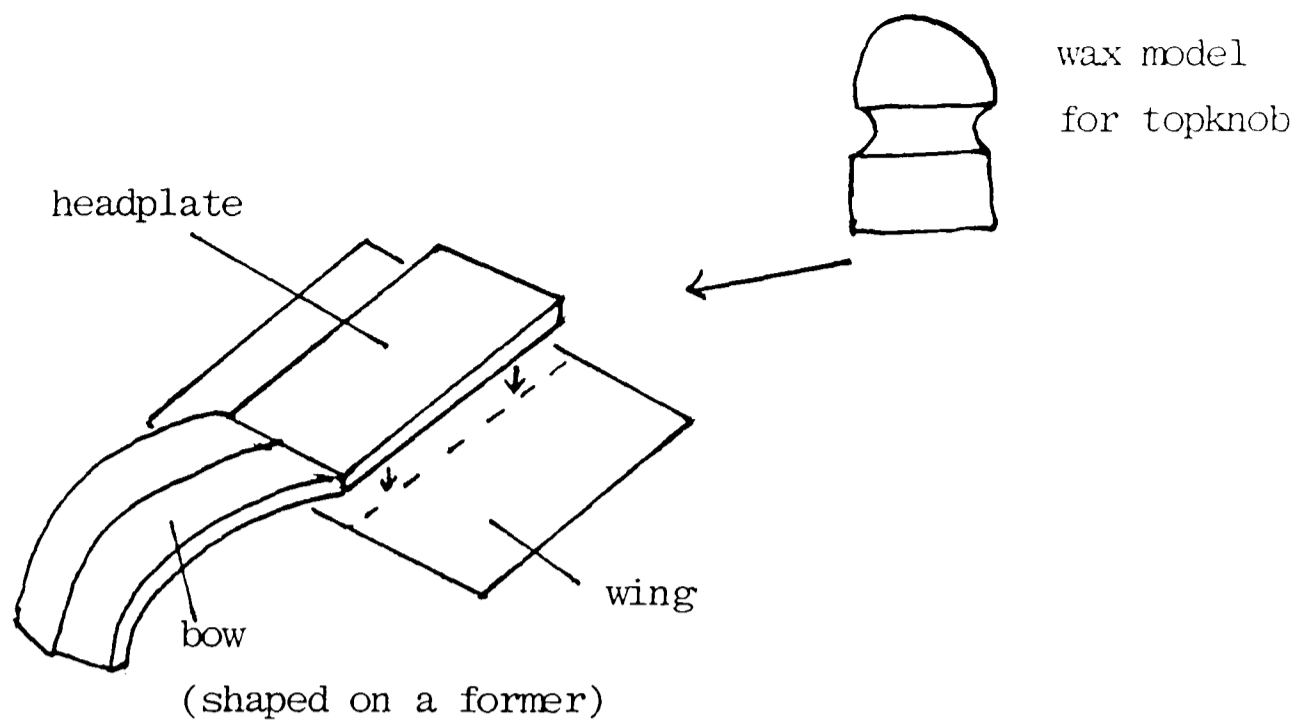
11) The moulds were heated at about 700 °C for about 18 hours to remove all traces of wax and any other organics. Further strength was added by adding scrim (loosely woven cloth strips) dipped in plaster slurry (and wrung out otherwise water would penetrate the mould and the resultant steam would cause further problems). The moulds were 'blown' by turning the mould over, blowing up into the sprue cap area to make sure no dust had got inside. A protective plate was put over the sprue cap area and then the moulds were placed in a sand pit with sand heaped up around them. To add the scrim and plaster and then put the moulds in a sand pit is probably to err on the side of caution, since one or other process should be sufficient. However, by this stage, considerable investment of time and energy have been made, so a 'belt and braces' approach is justified.

12) The bronze ingots and all the tools to be used during the casting process were warmed for a while, near the furnace. In this case the furnace (and kiln, above) were gas-fired. The bronze was placed in a large crucible (total metal weight capacity 100 lbs) and a flux added. Mr Hirst was able to tell when the metal was ready for casting by its appearance (at around 1000 degrees). If the metal is too hot, it causes blisters in the casting. He has had problems in the past with fumes from zinc and lead, both of which are poisonous and could be fatal in large amounts. Symptoms associated with lead fumes are well known from research into car exhaust fumes, amongst other work. Zinc fumes give fever-like symptoms at low levels. At the last minute before casting commenced, a deoxidant was also added. The surface of the molten metal was scraped clear and the moulds filled, using one continuous stream of metal.

13) When the moulds were cool (they are usually left overnight), the plaster and scrim jacket was cut off and the castings were easily retrieved from the crumbly plaster interior. Clay moulds may have been more difficult to remove without damaging the casting. The considerable amount of unwanted metal was sawn off with a hacksaw leaving stubs of the runners for positioning in a vice during cleaning. Primitive technologies have other methods of holding work steady, such as wrapping a rope round the artefact and keeping the rope under tension using the feet. Cruciform brooches do not show any evidence of saw or file marks, but, as observed

above, cleaning, polishing and abrasion through wear may have removed them.

14) Pin attachment was achieved by drawing mild steel wire (a bicycle spoke) to an appropriate thickness and turning coils around a pin (see Drescher 1955). Unfortunately, sideknobs were not cast at the same time as the brooches, so the method of attachment was not investigated practically.



Drawings for Appendix 3.1. Lost-wax casting of cruciform brooches

Details of construction of wax model - headplate and topknob  
(see Appendix 3.1, sections 2-7)

Appendix 3.2 (for table 3.2)

Database for unusual technical features

Slots cut into the base of the sideknob

Norway

Åk, Grytten pgd, MR. C 6200-1 (Double slots)  
Ålgard, Gjestal pgd, Ro. S 2035  
Bremnes, Sortland, No. Ts 1344-5  
Unknown site, Grytten, MR. B 444  
Hoyland, Nordre Undal pgd, VA. C 17990  
Kvassheim, Egersund pgd, Ro. B 5306, B 5363 A and B, B 5984  
Lindset, Vefsn pgd, No. T 18453  
Røssøy, Steigen pgd, No. Ts 1197-8  
Røysland, Helleland pgd, Ro. S 324.  
Skeie, Klepp pgd, Ro. S 7399.  
Skogøya, Steigen pgd, No. Ts 1122.  
Skrerros, Herefoss pgd, AA. C 21287a-c.  
Stallemo, Ovrebo, VA. C 23141  
Stokka, Høyland, Ro. S 6392 B  
Unknown. S UB 13 and 19

Sweden

Rude, Tuna sn, Me. SHM 10940:1  
Stentorp, Stentorp sn, VG. SHM 6765:7

Germany

Borgstedt, Kr Eckernförde, SH. No number  
Schmalstede, Kr Rendsburg, SH. Urn 250.

Denmark

Tude mark, Nørre-Skast s., Skast h, RA. Cop 10207

England

Bifrons, Kent. Maid. 629  
Brooke, Norfolk. BM 70,11-15,14  
Cleatham, Lincs. Scun. G30,10 and 11  
Girton, Cambs. CUM A 1906.288 A and B, 1906.295, 24.14A,  
24.20A, Z 31272  
Haslingfield, Cambs. CUM Z 43408  
Holywell Row, Suffolk. CUM Z 7128 C and D, Z 7145 A and B  
Illington, Norfolk. NC U101  
Lakenheath, Suffolk. CUM A1897.46  
Linton Heath, Cambs. CUM 48.1547 A  
Little Wilbraham, Cambs CUM 48.1347 A and B, 48.1401 B  
Milton-next-Sittingbourne, Kent. Maid. 181  
Morningthorpe, Norfolk. NC MRN 30 J and K, 362 J, 370 G  
Nassington, Northants. CUM 74.324, 74.325  
Northwold, Norfolk. BM 53,8-15,48  
Wychnor, Trent Valley. Burton on Trent Mus. ref Leahy (1979)

Separate knobs with tab

Norway

Skogen, Hedrum pgd, Vf C19769-70.

Denmark

Gudme, Fyn x596,x895

Germany

Borgstedt, Kr Eckernförde, SH. KS 4024 Ei and Pa  
Schmalstede, Kr Rensburg, SH. Urn 250

England

Barrington, Cambs. Ash 1909.263  
Fonaby, Lincs. Scun Fon US 11  
Howletts, Kent. BM 1918,7-8,43  
Islip, Northants. North D119  
Lackford, Suffolk. BStE 50,71  
Little Wilbraham, Cambs. CUM 48.1441  
Morningthorpe, Norfolk. NNC MRN 153 I  
St John's College Cricket Field, Cambs. CUM 42832 A and B  
Tuddenham, Suffolk. CUM 94.107A  
West Stow Heath, Suffolk. Ash 1909.429

Ridge between knob and collar

Norway

Glein, Nesna pgd, No. T 17931 a  
Grytten, Grytten pgd, MR. B 444.  
Bremnes, Sortland pgd, No. Ts 1344

Sweden

Unknown. SHM 6765

Denmark

Ribe, RA. Cop DK 213.

England

Howletts, Kent. BM 1936,5-11,13. 1918,7-8,43  
Lyminge, Kent. BM 90,8-3,2

Loop at end of nose

England only

Bergh Apton, Norfolk. NC BEA 6b  
Cleatham, Lincolnshire Scun G34/7  
Cranwich, Norfolk. BM 1982,1-1,1  
Islip, Northants. Kettering Mus. Hines 1984 fig 5.5  
Ixworth, Suffolk. BM 1927,12-12,21 and 1971,9-1,1  
Lakenheath, Suffolk. BM 1910,12-22,3  
Loveden Hill, Lincolnshire. Linc. 58/110c  
Tuddenham, Suffolk. CUM 94.107A  
Wakerley, Northants. G25. Kettering Mus. Hines 1984 fig 5.6

### Appendix 3.3

#### Database for unusual technical features seen on brooches abroad

##### C-form knobs

###### Norway

Belsvåg, Alstahaug pgd., Helgeland, No. T 2845.  
Aurland Kirke, Aurland pgd., SF. B 7790-91  
Røssøy, Steigen pgd., No. Ts 1199  
Vik, Klepp pgd., Ro. S 4372  
Unknown site, possibly Ro. S 9325.  
Unknown site. C 1592.

###### Sweden

Danmarksby, Danmarks sn., Up. SHM (silver)

###### Denmark

Bei Irgenshøj, bei Frederikssund. Cop 27186

###### Germany

Borgstedt, Kr Eckernförde, SH. KS 4026 B24

##### Two holes in one loop

###### Norway

Hillingan, Hamarøy pgd. No. Ts 4320 a  
Høyland, Nordre Undal pgd., VA. C17990.  
Hustad, Lødingen pgd., No. Ts 1251  
Kolsland, Bjarkøy pgd., No. Ts 2332  
Ljones, Skjerstad pgd., No. Ts 1424  
Offersøy, fra Vestøy, Lødingen pgd. No. Ts 3539  
Opedal, Ullensvang pgd. Ho. B 6409.  
Øvre Mele, Hjelmeland pgd, Ro. S 2371.  
Røssøy, Steigen pgd. No. Ts  
Skogøya, Steigen pgd. No Ts  
Unknown Ts 1474

###### Sweden

Rude, Tuna sn, Me. SHM 10940

###### Denmark

Giver, Giver s,. !Ars h. C 12858.

##### Ridge between sideknobs

###### Norway

Bråstein, Høyland pgd. Ro. C1287  
Dirdal, Høle pgd. Ro. S 2435  
Helle, Hogsfjorden pgd., Ro. S 3564 B  
Jarmunnen, Sømna pgd., No. T 13544 B  
Kleiveland, Hjelmeland pgd., Ro. S 2376  
Røssøy, Steigen pgd, No. Ts 1198  
Skogøya, Steigen pgd, No. Ts 1138  
Stamnes. Alstahaug pgd, No. T 13603 a  
Vågehamn, Lødingen pgd., No. Ts 5253 a

###### Sweden

Lindås, Alingsås sn., VG. SHM 11706:5

Unknown site, Gökhem sn., VG. SHM 12518:2  
Unknown site, Götene sn., VG. SHM 11706:5  
Häller, Brastad sn. Bo. SHM 1473  
Hanabo, Sjötofta sn., VG. SHM 25591  
Stommen, Bredared, Åsarp sn, VG. SHM 11396:5

Denmark

Unknown, Denmark. Cop 8414

## Appendix 3.4

### "Squeezies"

Impressions were made taken from the front of the cruciform brooches from the Ashmolean Museum, using fine-grade silicon rubber. These impressions provided access to some surfaces which were otherwise difficult to photograph. The starkly white rubber surfaces are, however, rather difficult to light properly. Achieving plates 14 and 16 required very delicate manipulation of light sources.

Thanks to Mark Norman and others of the Conservation Department, Ashmolean Museum.

## Appendix 4.1

Percentage composition of cruciform brooches by atomic absorption analysis

Brooch name	Cu	Zn	Sn	Pb	Fe	Ni	Ag
Asgarby 1	87.5	1.91	9.94	3.78	0.320	0.04	0.79
Asgarby 2	82.5	12.19	4.76	3.10	0.288	0.03	0.26
Barrington 1	85.5	1.89	6.03	5.99	0.108	0.03	0.17
Barrington B 1	76.5	7.77	4.34	11.11	0.122	0.03	0.08
Barrington 11	77.0	2.42	10.18	3.89	0.792	n.a.	0.12
Barrington 12	74.5	10.65	4.74	8.09	0.179	0.02	0.07
Barrington 2	78.5	17.90	1.58	3.63	0.160	0.03	0.09
Barrington 3	87.0	1.49	7.36	3.18	0.141	0.03	0.32
Barrington 4	81.0	2.48	10.16	5.04	0.136	0.04	0.17
Barrington 5	84.0	3.22	7.96	4.44	0.356	0.10	0.23
Barrington 6	85.0	4.96	5.52	2.48	0.260	0.10	0.12
Barrington 7	74.5	1.20	8.98	2.94	0.168	0.10	0.24
Barrington 8	76.0	12.90	0.86	2.88	0.194	0.10	0.16
Barrington 9	80.0	1.72	7.40	6.84	0.142	0.10	0.25
Barrington B 1	84.0	1.00	6.40	5.27	0.193	n.a.	0.16
Barrington B G82	82.5	2.62	9.15	3.38	0.417	0.05	0.30
Barrington G15	84.0	3.47	8.90	2.76	0.173	0.04	0.32
Barrington G6	82.0	4.62	7.84	2.89	0.164	0.04	0.31
Barton Seagrave	84.5	4.83	5.99	2.87	0.289	0.04	0.33
Bergh Apton G18	86.0	5.66	4.33	2.41	0.160	0.06	0.17
Bergh Apton G37	83.0	n.a.	13.09	2.15	n.a.0	n.a.	0.13
Bergh Apton G5	83.0	3.63	7.25	3.88	0.300	n.a.	0.31
Bergh Apton G6 (1)	84.0	0.78	10.80	3.17	0.460	0.07	0.14
Bergh Apton G6 (2)	85.0	4.61	6.38	3.75	0.210	0.05	0.21
Bergh Apton G6 (3)	84.0	5.64	5.58	3.53	0.210	0.05	0.20
Brooke 1	89.0	1.52	10.14	3.05	0.085	0.04	0.26
Brooke 2	86.5	0.76	6.56	2.21	0.217	0.04	0.23
Brooke 3	92.5	1.06	3.36	3.25	0.104	0.05	0.19
Brooke 4	84.5	5.61	5.73	4.83	0.356	0.05	0.33
Brooke 5	83.5	0.90	9.41	5.05	0.318	0.04	0.50
Brooke 6	85.5	7.89	7.09	2.06	0.189	0.02	0.09
Brooke 7	81.5	1.26	8.23	9.61	0.139	0.02	0.10
Bulmer 1	85.5	0.56	11.63	3.21	0.221	0.02	0.14
Bulmer 2	82.0	2.70	10.12	1.95	0.276	0.03	0.22
Bury St Edmunds	74.5	17.00	1.54	4.23	0.163	n.a.	0.19
Colchester 1	90.0	3.81	4.97	2.95	0.350	0.02	0.44
Cranwich	80.0	13.45	2.73	3.62	0.275	0.04	0.26
Darlington	80.0	1.44	10.60	3.36	0.368	0.10	0.13
Dorchester	90.5	0.88	8.52	3.33	0.163	n.a.	0.75
Drayton	85.0	0.04	9.87	2.81	n.d.	n.a.	0.22
Faversham	84.5	2.80	7.76	2.71	0.189	0.03	0.38
Feltwell	79.0	17.56	3.25	2.29	0.390	0.05	0.21
Ganton Wold G1 (1)	87.0	1.66	9.12	4.51	0.127	0.03	0.15
Ganton Wold G1 (2)	83.0	6.05	2.91	4.50	0.579	0.06	0.12
Ganton Wold G1 (3)	88.0	2.81	6.39	2.69	0.263	0.05	0.28
Girton 1	87.0	0.47	11.63	3.17	0.163	n.a.	0.12
Girton 2	81.5	9.70	6.62	3.62	0.236	n.a.	0.14
Girton G2	86.0	1.93	8.95	4.19	0.301	n.a.	0.35
Girton G33 (1)	84.0	5.83	6.83	3.91	0.340	n.a.	0.58
Girton G33 (2)	85.5	6.11	6.44	3.09	0.245	n.a.	0.13
Girton G39 (1)	85.5	1.48	9.74	3.71	0.145	n.a.	0.14
Girton G39 (2)	86.0	1.90	10.04	2.69	0.141	n.a.	0.10
Girton G5	86.0	6.22	5.31	1.57	0.347	n.a.	0.44
Girton G53	83.5	3.77	8.06	4.20	0.129	n.a.	0.14
Girton G7	83.0	0.82	8.85	3.84	0.070	n.a.	0.13
Goodmanham	88.5	4.73	4.87	3.63	0.271	0.04	0.26
Great Chesterton	82.5	0.52	6.15	8.74	0.077	0.02	0.06
Haslingfield 1	84.5	2.28	8.06	2.14	0.154	0.10	0.22
Haslingfield 11	90.0	0.56	6.73	2.95	0.072	0.04	0.15
Haslingfield 12	82.0	0.86	10.65	3.56	0.113	0.02	0.13
Haslingfield 13	86.5	0.88	10.32	2.77	0.108	0.02	0.14
Haslingfield 14	84.0	1.30	8.35	6.79	0.064	0.03	0.22
Haslingfield 2	78.5	1.28	9.62	5.48	0.126	n.a.	0.12
Haslingfield 3	82.0	2.76	5.92	2.76	0.382	n.a.	0.27

Haslingfield 5	86.5	1.14	11.50	1.50	0.120	n.a.	0.12
Haslingfield 6	86.5	3.86	9.20	0.14	0.170	n.a.	0.09
Haslingfield 7	86.5	2.44	8.70	2.15	0.120	n.a.	0.15
Haslingfield 8	83.5	1.44	8.37	4.49	0.130	n.a.	0.13
Haslingfield 9	84.5	1.00	13.24	4.65	0.100	n.a.	0.07
Holme Pierpoint 1	83.0	13.39	2.06	3.30	0.564	0.03	0.13
Holme Pierpoint 2	78.5	12.76	1.91	3.35	0.338	0.03	0.13
Holme Pierpoint 3	85.5	3.21	9.23	3.53	0.434	0.04	0.32
Holme Pierpoint 4	83.5	10.08	4.12	1.92	0.224	0.02	0.08
Holme Pierpoint 5	89.0	0.25	12.18	1.43	0.088	0.03	0.13
Holme Pierpoint 6	90.0	1.47	10.89	2.75	0.217	0.04	0.03
Holme Pierpoint 7	88.5	4.89	6.42	3.46	0.168	0.03	0.12
Holywell Row G16	86.5	1.58	8.37	3.31	0.270	n.a.	0.17
Holywell Row G21	88.0	3.54	7.70	2.59	0.540	n.a.	0.27
Holywell Row G22	84.0	1.16	10.20	4.08	0.230	n.a.	0.14
Holywell Row G37	87.0	2.12	9.61	3.95	0.170	n.a.	0.12
Holywell Row G48 (1)	80.0	0.60	8.97	10.34	0.450	n.a.	0.10
Holywell Row G48 (2)	86.5	1.00	7.22	4.33	0.090	n.a.	0.13
Holywell Row G48 (3)	87.0	1.12	9.43	4.06	0.240	n.a.	0.10
Holywell Row G48 (4)	73.5	n.a.	14.46	0.79	0.070	n.a.	0.05
Holywell Row G58	83.5	1.42	9.53	2.42	0.172	n.a.	0.21
Holywell Row G69	87.0	1.27	4.59	4.01	0.230	n.a.	0.12
Holywell Row G79 (1)	85.5	0.83	9.20	3.46	0.102	n.a.	0.14
Holywell Row G79 (2)	83.0	0.77	7.95	7.73	0.140	n.a.	0.19
Holywell Row G79 (3)	84.0	11.90	0.42	0.98	0.285	n.a.	0.04
Holywell Row G99 (1)	85.0	2.12	0.67	2.56	0.241	n.a.	0.13
Holywell Row G99 (2)	83.0	2.34	6.44	3.23	0.242	n.a.	0.16
Holywell Row G99 (3)	78.0	0.35	12.27	2.84	0.160	n.a.	0.09
Howletts 1	83.0	9.62	5.97	2.87	0.615	0.03	0.52
Howletts 2	86.5	2.20	8.36	3.74	0.946	0.04	0.15
Howletts G1 (1)	88.0	3.92	6.89	3.29	0.524	0.05	0.17
Howletts G1 (2)	87.0	2.40	7.54	1.70	0.238	0.03	0.35
Howletts G2	87.5	0.40	10.54	1.87	0.247	0.02	0.12
Hunstanton 1	81.0	0.51	9.70	8.53	0.053	0.03	0.15
Hunstanton 2	88.0	2.08	8.08	3.80	0.219	0.02	0.20
Icklingham	76.5	16.34	2.89	3.39	0.443	0.04	0.12
Ixworth 1	84.0	1.52	10.80	2.92	0.280	n.a.	0.27
Ixworth 2	80.0	15.00	2.60	1.45	0.313	0.10	0.06
Ixworth 3	86.5	0.01	11.59	1.72	0.056	n.a.	0.07
Ixworth 4	86.5	1.05	10.70	1.97	0.076	0.02	0.07
Kempston 1	93.5	1.00	12.26	2.27	0.180	n.a.	0.19
Kempston 2	81.5	5.76	8.07	5.68	0.390	n.a.	0.10
Kempston 3	88.5	1.36	7.30	3.71	0.074	0.03	0.22
Kenninghall 1	77.0	1.38	7.68	3.36	0.212	n.a.	0.28
Kenninghall 11	82.5	1.68	7.97	7.88	n.a.	n.a.	0.15
Kenninghall 2	86.0	1.96	8.04	5.10	0.208	n.a.	0.19
Kenninghall 3	80.5	3.78	4.78	2.48	0.341	0.10	0.14
Kenninghall 4	86.0	1.10	6.00	3.20	0.064	0.10	0.28
Kenninghall 5	89.3	1.18	6.40	2.63	0.247	0.04	0.23
Kenninghall 6	86.0	0.83	7.09	3.95	0.330	0.06	0.15
Kenninghall 7	84.5	1.38	9.25	3.72	n.a.	n.a.	0.19
Kenninghall 8	85.0	0.71	7.73	3.67	n.a.	n.a.	0.14
Kenninghall 9	86.0	0.84	7.99	3.69	n.a.	n.a.	0.21
Lakenheath 1	81.0	6.61	4.39	3.17	0.276	n.a.	0.33
Lakenheath 1	82.0	1.41	4.98	3.63	0.139	n.a.	0.24
Lakenheath 11	70.5	11.90	5.14	7.16	0.376	n.a.	0.01
Lakenheath 12	83.5	3.22	8.07	3.01	0.146	n.a.	0.30
Lakenheath 13	82.0	3.63	7.43	2.46	0.712	n.a.	0.13
Lakenheath 14	78.0	5.53	7.70	2.95	0.223	n.a.	0.26
Lakenheath 15	85.0	0.49	8.39	4.71	0.068	n.a.	0.02
Lakenheath 16	82.0	1.27	10.19	3.21	0.120	0.03	0.20
Lakenheath 2	86.5	1.34	7.90	2.85	0.228	n.a.	0.21
Lakenheath 3	78.5	0.79	8.39	3.60	0.109	n.a.	0.11
Lakenheath 4	79.5	3.51	7.46	2.22	0.326	n.a.	0.10
Lakenheath 6	84.5	2.20	6.24	2.52	0.274	n.a.	0.33
Lakenheath 7	84.5	4.61	7.62	3.43	0.320	n.a.	0.14
Lakenheath 8	70.5	2.38	6.34	4.36	0.524	n.a.	0.28
Lakenheath 9	76.0	4.59	4.02	2.32	0.244	n.a.	0.20
Linton Heath 1	84.5	0.99	10.88	2.36	0.261	0.02	0.10
Linton Heath 2	83.0	0.95	11.01	2.42	0.265	0.01	0.09

Little Wilbraham 1	91.5	0.24	4.93	1.56	0.090	0.02	0.18
Little Wilbraham 2	84.5	0.43	8.87	5.47	0.181	0.07	0.10
Little Wilbraham 3	86.0	0.05	9.65	2.86	0.059	0.03	0.10
Little Wilbraham 4	84.5	0.02	9.39	2.31	0.066	0.03	0.10
Little Wilbraham G105 (1)	83.0	1.49	10.38	2.70	0.115	0.03	0.17
Little Wilbraham G105 (2)	83.5	1.35	10.49	2.90	0.102	0.04	0.17
Little Wilbraham G111	76.0	16.07	3.96	2.68	0.232	0.01	0.44
Little Wilbraham G116	84.0	3.59	9.08	1.62	0.314	0.01	0.11
Little Wilbraham G128	86.5	0.41	7.70	3.26	0.306	0.08	0.60
Little Wilbraham G133	87.5	0.63	9.38	1.49	0.114	0.05	0.36
Little Wilbraham G143	86.5	0.23	10.55	1.51	0.095	0.04	0.14
Little Wilbraham G171 (1)	81.5	1.62	7.76	4.38	0.214	0.01	0.10
Little Wilbraham G171 (2)	76.5	10.50	5.28	2.54	0.331	0.01	0.30
Little Wilbraham G173-4 (1)	84.0	0.89	10.40	3.78	0.100	0.04	0.18
Little Wilbraham G173-4 (2)	83.0	2.70	8.77	3.23	0.246	0.04	0.20
Little Wilbraham G31 (1)	74.5	14.90	5.15	1.77	0.171	n.a.	0.31
Little Wilbraham G31 (2)	74.5	15.50	4.98	2.03	0.179	0.02	0.29
Little Wilbraham G47	82.0	1.14	8.64	4.37	0.539	0.04	0.17
Little Wilbraham G73 (1)	83.0	8.42	3.36	4.72	0.511	0.04	0.12
Little Wilbraham G73 (2)	84.5	0.62	7.14	3.42	0.068	0.03	1.03
Little Wilbraham G79	82.5	1.03	8.36	5.04	0.232	0.04	0.14
Little Wilbraham G87	80.0	10.09	5.76	3.17	0.239	0.04	0.21
Little Wilbraham G95 (1)	79.0	1.09	8.20	8.28	0.089	0.03	0.17
Little Wilbraham G95 (2)	75.0	2.15	8.20	12.10	0.223	0.02	0.18
Little Wilbraham G95 (3)	86.0	0.95	7.66	3.44	0.068	0.02	0.20
Longbridge	90.0	6.44	3.37	0.88	0.284	0.14	0.11
Lyminge	87.0	0.52	11.33	1.99	0.058	0.03	0.14
Mitchell's Hill 1	75.0	13.00	5.28	2.18	0.297	n.a.	0.08
Mitchell's Hill 2	85.0	3.54	6.62	3.35	0.335	0.10	0.24
Mitchell's Hill 3	90.5	2.20	6.10	1.27	0.160	n.a.	0.15
Mitchell's Hill 4	84.0	15.00	3.32	2.86	0.350	n.a.	0.20
Mitchell's Hill 5	79.0	3.70	6.87	11.04	0.990	n.a.	0.26
Mitchell's Hill 6	90.5	1.48	7.42	3.74	0.180	n.a.	0.16
Morningthorpe G129	86.0	2.19	8.12	3.37	0.350	n.a.	0.16
Morningthorpe G131	83.0	0.61	11.25	5.54	n.a.	n.a.	0.17
Morningthorpe G133	88.0	0.32	9.93	2.37	n.a.	n.a.	0.12
Morningthorpe G153	81.0	12.38	2.32	3.52	0.450	n.a.	0.12
Morningthorpe G16 a	87.5	1.48	8.97	2.87	0.260	n.a.	0.17
Morningthorpe G16 b	82.5	4.44	9.00	2.66	n.a.	n.a.	0.37
Morningthorpe G208	85.0	0.09	10.59	3.20	n.a.	n.a.	0.14
Morningthorpe G209	85.0	2.00	7.98	3.57	0.470	n.a.	0.21
Morningthorpe G253	80.0	9.39	4.50	1.82	0.270	n.a.	0.29
Morningthorpe G30 (1)	77.5	16.67	2.82	3.54	0.550	n.a.	0.11
Morningthorpe G30 (2)	78.0	16.84	2.82	1.98	0.380	n.a.	0.20
Morningthorpe G30 (3)	81.0	12.97	2.86	2.70	0.290	n.a.	0.16
Morningthorpe G346	86.0	0.31	8.20	4.22	0.150	n.a.	0.09
Morningthorpe G353 (1)	82.0	10.42	3.85	3.59	n.a.	0.05	0.11
Morningthorpe G362	76.5	16.24	1.57	5.45	n.a.	n.a.	0.10
Morningthorpe G370	84.5	2.52	6.81	2.50	0.280	n.a.	0.13
Morningthorpe G371	76.5	15.32	1.72	3.32	0.360	0.06	0.27
Morningthorpe G393	82.0	2.71	7.81	3.87	n.a.	n.a.	0.35
Morningthorpe G396	84.5	1.95	9.53	3.13	n.a.	n.a.	0.15
Morningthorpe G397	82.5	1.68	7.14	8.75	n.a.	n.a.	0.12
Morningthorpe G80	82.0	2.22	9.11	3.53	0.360	n.a.	0.16
Morningthorpe G90 (1)	79.5	1.67	10.46	3.64	n.a.	0.06	0.16
Morningthorpe G90 (3)	74.0	1.48	7.18	15.63	n.a.	0.22	0.06
Morningthorpe G91	84.0	0.53	10.32	3.68	0.130	n.a.	0.24
Morningthorpe G96	84.0	2.50	8.07	4.91	0.150	n.a.	0.09
Morningthorpe G97	85.0	n.a.	8.53	3.05	n.a.	n.a.	0.23
Mucking G579	78.0	1.70	9.48	9.96	0.157	0.02	0.20
Mucking G825 (1)	84.5	3.02	8.60	1.53	0.14	0.01	0.12
Mucking G825 (2)	84.0	3.08	9.76	2.20	0.117	0.02	0.14
Mucking G878 (1)	76.0	1.65	8.14	15.31	0.163	0.02	0.08
Mucking G878 (2)	77.0	1.70	8.27	14.54	0.310	0.01	0.04
Nassington 1	78.0	5.50	5.83	11.48	0.490	n.a.	0.19
Nassington 2	84.5	3.42	5.43	3.01	0.160	n.a.	0.69
Nassington G28 (1)	82.0	4.42	7.06	2.98	0.200	n.a.	0.49
Nassington G28 (2)	85.0	1.24	7.08	2.92	0.260	n.a.	0.20
Nassington G28 (3)	85.5	5.90	5.90	2.51	0.290	n.a.	0.29
Newnham 1	82.0	0.82	10.21	3.69	0.131	0.05	0.09

Newnham 2	84.5	1.80	10.71	2.57	0.094	0.01	0.13
Nortwold	84.0	0.25	13.19	2.43	0.095	0.03	0.11
Rothwell 1	87.0	7.12	4.89	3.48	0.510	n.a.	0.30
Rothwell 2	85.5	7.46	4.53	3.36	0.480	n.a.	0.29
Rothwell 3	91.0	3.86	7.93	3.31	0.280	n.a.	0.31
Rudstone 1	86.0	n.a.	12.06	1.74	0.121	0.04	0.16
Rudstone 1	87.5	0.99	10.16	1.54	0.225	0.03	0.12
St Johns 13	84.0	2.12	10.43	3.39	0.138	n.a.	0.13
St Johns 8	73.5	3.66	5.51	17.36	0.121	n.a.	0.03
Sancton 1	75.0	21.90	3.52	3.52	0.310	n.a.	0.10
Sancton 2	81.5	4.90	6.76	3.24	0.295	n.a.	0.39
Sleaford 1	83.5	3.93	7.49	2.31	0.221	0.02	0.30
Sleaford 2	87.0	0.01	9.69	1.67	0.057	0.03	0.14
Sleaford 3	84.0	1.17	8.27	7.83	0.191	0.12	0.14
Sleaford G129	71.5	0.17	8.57	15.20	0.166	n.a.	0.08
Sleaford G130	83.5	1.80	9.10	3.92	0.491	0.03	0.22
Sleaford G143	85.5	5.49	4.18	3.13	0.137	0.02	0.67
Sleaford G155	81.0	0.09	11.70	4.66	0.061	0.02	0.08
Sleaford G158	88.0	1.38	7.27	2.32	0.209	0.04	0.14
Sleaford G169	84.0	3.75	6.38	4.28	0.332	0.03	0.29
Sleaford G182 (1)	79.0	1.48	9.12	5.07	0.111	0.02	0.18
Sleaford G182 (2)	82.0	2.17	9.65	5.42	0.291	0.02	0.18
Sleaford G189	83.0	1.54	12.07	2.50	0.070	0.02	0.09
Sleaford G205 (1)	77.0	1.75	9.47	3.17	0.255	0.02	0.11
Sleaford G205 (2)	83.5	5.17	8.05	3.06	0.250	0.04	0.54
Sleaford G233	74.0	5.22	8.76	2.85	0.636	n.a.	0.21
Sleaford G49	82.5	0.13	10.22	2.59	0.227	0.02	0.11
Sleaford G66	87.5	0.28	7.66	5.07	0.113	0.03	0.16
Sleaford G79	85.0	2.84	6.58	4.00	0.270	0.03	0.20
Sleaford G80	89.0	0.94	5.55	4.24	0.139	0.03	0.16
Sleaford G86	85.5	2.58	6.54	2.45	0.301	0.04	0.24
Soham 1	86.0	1.71	9.10	2.58	0.237	0.04	0.18
Soham 2	81.0	5.41	7.35	4.59	0.177	0.02	0.46
Soham G12	80.0	1.39	8.17	6.84	0.251	0.02	0.21
Soham G16	77.0	1.05	7.43	13.27	0.133	0.04	0.16
Soham G7	81.0	0.34	11.98	3.79	0.075	0.01	0.14
South Willingham	84.5	4.57	7.51	3.58	0.238	0.03	0.36
South Yorkshire	83.0	12.00	3.30	2.61	0.480	n.a.	0.25
Sporle	85.0	8.16	4.03	2.36	0.256	0.02	0.19
St Johns 1	77.0	14.00	2.58	2.47	0.588	0.10	0.15
St Johns 11	83.0	3.43	8.35	3.29	0.470	n.a.	0.23
St Johns 12	84.0	9.29	2.79	3.23	0.088	n.a.	0.29
St Johns 14	82.5	2.48	9.99	2.43	0.136	n.a.	0.12
St Johns 2	86.5	1.54	11.82	2.63	0.360	n.a.	0.11
St Johns 3	87.0	1.94	9.62	3.23	0.120	n.a.	0.21
St Johns 4	84.5	0.27	13.02	1.30	0.094	n.a.	0.12
St Johns 5	86.5	6.67	5.42	2.16	0.240	n.a.	0.21
St Johns 6	83.0	2.87	6.42	8.14	0.308	n.a.	0.31
St Johns 9	91.5	0.12	13.17	1.83	0.161	n.a.	0.04
St Johns G1	85.0	0.24	11.70	3.72	0.077	n.a.	0.10
St Johns G38	85.0	2.00	8.38	4.39	0.108	n.a.	0.23
Swaffham G6	86.0	6.15	7.26	1.90	0.226	0.10	0.21
Tuddenham 1	83.0	2.43	10.16	3.90	0.225	0.03	0.20
Tuddenham 2	83.5	5.25	6.49	2.97	0.214	0.02	0.28
Tuddenham 4	84.0	4.12	8.14	2.95	0.192	0.02	0.19
Undley	70.0	0.68	10.81	13.84	0.126	0.02	0.08
Walsingham	83.5	9.23	5.20	3.40	0.418	0.08	0.46
Watling Street	85.5	4.52	6.71	3.03	0.250	n.a.	0.26
West Stow Heath 1	78.5	1.70	11.02	4.94	0.147	n.a.	0.09
West Stow Heath 2	87.0	1.28	12.86	2.95	0.271	n.a.	0.25
West Stow Heath 3	85.0	1.00	10.58	8.77	0.324	n.a.	0.59
West Stow Heath 4	83.0	4.08	8.32	4.72	0.352	n.a.	0.12
West Stow Heath 5	82.0	0.38	11.71	5.01	0.107	0.05	0.16
West Stow Heath 6	77.5	0.88	13.26	4.92	0.287	0.03	0.13

Woodstone 1	84.0	0.93	10.47	3.87	0.173	0.03	0.12
Woodstone 2	87.5	1.24	10.31	1.59	0.126	0.04	0.10
Unknown provenance 1	75.0	16.95	2.78	3.07	0.119	0.04	0.17
Unknown provenance 2	76.5	0.83	8.88	4.62	0.736	0.02	0.14
Unknown provenance 3	78.0	13.78	1.96	3.62	0.225	0.02	0.34
Unknown provenance 4	92.0	2.32	5.44	2.22	0.144	0.09	0.13

## Appendix 4.2 Probe analyses

Brooch name: Barrington 3						
Zn:	1.300	Sn:	7.290	Pb:	1.530	
Fe:	0.090	Ni:	0.040	Ag:	0.330	Sb: 0.030 As: 0.000
Co:	0.000	Au:	0.000			
Brooch name: Barrington A 1						
Zn:	4.190	Sn:	5.960	Pb:	2.180	
Fe:	0.130	Ni:	0.050	Ag:	0.310	Sb: 0.070 As: 0.020
Co:	0.000	Au:	0.000			
Brooch name: Barrington A 13						
Zn:	0.260	Sn:	12.900	Pb:	6.570	
Fe:	0.040	Ni:	0.020	Ag:	0.120	Sb: 0.040 As: 0.050
Co:	0.000	Au:	0.030			
Brooch name: Barrington A 2						
Zn:	17.020	Sn:	1.600	Pb:	2.350	
Fe:	0.120	Ni:	0.030	Ag:	0.100	Sb: 0.090 As: 0.000
Co:	0.000	Au:	0.000			
Brooch name: Barrington B 1						
Zn:	2.1	Sn:	6.38	Pb:	3.28	
Fe:	0.170	Ni:	0.030	Ag:	0.160	Sb: 0.080 As: 0.020
Co:	0.000	Au:	0.060			
Brooch name: Barrington B G82						
Zn:	3.140	Sn:	7.940	Pb:	1.940	
Fe:	0.450	Ni:	0.040	Ag:	0.200	Sb: 0.030 As: 0.020
Co:	0.000	Au:	0.000			
Brooch name: Bergh Apton G6 (1)						
Zn:	0.680	Sn:	10.950	Pb:	1.300	
Fe:	0.130	Ni:	0.040	Ag:	0.100	Sb: 0.060 As: 0.180
Co:	0.010	Au:	0.000			
Brooch name: Bergh Apton G6 (3)						
Zn:	6.480	Sn:	5.390	Pb:	3.420	
Fe:	0.130	Ni:	0.020	Ag:	0.170	Sb: 0.050 As: 0.140
Co:	0.000	Au:	0.050			
Brooch name: Bifrons 1						
Zn:	1.450	Sn:	10.350	Pb:	2.510	
Fe:	0.080	Ni:	0.030	Ag:	0.150	Sb: 0.070 As: 0.330
Co:	0.000	Au:	0.000			
Brooch name: Bifrons G15 (1)						
Zn:	9.330	Sn:	8.290	Pb:	7.950	
Fe:	0.270	Ni:	0.020	Ag:	0.060	Sb: 0.110 As: 0.370
Co:	0.000	Au:	0.030			
Brooch name: Bifrons G15 (2)						
Zn:	9.920	Sn:	7.810	Pb:	8.850	
Fe:	0.290	Ni:	0.030	Ag:	0.030	Sb: 0.080 As: 0.040
Co:	0.100	Au:	0.030			
Brooch name: Bifrons G23						
Zn:	21.270	Sn:	0.100	Pb:	2.050	
Fe:	0.100	Ni:	0.070	Ag:	0.010	Sb: 0.060 As: 0.180
Co:	0.000	Au:	0.000			
Brooch name: Bottesford						
Zn:	1.620	Sn:	9.250	Pb:	4.210	
Fe:	0.060	Ni:	0.030	Ag:	0.060	Sb: 0.070 As: 0.000
Co:	0.000	Au:	0.050			

Brooch name: Carlton Scroop 1  
Zn: 12.510 Sn: 2.780 Pb: 3.760  
Fe: 0.190 Ni: 0.040 Ag: 0.340 Sb: 0.070 As: 0.340  
Co: 0.010 Au: 0.000

Brooch name: Carlton Scroop 2  
Zn: 3.510 Sn: 8.140 Pb: 2.610  
Fe: 0.240 Ni: 0.040 Ag: 0.230 Sb: 0.080 As: 0.000  
Co: 0.000 Au: 0.040

Brooch name: Carlton Scroop 3  
Zn: 0.270 Sn: 12.260 Pb: 2.520  
Fe: 0.100 Ni: 0.020 Ag: 0.090 Sb: 0.030 As: 0.110  
Co: 0.000 Au: 0.030

Brooch name: Cleatham 1  
Zn: 2.350 Sn: 7.310 Pb: 2.110  
Fe: 0.180 Ni: 0.030 Ag: 0.170 Sb: 0.060 As: 0.080  
Co: 0.000 Au: 0.050

Brooch name: Cleatham G30 (1)  
Zn: 4.560 Sn: 5.360 Pb: 3.330  
Fe: 0.200 Ni: 0.040 Ag: 0.390 Sb: 0.090 As: 0.050  
Co: 0.010 Au: 0.000

Brooch name: Cleatham G30 (2)  
Zn: 0.600 Sn: 9.710 Pb: 1.520  
Fe: 0.210 Ni: 0.040 Ag: 0.150 Sb: 0.060 As: 0.200  
Co: 0.000 Au: 0.030

Brooch name: Cleatham G30 (3)  
Zn: 6.560 Sn: 9.060 Pb: 2.220  
Fe: 0.220 Ni: 0.040 Ag: 0.490 Sb: 0.060 As: 0.070  
Co: 0.000 Au: 0.040

Brooch name: Cleatham G30 (4)  
Zn: 2.290 Sn: 8.750 Pb: 6.290  
Fe: 0.160 Ni: 0.030 Ag: 0.170 Sb: 0.080 As: 0.490  
Co: 0.000 Au: 0.000

Brooch name: Cleatham G30 (5)  
Zn: 0.080 Sn: 12.600 Pb: 2.070  
Fe: 0.050 Ni: 0.040 Ag: 0.070 Sb: 0.040 As: 0.060  
Co: 0.000 Au: 0.000

Brooch name: Cleatham G34 (1)  
Zn: 2.380 Sn: 8.910 Pb: 4.330  
Fe: 0.270 Ni: 0.030 Ag: 0.160 Sb: 0.070 As: 0.180  
Co: 0.000 Au: 0.000

Brooch name: Cleatham G34 (2)  
Zn: 2.340 Sn: 8.780 Pb: 3.080  
Fe: 0.250 Ni: 0.030 Ag: 0.150 Sb: 0.060 As: 0.120  
Co: 0.000 Au: 0.040

Brooch name: Cleatham G34 (3)  
Zn: 1.370 Sn: 9.030 Pb: 3.690  
Fe: 0.070 Ni: 0.010 Ag: 0.080 Sb: 0.040 As: 0.020  
Co: 0.000 Au: 0.030

Brooch name: Cleatham G9  
Zn: 2.710 Sn: 9.960 Pb: 9.260  
Fe: 0.150 Ni: 0.040 Ag: 0.060 Sb: 0.090 As: 0.070  
Co: 0.010 Au: 0.000

Brooch name: Colchester 1  
Zn: 2.420 Sn: 7.930 Pb: 5.100  
Fe: 0.120 Ni: 0.040 Ag: 0.440 Sb: 0.070 As: 0.210  
Co: 0.000 Au: 0.070

Brooch name:	Flixborough 1				
Zn:	6.190	Sn:	5.860	Pb:	4.540
Fe:	0.200	Ni:	0.020	Ag:	0.110
Co:	0.000	Au:	0.000	Sb:	0.100
				As:	0.250
Brooch name:	Fonaby 1				
Zn:	1.920	Sn:	8.140	Pb:	3.180
Fe:	0.160	Ni:	0.020	Ag:	0.030
Co:	0.000	Au:	0.000	Sb:	0.070
				As:	0.000
Brooch name:	Fonaby 1				
Zn:	4.090	Sn:	6.370	Pb:	0.580
Fe:	0.280	Ni:	0.050	Ag:	0.550
Co:	0.000	Au:	0.050	Sb:	0.050
				As:	0.130
Brooch name:	Fonaby 2				
Zn:	9.950	Sn:	4.950	Pb:	3.270
Fe:	0.130	Ni:	0.020	Ag:	0.980
Co:	0.000	Au:	0.020	Sb:	0.070
				As:	0.140
Brooch name:	Fonaby 3				
Zn:	1.340	Sn:	8.910	Pb:	3.030
Fe:	0.270	Ni:	0.040	Ag:	0.120
Co:	0.010	Au:	0.000	Sb:	0.050
				As:	0.270
Brooch name:	Fonaby 4				
Zn:	1.130	Sn:	7.060	Pb:	1.430
Fe:	0.130	Ni:	0.030	Ag:	0.280
Co:	0.000	Au:	0.000	Sb:	0.060
				As:	0.000
Brooch name:	Fonaby 5				
Zn:	1.930	Sn:	10.250	Pb:	5.520
Fe:	0.120	Ni:	0.050	Ag:	0.050
Co:	0.000	Au:	0.000	Sb:	0.130
				As:	0.260
Brooch name:	Fonaby 5				
Zn:	2.060	Sn:	9.810	Pb:	4.980
Fe:	0.130	Ni:	0.020	Ag:	0.060
Co:	0.010	Au:	0.000	Sb:	0.130
				As:	0.270
Brooch name:	Fonaby 6				
Zn:	3.190	Sn:	7.210	Pb:	1.300
Fe:	0.370	Ni:	0.040	Ag:	0.270
Co:	0.000	Au:	0.050	Sb:	0.040
				As:	0.010
Brooch name:	Fonaby G23				
Zn:	8.570	Sn:	7.010	Pb:	2.300
Fe:	0.160	Ni:	0.110	Ag:	0.130
Co:	0.000	Au:	0.000	Sb:	0.050
				As:	0.310
Brooch name:	Fonaby G28				
Zn:	0.270	Sn:	9.840	Pb:	5.960
Fe:	0.040	Ni:	0.030	Ag:	0.030
Co:	0.000	Au:	0.000	Sb:	0.040
				As:	0.370
Brooch name:	Fonaby G32				
Zn:	1.200	Sn:	8.750	Pb:	4.480
Fe:	0.230	Ni:	0.030	Ag:	0.520
Co:	0.000	Au:	0.000	Sb:	0.090
				As:	0.330
Brooch name:	Fonaby G35				
Zn:	0.020	Sn:	11.570	Pb:	0.160
Fe:	0.020	Ni:	0.030	Ag:	0.160
Co:	0.000	Au:	0.050	Sb:	0.030
				As:	0.140
Brooch name:	Fonaby G38				
Zn:	9.010	Sn:	4.990	Pb:	2.620
Fe:	0.230	Ni:	0.020	Ag:	0.080
Co:	0.000	Au:	0.000	Sb:	0.140
				As:	0.000

Brooch name: Fonaby G43 (1)						
Zn:	10.850	Sn:	5.200	Pb:	2.230	
Fe:	0.180	Ni:	0.040	Ag:	0.830	Sb: 0.080 As: 0.060
Co:	0.000	Au:	0.030			
Brooch name: Girton 1						
Zn:	6.440	Sn:	5.040	Pb:	0.900	
Fe:	0.036	Ni:	0.020	Ag:	0.410	Sb: 0.040 As: 0.020
Co:	0.000	Au:	0.000			
Brooch name: Girton 2						
Zn:	10.500	Sn:	5.560	Pb:	4.350	
Fe:	0.230	Ni:	0.030	Ag:	0.110	Sb: 0.050 As: 0.000
Co:	0.000	Au:	0.000			
Brooch name: Girton 3						
Zn:	9.000	Sn:	7.790	Pb:	9.230	
Fe:	0.420	Ni:	0.030	Ag:	0.120	Sb: 0.140 As: 0.020
Co:	0.010	Au:	0.000			
Brooch name: Girton 4						
Zn:	4.270	Sn:	8.140	Pb:	3.050	
Fe:	0.110	Ni:	0.030	Ag:	0.170	Sb: 0.070 As: 0.000
Co:	0.000	Au:	0.030			
Brooch name: Girton G13 (1)						
Zn:	0.420	Sn:	11.990	Pb:	2.480	
Fe:	0.120	Ni:	0.030	Ag:	0.110	Sb: 0.050 As: 0.010
Co:	0.000	Au:	0.030			
Brooch name: Girton G39 (1)						
Zn:	1.55	Sn:	9.45	Pb:	3.35	
Fe:	0.120	Ni:	0.030	Ag:	0.100	Sb: 0.030 As: 0.000
Co:	0.000	Au:	0.000			
Brooch name: Girton G39 (2)						
Zn:	1.940	Sn:	10.470	Pb:	2.530	
Fe:	0.130	Ni:	0.130	Ag:	0.110	Sb: 0.080 As: 0.010
Co:	0.000	Au:	0.040			
Brooch name: Glenthams 1						
Zn:	0.040	Sn:	11.190	Pb:	1.940	
Fe:	0.020	Ni:	0.050	Ag:	0.120	Sb: 0.040 As: 0.150
Co:	0.000	Au:	0.040			
Brooch name: Glenthams 2						
Zn:	5.250	Sn:	9.370	Pb:	2.010	
Fe:	0.200	Ni:	0.040	Ag:	0.090	Sb: 0.060 As: 0.000
Co:	0.000	Au:	0.000			
Brooch name: Grantham						
Zn:	0.400	Sn:	13.440	Pb:	1.820	
Fe:	0.030	Ni:	0.010	Ag:	0.110	Sb: 0.060 As: 0.140
Co:	0.000	Au:	0.000			
Brooch name: Hatton						
Zn:	0.560	Sn:	12.480	Pb:	3.010	
Fe:	0.050	Ni:	0.020	Ag:	0.160	Sb: 0.030 As: 0.050
Co:	0.000	Au:	0.000			
Brooch name: Holme Pierpoint 1						
Zn:	14.250	Sn:	2.110	Pb:	3.700	
Fe:	0.310	Ni:	0.030	Ag:	0.150	Sb: 0.060 As: 0.090
Co:	0.010	Au:	0.000			
Brooch name: Holme Pierpoint 2						
Zn:	15.650	Sn:	2.450	Pb:	4.290	
Fe:	0.310	Ni:	0.020	Ag:	0.170	Sb: 0.040 As: 0.170
Co:	0.000	Au:	0.090			

Brooch name: Holme Pierpoint 3						
Zn:	0.760	Sn:	10.220	Pb:	1.490	
Fe:	0.690	Ni:	0.040	Ag:	0.150	Sb: 0.070 As: 0.300
Co:	0.000	Au:	0.000			
Brooch name: Howletts G1 (1)						
Zn:	4.360	Sn:	7.490	Pb:	2.110	
Fe:	0.460	Ni:	0.040	Ag:	0.180	Sb: 0.080 As: 0.370
Co:	0.020	Au:	0.000			
Brooch name: Hunstanton 2						
Zn:	1.930	Sn:	6.900	Pb:	2.790	
Fe:	0.160	Ni:	0.030	Ag:	0.190	Sb: 0.050 As: 0.210
Co:	0.000	Au:	0.000			
Brooch name: Icklingham						
Zn:	19.190	Sn:	3.610	Pb:	2.240	
Fe:	0.450	Ni:	0.040	Ag:	0.090	Sb: 0.050 As: 0.000
Co:	0.010	Au:	0.000			
Brooch name: Kempston 3						
Zn:	1.340	Sn:	8.070	Pb:	2.040	
Fe:	0.080	Ni:	0.040	Ag:	0.250	Sb: 0.090 As: 0.080
Co:	0.010	Au:	0.000			
Brooch name: Kenninghall 10						
Zn:	1.530	Sn:	10.420	Pb:	3.650	
Fe:	0.170	Ni:	0.050	Ag:	0.170	Sb: 0.060 As: 0.250
Co:	0.010	Au:	0.000			
Brooch name: Laceby G1 (1)						
Zn:	15.450	Sn:	3.640	Pb:	1.130	
Fe:	0.160	Ni:	0.060	Ag:	0.240	Sb: 0.120 As: 0.580
Co:	0.010	Au:	0.040			
Brooch name: Laceby G1 (2)						
Zn:	11.160	Sn:	5.360	Pb:	2.230	
Fe:	0.360	Ni:	0.070	Ag:	0.170	Sb: 0.070 As: 0.000
Co:	0.010	Au:	0.000			
Brooch name: Laceby G1 (3)						
Zn:	1.310	Sn:	10.130	Pb:	4.170	
Fe:	0.090	Ni:	0.040	Ag:	0.110	Sb: 0.050 As: 0.120
Co:	0.000	Au:	0.040			
Brooch name: Lakenheath 2						
Zn:	1.160	Sn:	8.270	Pb:	2.190	
Fe:	0.160	Ni:	0.030	Ag:	0.230	Sb: 0.070 As: 0.010
Co:	0.000	Au:	0.000			
Brooch name: Lakenheath 7						
Zn:	2.250	Sn:	8.250	Pb:	2.840	
Fe:	0.260	Ni:	0.040	Ag:	0.200	Sb: 0.080 As: 0.000
Co:	0.000	Au:	0.000			
Brooch name: Lincoln 1						
Zn:	13.470	Sn:	4.070	Pb:	2.190	
Fe:	0.160	Ni:	0.060	Ag:	0.540	Sb: 0.060 As: 0.000
Co:	0.000	Au:	0.000			
Brooch name: Lincoln 2						
Zn:	2.440	Sn:	6.940	Pb:	2.860	
Fe:	0.240	Ni:	0.030	Ag:	0.210	Sb: 0.070 As: 0.320
Co:	0.000	Au:	0.000			
Brooch name: Lincoln 3						
Zn:	2.640	Sn:	8.200	Pb:	3.250	
Fe:	0.270	Ni:	0.040	Ag:	0.250	Sb: 0.070 As: 0.390
Co:	0.000	Au:	0.000			

Brooch name: Little Wilbraham 2  
Zn: 0.480 Sn: 9.300 Pb: 3.640  
Fe: 0.160 Ni: 0.080 Ag: 0.110 Sb: 0.150 As: 0.000  
Co: 0.000 Au: 0.000

Brooch name: Little Wilbraham G105 (1)  
Zn: 1.490 Sn: 10.570 Pb: 3.640  
Fe: 0.110 Ni: 0.040 Ag: 0.140 Sb: 0.070 As: 0.000  
Co: 0.000 Au: 0.000

Brooch name: Little Wilbraham G105 (2)  
Zn: 1.280 Sn: 10.830 Pb: 3.880  
Fe: 0.060 Ni: 0.050 Ag: 0.150 Sb: 0.070 As: 0.000  
Co: 0.000 Au: 0.000

Brooch name: Little Wilbraham G133  
Zn: 0.560 Sn: 9.410 Pb: 1.070  
Fe: 0.070 Ni: 0.060 Ag: 0.320 Sb: 0.040 As: 0.000  
Co: 0.000 Au: 0.000

Brooch name: Little Wilbraham G173-4 (1)  
Zn: 0.890 Sn: 9.970 Pb: 2.060  
Fe: 0.040 Ni: 0.060 Ag: 0.160 Sb: 0.060 As: 0.010  
Co: 0.000 Au: 0.000

Brooch name: Little Wilbraham G173-4 (2)  
Zn: 2.550 Sn: 8.370 Pb: 2.830  
Fe: 0.250 Ni: 0.070 Ag: 0.220 Sb: 0.050 As: 0.000  
Co: 0.000 Au: 0.000

Brooch name: Little Wilbraham G73 (1)  
Zn: 7.940 Sn: 3.430 Pb: 4.280  
Fe: 0.490 Ni: 0.020 Ag: 0.130 Sb: 0.120 As: 0.000  
Co: 0.000 Au: 0.000

Brooch name: Little Wilbraham G73 (2)  
Zn: 0.620 Sn: 7.350 Pb: 3.330  
Fe: 0.030 Ni: 0.030 Ag: 2.500 Sb: 0.080 As: 0.070  
Co: 0.000 Au: 0.000

Brooch name: Little Wilbraham G79  
Zn: 1.110 Sn: 8.320 Pb: 2.450  
Fe: 0.160 Ni: 0.050 Ag: 0.110 Sb: 0.080 As: 0.000  
Co: 0.000 Au: 0.000

Brooch name: Little Wilbraham G95 (2)  
Zn: 1.870 Sn: 8.790 Pb: 8.340  
Fe: 0.190 Ni: 0.030 Ag: 0.190 Sb: 0.080 As: 0.020  
Co: 0.000 Au: 0.000

Brooch name: Longbridge  
Zn: 2.670 Sn: 4.310 Pb: 1.300  
Fe: 0.110 Ni: 0.080 Ag: 0.100 Sb: 0.080 As: 0.040  
Co: 0.000 Au: 0.000

Brooch name: Milton-next-Sittingbourne 1  
Zn: 11.170 Sn: 6.160 Pb: 5.060  
Fe: 0.290 Ni: 0.020 Ag: 0.040 Sb: 0.080 As: 0.000  
Co: 0.000 Au: 0.000

Brooch name: Milton-next-Sittingbourne 2  
Zn: 9.200 Sn: 4.230 Pb: 5.100  
Fe: 0.260 Ni: 0.020 Ag: 1.070 Sb: 0.110 As: 0.340  
Co: 0.000 Au: 0.000

Brooch name: North Owersby  
Zn: 1.700 Sn: 10.810 Pb: 3.840  
Fe: 0.140 Ni: 0.040 Ag: 0.140 Sb: 0.060 As: 0.070  
Co: 0.000 Au: 0.050

Brooch name: Rudstone 1  
Zn: 6.720 Sn: 2.810 Pb: 0.260  
Fe: 0.230 Ni: 0.140 Ag: 0.120 Sb: 0.020 As: 0.150  
Co: 0.010 Au: 0.000

Brooch name: Ruskington 1  
Zn: 9.810 Sn: 2.470 Pb: 3.970  
Fe: 0.360 Ni: 0.030 Ag: 0.120 Sb: 0.070 As: 0.250  
Co: 0.000 Au: 0.000

Brooch name: Ruskington 2  
Zn: 1.120 Sn: 7.660 Pb: 1.230  
Fe: 0.220 Ni: 0.030 Ag: 0.220 Sb: 0.080 As: 0.070  
Co: 0.000 Au: 0.030

Brooch name: Ruskington 3  
Zn: 7.140 Sn: 7.860 Pb: 2.410  
Fe: 0.190 Ni: 0.020 Ag: 0.300 Sb: 0.110 As: 0.000  
Co: 0.000 Au: 0.000

Brooch name: Ruskington 4  
Zn: 2.530 Sn: 7.460 Pb: 6.100  
Fe: 0.120 Ni: 0.040 Ag: 0.160 Sb: 0.040 As: 0.050  
Co: 0.010 Au: 0.070

Brooch name: Ruskington 5  
Zn: 2.630 Sn: 6.060 Pb: 2.400  
Fe: 0.240 Ni: 0.040 Ag: 0.220 Sb: 0.080 As: 0.190  
Co: 0.010 Au: 0.000

Brooch name: Ruskington 6  
Zn: 3.560 Sn: 6.950 Pb: 2.020  
Fe: 0.180 Ni: 0.070 Ag: 0.230 Sb: 0.060 As: 0.100  
Co: 0.010 Au: 0.050

Brooch name: Ruskington G13  
Zn: 2.310 Sn: 8.310 Pb: 0.280  
Fe: 0.130 Ni: 0.030 Ag: 0.140 Sb: 0.030 As: 0.000  
Co: 0.000 Au: 0.120

Brooch name: Searby  
Zn: 3.700 Sn: 7.340 Pb: 2.960  
Fe: 0.210 Ni: 0.040 Ag: 0.120 Sb: 0.050 As: 0.320  
Co: 0.000 Au: 0.000

Brooch name: Sleaford G116  
Zn: 0.030 Sn: 9.980 Pb: 1.500  
Fe: 0.020 Ni: 0.050 Ag: 0.140 Sb: 0.040 As: 0.170  
Co: 0.000 Au: 0.000

Brooch name: Sleaford G143  
Zn: 6.260 Sn: 4.360 Pb: 1.220  
Fe: 0.130 Ni: 0.000 Ag: 0.620 Sb: 0.100 As: 0.210  
Co: 0.000 Au: 0.000

Brooch name: Sleaford G223  
Zn: 1.160 Sn: 8.080 Pb: 4.210  
Fe: 0.210 Ni: 0.040 Ag: 0.140 Sb: 0.070 As: 0.140  
Co: 0.000 Au: 0.000

Brooch name: Sleaford G79  
Zn: 2.040 Sn: 7.560 Pb: 1.150  
Fe: 0.140 Ni: 0.050 Ag: 0.200 Sb: 0.110 As: 0.090  
Co: 0.000 Au: 0.000

Brooch name: Spong Hill C1034  
Zn: 0.030 Sn: 12.990 Pb: 1.130  
Fe: 0.080 Ni: 0.000 Ag: 0.070 Sb: 0.020 As: 0.000  
Co: 0.000 Au: 0.020

Brooch name: Spong Hill C1072  
Zn: 0.340 Sn: 12.410 Pb: 0.430  
Fe: 0.360 Ni: 0.020 Ag: 0.170 Sb: 0.020 As: 0.250  
Co: 0.000 Au: 0.020

Brooch name: Spong Hill C1168  
Zn: 16.100 Sn: 4.030 Pb: 3.500  
Fe: 0.450 Ni: 0.040 Ag: 0.100 Sb: 0.060 As: 0.170  
Co: 0.000 Au: 0.040

Brooch name: Spong Hill C1168 (1)  
Zn: 0.380 Sn: 12.760 Pb: 0.800  
Fe: 0.070 Ni: 0.030 Ag: 0.120 Sb: 0.070 As: 0.070  
Co: 0.000 Au: 0.050

Brooch name: Spong Hill C1216  
Zn: 0.430 Sn: 10.230 Pb: 3.540  
Fe: 0.050 Ni: 0.040 Ag: 0.330 Sb: 0.050 As: 0.110  
Co: 0.010 Au: 0.060

Brooch name: Spong Hill C1468 (1)  
Zn: 0.510 Sn: 7.830 Pb: 2.720  
Fe: 0.110 Ni: 0.030 Ag: 0.120 Sb: 0.060 As: 0.210  
Co: 0.020 Au: 0.020

Brooch name: Spong Hill C1468 (2)  
Zn: 0.070 Sn: 8.650 Pb: 1.680  
Fe: 0.250 Ni: 0.030 Ag: 0.070 Sb: 0.010 As: 0.300  
Co: 0.010 Au: 0.050

Brooch name: Spong Hill C1469  
Zn: 2.070 Sn: 9.780 Pb: 2.910  
Fe: 0.350 Ni: 0.020 Ag: 0.140 Sb: 0.070 As: 0.220  
Co: 0.010 Au: 0.030

Brooch name: Spong Hill C2656  
Zn: 10.030 Sn: 3.380 Pb: 0.640  
Fe: 0.360 Ni: 0.060 Ag: 2.370 Sb: 0.170 As: 0.210  
Co: 0.000 Au: 0.080

Brooch name: Spong Hill C2918  
Zn: 1.660 Sn: 10.180 Pb: 3.200  
Fe: 0.110 Ni: 0.030 Ag: 0.140 Sb: 0.040 As: 0.030  
Co: 0.010 Au: 0.020

Brooch name: Spong Hill C2997  
Zn: 17.230 Sn: 3.020 Pb: 0.060  
Fe: 0.170 Ni: 0.050 Ag: 0.090 Sb: 0.210 As: 0.440  
Co: 0.010 Au: 0.010

Brooch name: Spong Hill C3055 (1)  
Zn: 11.960 Sn: 2.890 Pb: 0.110  
Fe: 0.280 Ni: 0.030 Ag: 0.190 Sb: 0.070 As: 0.110  
Co: 0.000 Au: 0.010

Brooch name: Spong Hill C3055 (2)						
Zn:	2.850	Sn:	7.760	Pb:	1.510	
Fe:	0.080	Ni:	0.040	Ag:	0.090	Sb: 0.080 As: 0.050
Co:	0.010	Au:	0.010			
Brooch name: Spong Hill G2 (1)						
Zn:	7.450	Sn:	7.550	Pb:	1.060	
Fe:	0.240	Ni:	0.140	Ag:	0.090	Sb: 0.020 As: 0.260
Co:	0.010	Au:	0.050			
Brooch name: Spong Hill G2 (2)						
Zn:	7.500	Sn:	8.650	Pb:	1.730	
Fe:	0.250	Ni:	0.130	Ag:	0.100	Sb: 0.050 As: 0.290
Co:	0.010	Au:	0.030			
Brooch name: Spong Hill G22 (1)						
Zn:	1.030	Sn:	7.570	Pb:	1.270	
Fe:	0.220	Ni:	0.050	Ag:	0.140	Sb: 0.040 As: 0.250
Co:	0.010	Au:	0.050			
Brooch name: Spong Hill G22 (2)						
Zn:	0.490	Sn:	10.270	Pb:	2.790	
Fe:	0.100	Ni:	0.030	Ag:	0.240	Sb: 0.060 As: 0.360
Co:	0.000	Au:	0.030			
Brooch name: Spong Hill G22 (3)						
Zn:	0.820	Sn:	8.780	Pb:	1.980	
Fe:	0.050	Ni:	0.040	Ag:	0.150	Sb: 0.050 As: 0.070
Co:	0.000	Au:	0.030			
Brooch name: Spong Hill G26						
Zn:	0.220	Sn:	10.670	Pb:	3.880	
Fe:	0.050	Ni:	0.040	Ag:	0.250	Sb: 0.060 As: 0.130
Co:	0.010	Au:	0.040			
Brooch name: Spong Hill G39						
Zn:	1.880	Sn:	6.100	Pb:	1.480	
Fe:	0.160	Ni:	0.040	Ag:	0.220	Sb: 0.070 As: 0.120
Co:	0.000	Au:	0.010			
Brooch name: Spong Hill G45						
Zn:	6.470	Sn:	6.660	Pb:	1.630	
Fe:	0.210	Ni:	0.030	Ag:	0.640	Sb: 0.100 As: 0.030
Co:	0.010	Au:	0.050			
Brooch name: Spong Hill G46						
Zn:	7.460	Sn:	4.640	Pb:	5.520	
Fe:	0.220	Ni:	0.030	Ag:	0.330	Sb: 0.080 As: 0.140
Co:	0.000	Au:	0.010			
Brooch name: Spong Hill G57						
Zn:	7.790	Sn:	2.690	Pb:	0.370	
Fe:	0.250	Ni:	0.110	Ag:	0.100	Sb: 0.020 As: 0.000
Co:	0.010	Au:	0.040			
Brooch name: Spong Hill G58						
Zn:	4.660	Sn:	6.350	Pb:	0.720	
Fe:	0.310	Ni:	0.030	Ag:	0.380	Sb: 0.040 As: 0.230
Co:	0.020	Au:	0.010			
Brooch name: St Johns 5						
Zn:	7.440	Sn:	5.380	Pb:	2.530	
Fe:	0.210	Ni:	0.040	Ag:	0.170	Sb: 0.120 As: 0.000
Co:	0.000	Au:	0.000			
Brooch name: St Johns 6						
Zn:	3.160	Sn:	6.490	Pb:	4.600	
Fe:	0.220	Ni:	0.050	Ag:	0.250	Sb: 0.090 As: 0.000
Co:	0.000	Au:	0.000			

Brooch name: St Johns G38  
Zn: 1.900 Sn: 9.940 Pb: 3.190  
Fe: 0.150 Ni: 0.040 Ag: 0.220 Sb: 0.060 As: 0.000  
Co: 0.000 Au: 0.000

Brooch name: Unknown 3  
Zn: 2.240 Sn: 4.710 Pb: 0.570  
Fe: 0.130 Ni: 0.100 Ag: 0.150 Sb: 0.050 As: 0.280  
Co: 0.000 Au: 0.000 :

Brooch name: Unknown 4  
Zn: 0.800 Sn: 9.850 Pb: 4.390  
Fe: 0.720 Ni: 0.050 Ag: 0.140 Sb: 0.070 As: 0.180  
Co: 0.000 Au: 0.000

Brooch name: Woolsthorpe-by-Belvoir 1  
Zn: 6.690 Sn: 7.200 Pb: 1.860  
Fe: 0.120 Ni: 0.030 Ag: 0.580 Sb: 0.100 As: 0.210  
Co: 0.000 Au: 0.060

Brooch name: Woolsthorpe-by-Belvoir 2  
Zn: 1.030 Sn: 10.700 Pb: 2.750  
Fe: 0.070 Ni: 0.030 Ag: 0.140 Sb: 0.030 As: 0.190  
Co: 0.000 Au: 0.000

## Tables

Tables 3.1a-c

Prevalence of solid and hollow cross-sections at the bows of cruciform brooches, subdivided by Reichstein's phasing C3/D1 through to D3.

This listing consists of those brooches that have been examined and had previously been given *Typen* in Reichstein's catalogue, or which were easily assignable to his *Typen*.

a) German, Danish and Dutch examples.

	Bow section:Solid	Hollow
Phase		
C3/D1 continental	21	0
D2 Norwegian and cont.	15	1
D3 Norwegian	0	1
D3 continental	14	21
Unknown type or date	13	3
Total	63	26

b) Norwegian and Swedish examples.

	Bow section:Solid	Hollow
Phase		
C3/D1	6	2
C3/D1 continental	1	0
D2	4	24
D2 continental	1	0
D3	2	71
Unknown type or date	26	73
Total	40	170

c) English examples

Type	Bow section:Solid	Hollow	Reichstein Stufen
A1	6	0	C3/D1
A2	7	0	D2
A3	3	3	D2, D3
Associated with A	5	2	
Sub-total	21	5	
B1 (small)	7	2	?D2, D3
B1 (large)	1	6	D3
B2 (small)	13	17	?D2, D3
B2 (large)	4	10	D3
B3 (small)	1	14	"
B3 (large)	1	6	"
Associated with B	7	10	
Sub-total	34	65	

C1	0	15	D3, D3/E1
C2	6	15	
<u>Associated with C</u>	<u>5</u>	<u>9</u>	
Sub-total	11	39	
D1	5	9	D3, D3/E1
D2	7	18	
D3	4	17	
D4	8	9	
D5	8	32	
D6	1	11	
<u>Associated with D</u>	<u>10</u>	<u>13</u>	
Sub-total	43	109	
Z1	10	9	D3/E1
Z2	3	4	
Z3	6	1	
Z4	1	1	
<u>Associated with Z</u>	<u>1</u>	<u>3</u>	
Sub-total	21	18	
Total	132	234	

Table 3.2

Ratio of catch to overall brooch length

Country	Stufe /Type	n	Catch(mm)	Catch/overall mean $\pm$ s.d.	No of outlying examples, values
Norway /Swedish	C3/D1	6	38 $\pm$ 8	0.48 $\pm$ 0.03	n=1, 0.29
	D2	23	44 $\pm$ 7	0.48 $\pm$ 0.05	n=2, 0.32, 0.36
		4	20 $\pm$ 7	0.20 $\pm$ 0.05	
	D3	12	56 $\pm$ 19	0.49 $\pm$ 0.05	
		28	23 $\pm$ 6	0.21 $\pm$ 0.05	
Germany /Danish	C3/D1	15	40 $\pm$ 9	0.47 $\pm$ 0.03	
	D2	4	36 $\pm$ 10	no pattern	0.32, 0.36, 0.47, 0.50
	D3	5	23 $\pm$ 4	"	0.22, 0.23, 0.27, 0.36, 0.39
Dutch	C3/D1	1	45		0.47
	D2	1	60		0.53
	D3	7	23 $\pm$ 9	0.21 $\pm$ 0.03	n=1, 0.32
England	type A	15	22 $\pm$ 5	0.26 $\pm$ 0.09	
	type B (small)	37	16 $\pm$ 3	0.20 $\pm$ 0.04	
	type B (long)	27	22 $\pm$ 7	0.19 $\pm$ 0.03	
	type C	39	20 $\pm$ 4	0.17 $\pm$ 0.03	
	type D	107	20 $\pm$ 5	0.16 $\pm$ 0.04	
	type Z	24	20 $\pm$ 4	0.14 $\pm$ 0.03	

Scandinavian and continental brooches used are those Reichstein gave *Typen* and *Stufen*.

Figures used for calculation are only for those brooches where both the overall length and the catch length are known.

Table 3.3

English sideknob attachment

frequency (percentage)

Type	Cast separately	Cast onto hpl
A	28 (100)	0
Small B1	2 (22)	7 (78)
Large B1	5 (71)	2 (29)
Small B2	5 (18)	23 (82)
Large B2	5 (50)	5 (50)
Small B3	4 (45)	5 (55)
Large B3	6 (100)	0
Total	27 (39)	42 (61)
C1	9 (90)	1 (10)
C2	10 (62)	8 (38)
Total	19 (73)	7 (27)
D1	0	15 (100)
D2	13 (54)	11 (46)
D3	3 (19)	16 (81)
D4	5 (28)	13 (72)
D5	16 (52)	15 (48)
D5a	0	7 (100)
D5b	3 (60)	2 (40)
D6	4 (57)	3 (43)
D6a	6 (67)	2 (33)
Total	50 (37)	84 (63)
Z1a	3 (38)	5 (62)
Z1b	0	7 (100)
Z2a	0	8 (100)
Z2b	0	2 (100)
Z3	4 (50)	4 (50)
Z4	not applicable - no sideknobs	
Total	7 (21)	26 (79)

Table 3.4 Pin axis and coil assembly on non-English brooches

		<i>Stufen</i>				
	Metals	C3/D1	D2	D3	Not known	Total
Norwegian /Swedish	FF	3	4	14	1	22
	CC	3	6	1	2	12
	FC	1	-	-	2	3
	-F	1	9	26	8	44
	-C	1	-	1	1	3
German /Danish	FF	4	3	3	4	14
	FC	12	3	3	1	19
	-F	2	1	10	-	13
	-C	-	-	1	-	1
Dutch	-F	-	-	3	-	3

Code

FC iron used for sideknob axis, copper for pin

CF iron used for pin, copper for sideknob axis

CC copper used for both

FF iron used for both

-F iron used for pin, sideknob axis not clear, or not applicable since sideknobs cast onto headplate

-C copper used for pin, sideknob axis not clear, or not applicable since sideknobs cast onto headplate

Table 3.5

Pin lugs

Brooch type	Pin lugs		
	One	Two	Unknown/unclear
Associated B1	-	1	-
Small B2	28	3	4
Small B3	12	2	1
C1	12	1	2
D1	5	10	1
D2	18	3	5
Associated D2	8	5	-
D3	17	2	2
D4	13	3	5
D5	24	4	3
D5a	3	4	2
Z1a	4	2	-
Z1b	-	7	-
Associated Z1b	4	-	2
Z2a	3	3	-
Z2b	-	2	-
Z3	3	4	5
Z4	-	2	4

Other brooch types not listed have only one pin lug or do not have their headplates preserved.

Table 3.6

Wings bent back from headplate.

English occurrences

<u>Type</u>	<u>Freq</u>	<u>Type</u>	<u>Freq</u>
A2	5	D5	20
A3	4	D5a	4
Ass. A	3	D5b	3
B1	8	D6	1
B2	22	D6a	2
B3	14	Z1a	2
Ass. B	10	Z1b	4
C1	6	Z2a	1
C2	9	Z4	1
D1	11	Small-long foot	3
D2	11		
D3	9		
D4	4		

Norwegian examples

Måge, Ullensvang. B5733 Reichstein no 243 Typ Lyminge, fig 101,7

Stokka, Høyland. S6392 Reichstein no 162 Typ Mundheim

Vågehamn, Lødingen. Ts5253 Reichstein no 310 Typ Skogøya

Hagbartsholmen, Steigen. Ts 1435 Reichstein no 312 Typ Skogøya

Skogøya, Steigen. Ts 1131 Reichstein no 315 Typ Mundheim

Swedish examples

Vädersholm, Södra Ving sn. SHM 22474 Vg Einzelformen

Hammarnäs, Stora Hammar sn, Skåne. SHM 19750:27-28 Reichstein no 390 no type given

Spånstad, Enslöv, Halland. SHM 7331:597 Reichstein no 372 Einzelformen

Unknown site, Västergötland. SHM 6765:7 Vg Reichstein no 421 Typ Stoveland

Table 3.7

Weight of cruciform brooches

Type	Weight to nearest gramme (mean, standard deviation, number of examples <u>or</u> list of values)
A1	9, 11, 10
A2	27 $\pm$ 11, n=6
A3	11, 49
Small B1	18, 21, 22, 30
Small B2	23 $\pm$ 9, n=9
Large B2	38, 38, 78
Small B3	22 $\pm$ 10, n=6
Large B3	28, 57, 52
C1	66 $\pm$ 9, n=7
C2	61, 62, 64, 76
D1	38, 58, 70, 77
D2	69 $\pm$ 22, n=10
D3	71 $\pm$ 11, n=6
D4	69 $\pm$ 19, n=5
D5	70 $\pm$ 17, n=11
D6	55, 48
D6a	56, 62
Z1a	87 $\pm$ 21, n=4
Z1b	90, 90, 90
Z2a	78
Z2b	66
Z3	96
Z4	54, 122

Table 3.7a

Norwegian brooch weights

Reichstein Typ	Weight (g)
Åk	24
Kvassheim	10, 30
Tveitane-Hunn	22, 37
Eine	34
Røssøy	18, 18, 26, 30, 32, 46, 46, 48
Foldvik-Empingham	106
Mundheim	32, 36, 44, 50, 50, 51, 60, 66, 66
Byrkje	84, 88
Skogøya	20, 24, 60, 78, 80, 84, 121, 130, 130
Eidbukten	52
<i>Einzelformen</i>	70, 75

Table 3.8

Unusual technological features

Feature	Distrib.		Types	Phase	f	
	Country	county				
Pin lug attached to topknob collar <sup>1</sup>	Norway	No	Skogøya	D3	6	
			Røssøy	D2	6	
		ST	Eidbukten		1	
			Varhaug	D3	1	
		MR	Eidbukten		1	
			<i>Einzelformen</i>		2	
		NT	Mundheim	D3	1	
			Nygaard	D2	2	
		Ho	<i>Einzelformen</i>		1	
			?Mundheim	D3	1	
		VA	Groß Siemß	D2	1	
			Lunde	D2	1	
		Ro	Ålgard		1	
			Mundheim	D3	2	
		SF	?		9	
			Stedje	C3/D1	1	
		Sweden	Various	?		1
				<i>Einzelformen</i> , Åk	C3/D1	7
		Denmark	Various	Groß Siemß	and D2	10
				Hjelmhede, <i>Einz.</i> ,		
		Germany	SH	Witmarsum	C3/D1	2
		Holland	Frisia	Witmarsum	C3/D1	1
				Midlum or sim	D3	2
England	Kent	A3		1		
	Essex	A2, A3		2		
	Cambs	A1		2		
	Suffolk	A1, A		2		
	Norfolk	A2, A		3		
	Oxford.	A1		1		
	Bedf.	A1		1		
Lincs.	A1		1			

Table 3.8 cont/

---

Slots in sideknob	Norway	No	Røssøy	D2	2	
			<i>Einzelformen</i>	D2	1	
			Mundheim	D3	1	
			Skogøya	D3	1	
			Ro	Ålgard		1
			?		5	
			Mundheim	D3	1	
			VA/AA/?	?	5	
		Sweden	Me	<i>Einzelformen</i>		1
			VG	Stoveland	D3	1
	Denmark	RA	Krefeld-Gellep	D3	1	
	Germany	SH	Hjelmhede	?D2/D3	1	
			Midlum	D3	1	
	England a) type A or B	Kent	B2, B or C		2	
			Norfolk	A, B1, B2	4	
		Lincs	B2		2	
			Cambs	A3, B1, B2,	5	
		Suffolk	B2, B3		3	
			Norfolk	C2, D3, D5	3	
		b) Other type	Cambs	D2, D3, D5, D6	5	
Suffolk			C2, D6	3		
North.			D2, Z3	3		
Knobs with tab		Germany	SH	Borgstedt	?	2
	Midlum			D3	1	
	Norway	Vf	Trumpington	?	2	
			England	Kent	A or B	1
	Cambs	A2 A3 D4		4		
		Norfolk	C	1		
		Suffolk	A3 D5	2		
	Lincs	Z1	1			
	Ridge between knob and collar	Norway	No	Rossoy	D2	1
No			?		1	
MR			Eidbukten		1	
Sweden		VG	Stoveland	D3	1	
Denmark		RÅ	?	?D3	1	
England		Kent	A or B, B2, B3		3	
Loop at end of nose	England	Norfolk	B2		2	
		Suffolk	C1, D5		3	
		Lincs	B, B or C		2	
		Northants	B2		2	

---

1. Object references not given in the appendix for this feature as they are so numerous (Appendix 3.8).

Table 3.8a

Unusual technological features

Feature	Distrib. Country/county		Types	Phase	f
C-form knobs	Norway	No	Witmarsum	C3/D1	1
		SF	"	"	1
		Ro	"	"	1
		?	"	"	1
		?	?	?	1
		No	Røssøy	D2	1
	Sweden	Up	?		1
	Denmark	FA	?		1
Germany	SH	Pritzler	C3/D1	1	
-----					
Trimmed back of knob and/or collar	Norway	VA	Lunde	D2	3
			Nøding	D3	1
		Ro	?/Einzelformen		3
			Eine	D2	1
			Mundheim	D3	1
		He	Eine	D2	1
		Vf	Lunde	D2	1
			Eine	D2	1
			<i>Einzelformen</i>		1
		Te	Lunde	D2	2
		Bu	<i>Einzelformen</i>		1
		No	Skogøya	D3	7
		Røssøy	D2	1	
	Sweden	Bo	Lunde	D2	1
		?		1	
		Vg	<i>Einzelformen/?</i>		2
		Lunde	D2	1	
		Brunnhem	D2	1	
Denmark	Vi	Midlum	D3	1	
-----					
2 slots in sideknob	Norway	MR	Eidbukten		1
-----					
Pin lug with two holes	Norway	No	Skogøya	D3	7
			Røssøy	D2	2
		Ro	Eine	D2	1
		VA	Lunde	D2	1
		HO	<i>Einzelformen</i>	?	1
	Denmark	ÅA	"	?	?
-----					

Table 3.8a cont/

Ridge between skbs	Norway	Ro	Mundheim	D3	3	
			?		1	
		No	Skogøya	D3	4	
	Sweden	VG		Røssøy	D3	1
				<i>Einzelformen</i>		1
				Lunde	D2	1
				Götene	D3	2
			?		1	
	Denmark	Bo	Lunde	D2	1	
		?	?	?D2	1	

Table 3.9

Decoration on English brooches

Type	Punch type																Others	Gilt	WM	
	Circular								Triangular											
	1	2	3	4	5	9	10	11	6	7	8	12	13	14	15	16				
A1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A2	1	1	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-
A3	2	3	-	1	-	-	-	-	-	1	-	-	1	-	-	-	-	-	-	-
B1	-	-	-	-	-	2	-	-	-	-	-	-	2	-	-	-	2	-	-	-
B2	1	-	2	-	-	3	1	-	-	-	-	1	2	1	-	-	2	2	1	-
B3	-	7	2	1	-	2	-	-	-	-	2	-	2	-	-	-	-	2	-	-
C1	1	-	-	-	-	2	-	-	-	1	-	-	2	-	-	-	1	1	-	-
C2	2	2	2	1	-	4	-	-	1	-	1	3	2	3	-	-	-	2	-	-
D1	2	-	1	1	2	-	-	-	-	-	-	-	1	1	-	1	2	1	1	-
D2	1	3	3	5	-	3	-	-	1	-	2	-	5	-	-	-	-	-	-	-
D3	-	-	-	-	-	3	-	-	-	2	1	-	1	-	-	1	3	2	1	-
D4	2	1	-	3	-	1	-	-	-	-	2	1	-	1	-	-	3	3	3	-
D5	5	2	6	3	-	4	-	-	2	2	3	-	7	4	-	-	4	3	1	-
D6	-	3	2	-	-	2	-	-	1	-	1	-	2	-	-	1	1	-	-	-
Z1	3	2	-	5	-	1	-	-	1	2	-	-	2	1	-	-	-	12	8	-
Z2	2	1	1	1	4	-	-	-	2	-	1	-	1	-	-	-	-	2	4	-
Z3	1	-	-	1	-	-	-	-	-	-	1	-	2	-	-	-	-	5	5	-
Z4	1	-	1	-	-	-	-	-	1	-	1	-	1	-	-	-	-	2	1	-
Total	24	19		6		1	-	9	8	15	5	33	11	1	3	17	37	25		
		25	22	27																

Codes for tables 3.9 and 3.10

Rounded and circular punch marks

- 1 Single point
- 2 Semi-circle
- 3 Double semi-circle
- 4 Circle
- 5 Concentric circle
- 9 Ring and dot
- 10 Two concentric rings with central point
- 11 More than two concentric rings with central point

Triangular and V shaped punch marks

- 6 Triangle
- 7 V shape
- 8 Double V shape

More unusual punch marks

- 12 Dashed lines
- 13 Notching by joined points
- 14 Y shape with internal divisions
- 15 Incised zig-zag
- 16 Circle within a triangle

Others = short, straight lines (but see also 13, above); broad semi-circle; lozenge-shaped; sets of three rounded dots

Other abbreviations

- WM = white metal
- f = frequency

Table 3.10

<u>County</u>	<u>Stamp type</u>																	Gilt	WM	f
	1	2	3	4	5	9	10	11	6	7	8	12	13	14	15	16	Oth			
Kent	1	2	-	-	-	-	-	-	-	-	-	-	1	-	-	-	1	-	-	5
Essx	-	1	-	-	-	2	-	-	-	-	-	-	1	-	-	-	-	-	-	4
Cmbs	2	7	1	2	1	1	-	-	2	-	2	-	7	6	-	-	4	8	4	47
Nrfk	-	3	5	7	-	6	-	-	1	1	4	-	7	-	-	1	5	9	10	55
Sffk	2	2	7	4	-	8	-	-	-	1	-	2	9	3	-	-	2	5	2	47
Lncs	-	4	-	-	1	1	-	-	3	4	4	-	3	1	-	2	2	6	6	37
Hmbs	3	1	2	1	-	2	-	-	1	-	-	-	3	-	-	-	2	2	1	18
Nrth	3	3	1	5	-	-	-	-	-	3	-	1	2	-	-	-	3	2	2	25
Yrks	3	-	4	1	-	1	-	-	1	-	1	1	1	-	-	-	-	-	-	13
Durh	1	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	1	-	3

Essx = Essex

Cmbs = Cambridgeshire

Nrfk = Norfolk

Sffk = Suffolk

Lncs = Lincolnshire

Hmbs = Humberside

Nrth = Northamptonshire

Yrks = Yorkshire

Durh = Durham

Oth = Other stamps

f = total frequency in county

Table 3.11

Number of brooches on which types of punch mark were observed - total frequency, including broken, unprovenanced or untypable brooches.

Number of brooches with each punch mark.

	Norway	Sweden	Denmark	Germany	Holland	England
Single point	16	5	8	-	5	42
Single semi-circle	8	1	1	1	-	33
Double semi-circle	7	2	3	1	1	52
Circles	1	-	2	-	3	45
Double circles	1	-	3	-	-	3
Triangles	4	-	-	1	-	9
Acute angles	3	-	3	1	-	15
Double acute angles	-	-	1	-	-	8
Ring and dot	27	12	12	-	-	23
Joined dots, segmenting lines	30	6	3	3	1	15
Segmented Y shape	-	-	-	-	-	17
Incised zig-zag	-	-	1	8	-	1
Others	4	-	-	-	-	16
Total number of brooches used for this analysis:	188	42	53	50	25	416

Table 3.12

Use of punch marks on Norwegian brooches, divisions according to Reichstein Typen.

Typ	Single point	Joined dots	Semi-circle	Double semi-circle	Triangle	Ring and dot
Tveitane-						
Hunn	2	-	-	-	-	1
Kvassheim	-	-	-	-	-	2
Røssøy	1	6	2	-	-	-
Nygaard	-	-	1	-	-	-
Lunde	2	2	1	1	-	4
Eine	1	2	-	-	-	3
Skogøya	1	6	2	3	3	-
Mundheim	1	2	-	-	-	2

Table 3.13

Norwegian stamp use

Regions

	1	2	3	4	5	6	7	Other	Gilt
VA	2	6	1	-	1	-	1	-	-
AA	-	3	1	-	-	1	-	-	-
Ro	4	7	6	-	1	-	1	1	2
Vf	2	5	1	-	1	-	-	-	-
Te	2	1	-	1	-	-	-	-	-
Ho	1	-	1	1	-	-	1	-	-
Bu	-	1	-	-	-	-	-	-	1
SF	-	1	-	-	-	-	-	-	1
MR	3	1	1	3	-	-	-	1	-
ST	1	-	-	-	-	-	-	-	-
NT	2	2	2	-	-	-	-	-	-
No	12	-	3	3	3	3	-	-	-

Periods

C3/D1	-	3	2	-	-	-	-	-	-
D2	10	7	4	4	1	-	2	4	-
D3	10	3	4	1	3	3	1	4	2
Unknown	6	6	4	2	1	-	-	-	1

- 1 Notching by joined points
- 2 Circle with central point
- 3 Single point
- 4 Semi-circle
- 5 Double semi-circle
- 6 Triangle
- 7 V shape

VA Vest-Agder  
 AA Aust-Agder  
 Ro Rogaland  
 Vf Vestfold  
 Te Telemark  
 Ho Hordaland  
 Bu Buskerud  
 SF Sogn og Fjordane

MR Møre og Romsdal  
 ST Sør-Trøndelag  
 NT Nord-Trøndelag  
 No Nordland

Table 3.14 Summary of technological variation

a) Late phase (Stufe D3 and after)

<u>Feature</u>	<u>Norway/Sweden</u>	<u>Denmark/Germany/Frisia</u>	<u>England</u>
Bow cross-section	Normally concave or very hollow, occasionally solid.	Slightly later change-over, not as extreme or as complete as in Nw	Normally hollow but freq solid, esp. in the very latest forms.
Catch length	Mixed but normally short.	Normally shorter than Nw, occ. long.	Short, often very short cf brooch length.
Sideknob casting	Regional diff. in styles. Normally cast-on in south, often separate in north.	Both styles known.	Mostly cast onto hpl. Most forms have examples of both techniques however.
Sideknob cross-section	Usually semi-circ occasionally circ even where cast with hpl.	Semi-circular except where separate.	Semi-circular.
Wire	Regional var., normally iron, occ copper or copper-alloy.	Iron dominates.	Iron.
Pinlugs	Single, occ. with two holes	Single, occ. double.	Single, occ. double in simple forms, v freq in late forms.
Slope of headplate	Both straight and sloped back from hpl.	As Nw/Sw	Frequently sloped back from hpl
Weight vs size	Regional styles. Normally light cf size, heavier in north.	Normally small but occ. large and heavy	Range of sizes, but mostly heavy cf size.
Applied decoration - etc	Limited range, little gilding.	As Nw/Sw	Very frequent.

b) English brooch types

<u>Feature</u>	<u>Observations</u>
Bow cross section	Initially solid, subsequently more frequently hollow, with examples of both styles in most brooch types. Exceptions: C1 (all hollow), small B3 (all but one hollow) and type Z brooches (more frequently solid).
Catch length	Initially long, subsequently short or very short. Occ. stepped lower edge, or ridge running to end of foot

Table 3.15

Technical attribute combinations amongst English brooch types

Type	Attribute combinations														Total
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
A1	6														6
A2	3	5													8
A3		4	3	1											8
B1S			1	1	2	2									6
B1L				2			1	1	3						7
B2S		3	2	1		9		4		7	1	2			29
B2L			2	1		3	1	1	7	1					16
B3S				1		1	1		7	3	1	1			15
B3L		1		1				1	4						7
C1			2	1					5	6					14
C2						1		4		2			3		10
D1					1			2		2		2		3	10
D2					1	4		4	4	2		2	5		22
D3		1				2	3	6	1	8	1		1	1	24
D4						5			3	5	1	1		4	19
D5		2		2	1	2		6	10	2	1			4	30
D5a					1		1	1		1		2		2	8
D5b					1			1	1						3
D6				2		1		1					3		7
D6a								2		2			4		8
Z1a		1					1	1		2	2	1			8
Z1b											4	2			6
Z2a						1					1	2			4
Z3							4				4	1		1	10

Combination coding

- |         |          |          |
|---------|----------|----------|
| 1 SSCSI | 6 SCSSI  | 11 SCSTI |
| 2 SSCSS | 7 SSSSI  | 12 HCSTI |
| 3 HSCSS | 8 HCSSS  | 13 HSSSI |
| 4 HSCSI | 9 HSSSS  | 14 HCSTS |
| 5 SCSSS | 10 HCSSI |          |

where SSCSI = solid bow cross-section, separate side knobs, circular cross-section side knobs, single pin lug, hpl wings in line with hpl  
 and HCSTS = hollow bow cross-section, side knobs cast on, semi-circular cross-section side knobs, two pin lugs, hpl wings slope back from hpl  
 etc.

Table 3.16

Technical attribute combinations on 7 Norwegian brooch types

Attribute combination	Frequency observed per type							Tot
	Røssøy	Lunde	Eine	Mundh.	Skoq.	Skjervum	Byrkje	
SCTFH	2	-	-	-	-	-	-	2
SCSCH	2	-	-	1	-	-	-	3
SCSCS	1	-	-	-	-	-	-	1
SCTCH	1	-	-	-	-	-	-	1
SSTCH	-	-	1	-	-	-	-	1
CSSFH	2	1	-	18	7	2	3	33
CCSFH	-	6	2	?5	2	-	-	15
SCTCS	-	1	-	-	-	-	-	1
SCSFH	-	1	-	-	6	-	-	7
CSS?S	-	-	1	1	-	-	-	2
CSSCH	-	-	-	4	-	1	-	5
SSSFH	-	-	-	1	5	-	-	6
SCSCH	-	-	-	1	-	-	-	1
SSTFH	-	-	-	-	1	-	-	1

SCTFH = Separate sideknobs, circular cross-section, two holes in pinlug, ferrous pin, hollow bow cross-section

CSSCS = Sideknobs cast on, semi-circular cross-section, single hole in pinlug, copper/copper alloy pin, solid bow cross-section

etc.

Table 3.17

Technical combinations in German, Danish and Dutch brooches

	Certain	Possible	Total
SCSFS	13	18	31
SCSCS	14	11	25
SCSCH	2	2	4
SCSFH	1	16	17
CSSFS	3	8	11
CSSFH	2	2	4
CSTFS	2	3	5
	37	60	<u>97</u>

97 brooches in sample

Where SCSFS = separate sideknobs, circular cross-section, single pinlug, ferrous pin, solid bow cross-section  
and CSTCH = sideknobs cast with headplate, semi-circular cross-section, two pinlugs, copper alloy pin, hollow bow cross-section etc.

Sample excludes the brooch from Giver, mentioned in text as being imported from Norway, which has separate sideknobs, a pinlug with two holes, copper alloy pin and solid bow cross-section.

Most brooches are too imperfectly preserved to give full information, especially where sideknobs were cast separately.

Table 3.18

Type	n	N	Richness R	Av. no.* per comb.	Freq. of each comb.	S.d.	S.d.x R
A1	6	1	0.17	6	6		
A2	8	2	0.25	4	5, 3		
A3	8	3	0.38	2.67	4, 3, 1		
B1S	6	4	0.67	1.5	2, 2, 1, 1		
B1L	7	4	0.57	1.75	3, 2, 1, 1		
B2S	29	8	0.28	3.62	9, 7, 4, 3, 2, 2, 1, 1	2.92	0.82
B2L	16	7	0.44	2.29	7, 3, 2, 1, 1, 1, 1	2.21	0.97
B3S	15	7	0.47	2.14	7, 3, 1, 1, 1, 1, 1	2.27	1.07
B3L	7	4	0.57	1.75	4, 1, 1, 1		
C1	14	4	0.29	3.5	6, 5, 2, 1	2.38	0.69
C2	10	4	0.4	2.5	4, 3, 2, 1	1.29	0.52
D1	10	5	0.5	2	3, 2, 2, 2, 1	0.71	0.35
D2	22	7	0.32	3.14	5, 4, 4, 4, 2, 2, 1	1.46	0.47
D3	24	9	0.38	2.67	8, 6, 3, 2, 1, 1, 1, 1, 1	2.60	0.99
D4	19	6	0.32	3.17	5, 5, 4, 3, 1, 1	1.83	0.59
D5	30	9	0.3	3.33	10, 6, 4, 2, 2, 2, 2, 1, 1	2.96	0.89
D5a	8	6	0.75	1.33	2, 2, 1, 1, 1, 1		
D5b	3	3	1	1	1, 1, 1		
D6	7	4	0.57	1.75	3, 2, 1, 1		
D6a	8	3	0.38	2.67	4, 2, 2		
Z1a	8	6	0.75	1.33	2, 2, 1, 1, 1, 1		
Z1b	6	2	0.33	3	4, 2		
Z2a	4	3	0.75	1.33	2, 1, 1		
Z3	10	4	0.4	2.5	4, 4, 1, 1	1.73	0.69

Av. no. per comb. = Average number of samples per combination =  $n/N$

S.d. = Standard deviation

R = Richness =  $N/n$

where n = number of brooches, N = number of combinations

Table 3.19

Technical attribute combinations amongst English brooch types A, B, C, D and Z

Type	n	N	R.	Av. no. per comb.	Freq. of comb.s	S.d.	S.d.xR
A	22	4	0.18	5.5	9, 9, 3, 1	4.12	0.74
B	66	11	0.17	6.0	17, 15, 12, 6, 3, 3, 3, 2, 1, 1, 1	5.82	0.99
C	29	6	0.21	4.8	8, 6, 6, 3, 3, 1	4.5	0.95
D	104	13	0.10	8.0	29, 25, 20, 17, 12, 9, 6, 6, 5, 4, 2, 1, 1	10.5	1.05
Z	27	7	0.26	3.9	12, 5, 4, 2, 2, 1, 1	3.86	1.01

R = Richness  $N/n$

Av. no. per comb. = Average number of samples per combination.

S.d. = standard deviation of distribution

Table 4.1: Average contents of alloy types

	Mean % $\pm$ standard deviation (or actual values)		
	Zn	Sn	Pb
Bronzes n=162	1.1 $\pm$ 0.8	9.7 $\pm$ 1.7	3.9 $\pm$ 2.7
Zinc bronzes n=91	4.1 $\pm$ 1.7	7.0 $\pm$ 1.1	3.3 $\pm$ 2.4
Gunmetals n=36	8.9 $\pm$ 2.0	4.6 $\pm$ 0.9	3.4 $\pm$ 2.1
Tin brasses n=29	15.4 $\pm$ 2.2	3.0 $\pm$ 0.9	2.8 $\pm$ 1.2
Brasses n=3	21.3 12.9 11.9	0.1 0.9 0.4	2.1 2.9 1.0
Coppers n=2	2.1 1.1	0.7 3.4	2.6 3.3

Table 4.2 Frequency of alloy types within archaeological types

		<u>Alloy types</u>					
Type	n	Bronzes (high-tin low-zinc)	Zinc Bronzes	Gunmetals	Tin Brasses	Brass	Copper
A	28	19 (6)	1	2	5	1	0
B	99	66 (10)	13	9	11	0	0
C	43	29 (5)	5	4	5	0	0
D	154	95 (8)	37*	13	6	2	1
Z	35	19 (0)	9*	5	1	0	1

The figure in brackets shows the number of high-tin, low-zinc bronzes (more than 11% tin and less than 1% zinc) within the general bronze grouping.

\* Bronzes and zinc bronzes form a single combined grouping in these two archaeological types, so the bronze/zinc bronze classification is given here for continuity only (see fig 4.14).

Percentage frequency of alloy types within archaeological types

Type	Bronzes (high-tin low-zinc)	Zinc Bronzes	Gunmetals	Tin Brasses	Brass	Copp.
A	68 (32)	4	7	18	4	0
B	67 (15)	13	9	11	0	0
C	67 (17)	12	9	12	0	0
D	62 (8)	24	8	4	1	0
Z	54 (0)	26	14	3	0	3

The figure in brackets shows the percentage of bronzes with high-tin, low-zinc contents.

Table 4.3

Geographical distribution of alloy types

County	n	Bronze	Zinc bronze	Gunmetal	Brass	Copper
Cambs	87	61	13	10	15	1
Norfolk	60	60	8	8	20	3
Suffolk	46	52	26	4	15	9
Essex	8	75	13	-	-	12
Kent	13	38	15	23	23	-
Lincs	62	66	13	10	11	-
Humbs	10	20	20	20	30	10
Yorks	7	71	14	-	14	-
Northants	6	-	50	50	-	-
Notts	7	42	-	14	42	-
Oxon	1	100	-	-	-	-
Warwicks	4*	25	25	25	25	-
Durham	1	100	-	-	-	-
Beds	4	75	-	25	-	-

\* Results from Brownsword (1984)

Table 4.4

Alloy compositions in pairs of brooches

Brooch pair	Zn	Sn	Pb	Fe	Ni	Ag	Remarks
Barrington	o	x	o	o	o	o	o
Bergh Apton	o	o	x	x	x	x	?x
Bifrons G15	x	x	x	x	x	x	x
Cleatham	o	o	o	x	x	o	?o
Cleatham	o	o	o	o	x	o	o
Cleatham	x	x	o	x	x	x	x
Girton	o	x	o	?x	x	o	?
Haslingfield	x	x	o	x	x	x	x
Holme Pierpoint	x	x	x	o	x	x	x
Holywell Row	x	o	x	o	?x	o	?
Holywell Row	x	?	o	x	?x	x	?X
Howletts	o	x	o	o	o	o	o
Kenninghall	x	o	?o	?o	?o	o	o
Lincoln 2 and 3	x	o	o	x	?x	x	?
Linton Heath 1 and 2	x	x	x	x	x	x	x
Little Wilbraham G31 (1) and (2)	x	x	o	x	?x	x	x
Little Wilbraham G95 (1) and (2)	x	x	?o	o	x	x	?x
Little Wilbraham G105 (1) and (2)	x	x	x	x	x	x	x
Little Wilbraham 3 and 4	x	x	x	x	x	x	x
Morning Thorpe G30 (1) and (2)	x	x	o	o	?x	o	?
Mucking G825 (1) and (2)	x	o	o	o	o	o	o
Newnham Croft 1 and 2	?o	x	o	o	o	o	o
Rothwell 1 and 2	x	x	x	x	?x	x	x
Rudstone 1 and 2	?o	o	o	o	o	o	o
St Johns 10 and 11	o	o	o	o	?x	x	?o
St Johns 13 and 14	o	x	o	x	?x	x	?
Soham 1 and 2	?o	x	?o	o	o	o	o
Spong Hill G2 (1) and (2)	x	o	o	x	x	x	?x
Spong Hill G22 (1) and (2)	?o	o	o	o	o	o	o

x denotes a match

o denotes a mis-match

In the remarks column, an overall judgement on whether the compositions match or not is given, based on the criteria discussed on p398

## Illustrations

## Figures

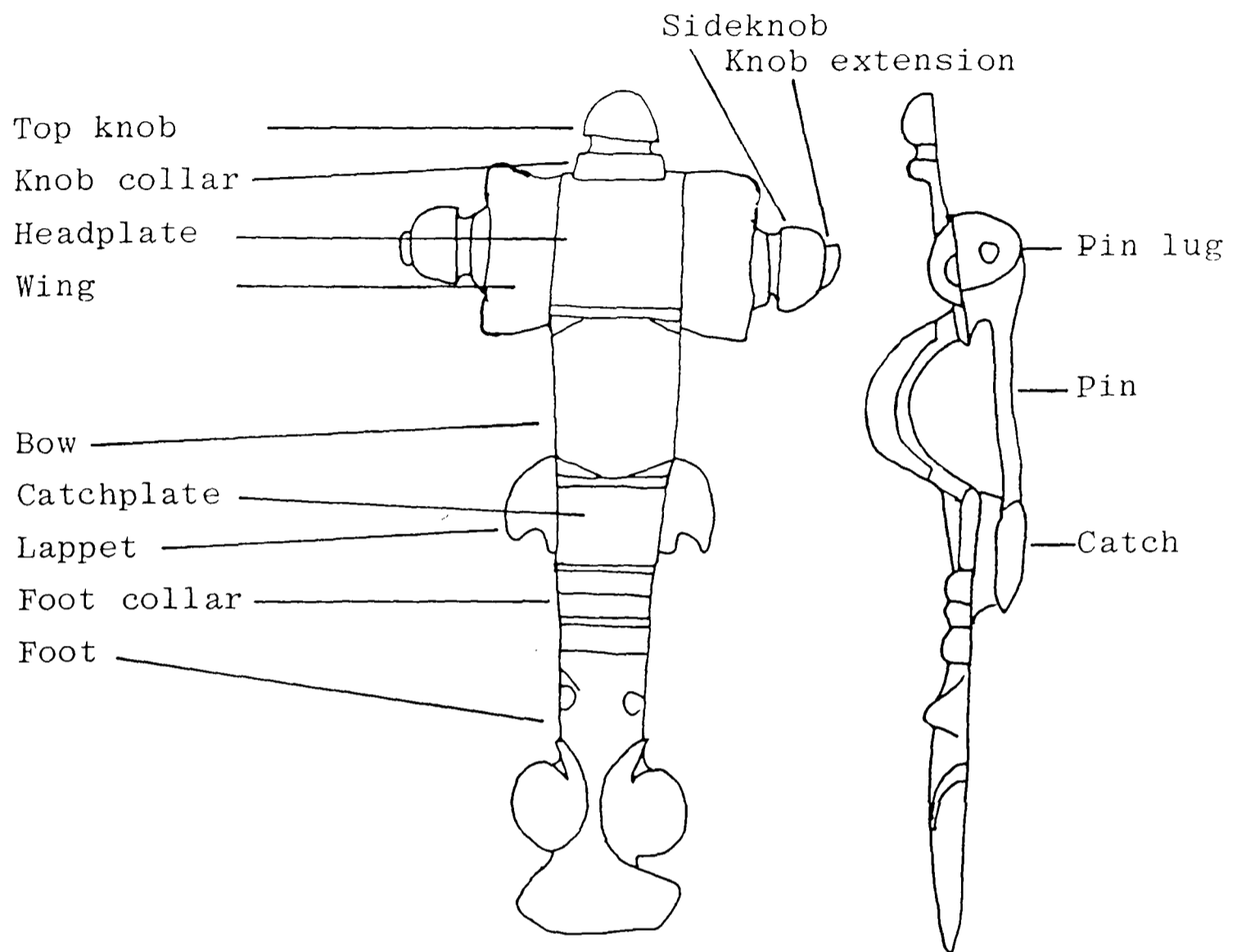
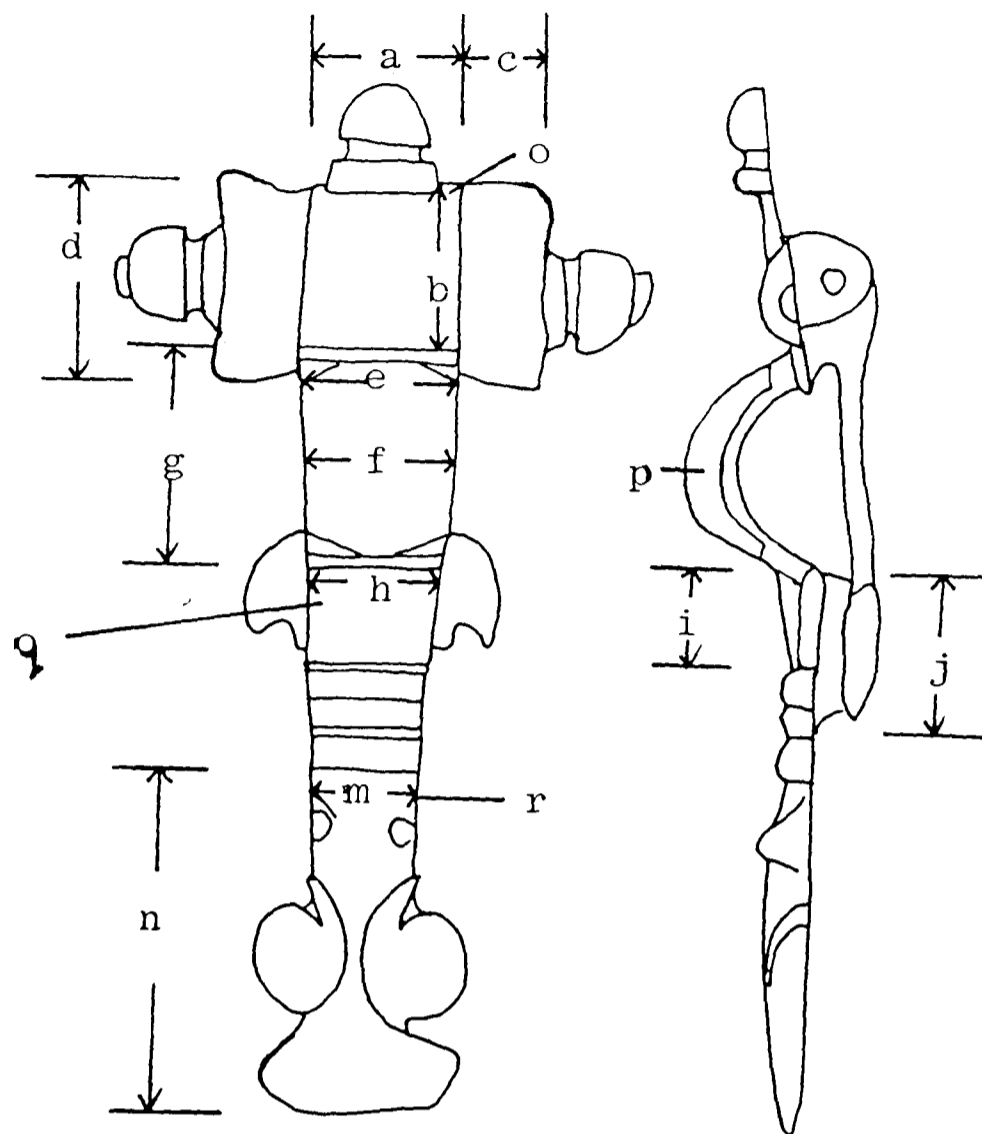


Fig 1.1 Names of brooch parts

Simplified outline of Sewerby Grave 28 (Hirst (1985) fig 42),  
85% true size.



- a width of headplate
- b length of headplate
- c width of wing
- d length of wing
- e width of top of bow
- f width of middle of bow
- g length of bow
- h width of catchplate
- i length of catchplate
- j length of catch

Position of thickness measurements

- o headplate
- p bow
- q catchplate
- r foot

Fig1.2 Dimensions of brooch parts.

Simplified outline of Sewerby Grave 28 (Hirst (1985) fig 42),  
85% true size

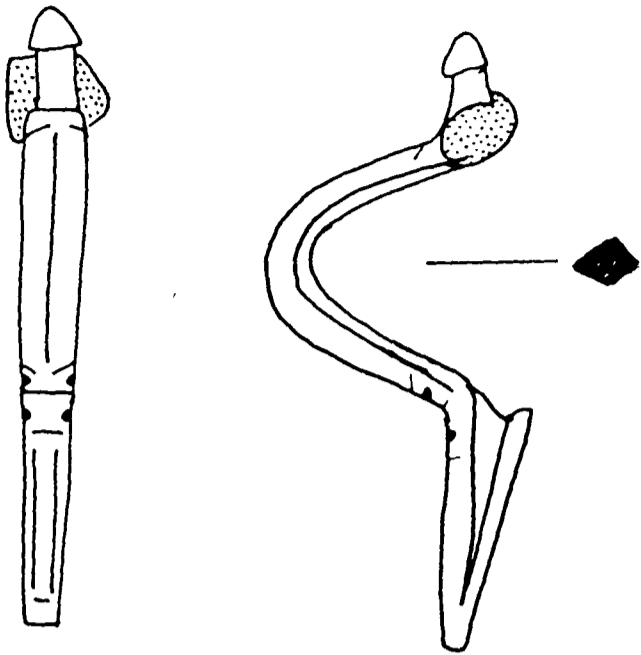


Fig 2.1  
Dorchester  
Type A1

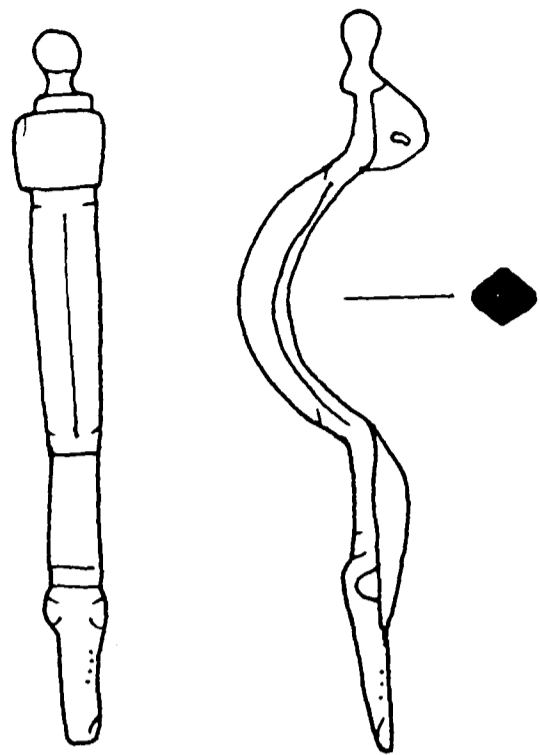


Fig 2.2  
Ixworth 1  
Type A1

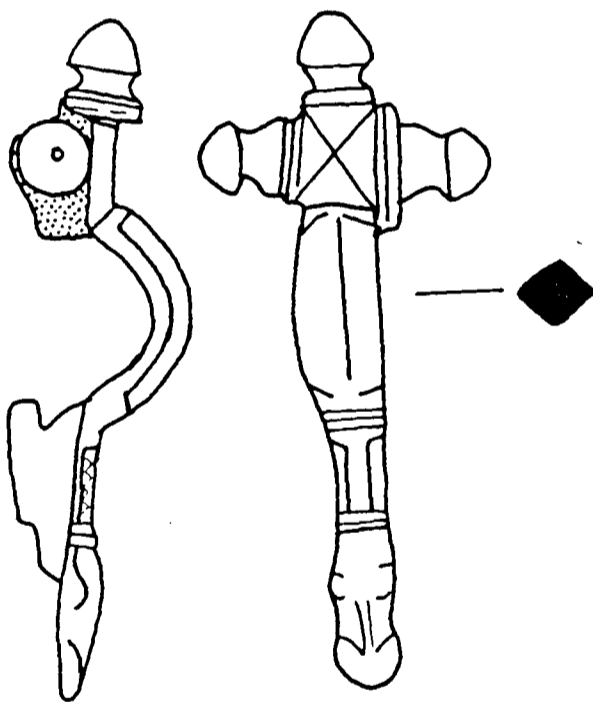


Fig 2.3  
Colchester 2  
Type A2

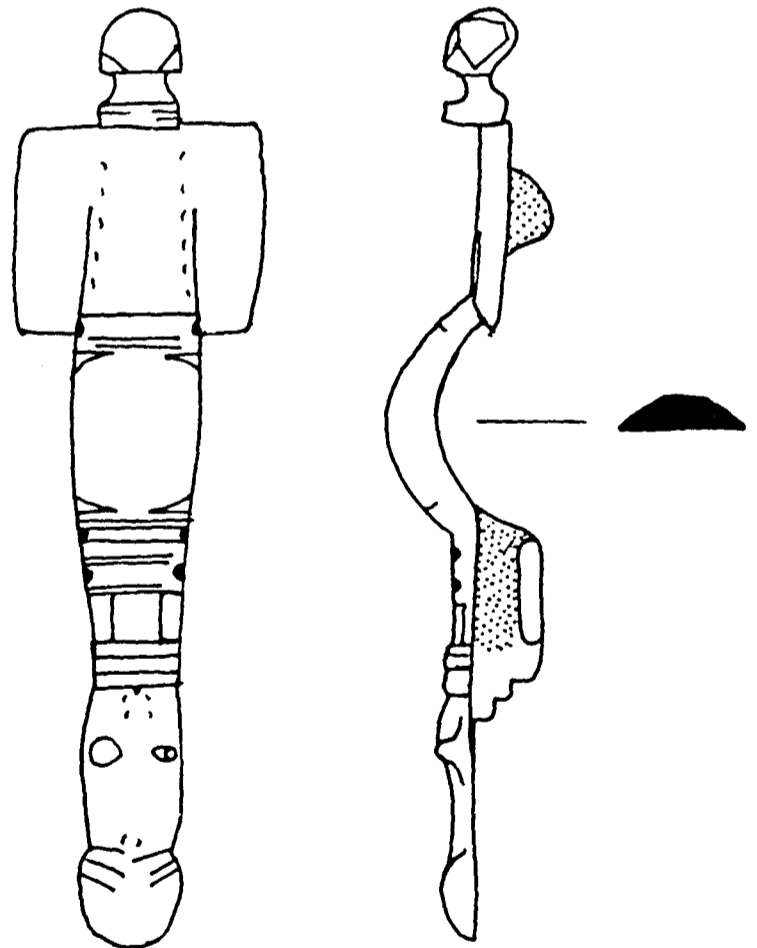


Fig 2.4  
Rudstone 1  
Type A2

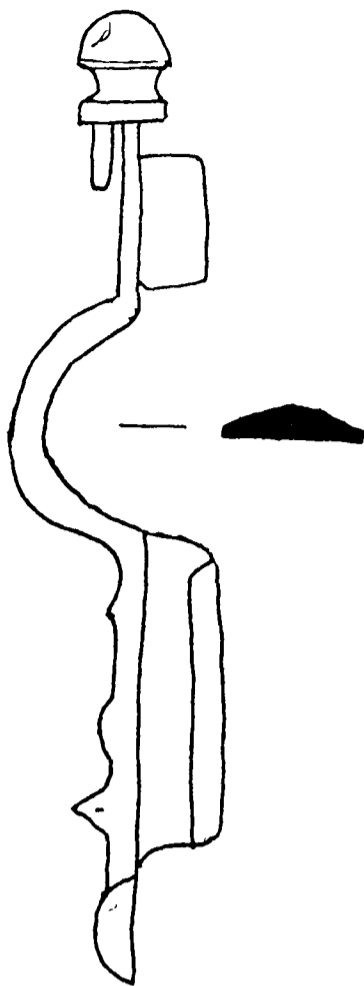
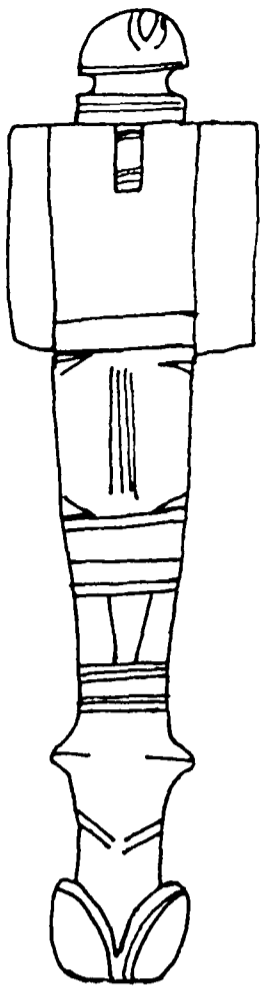


Fig 2.5  
Barrington 11  
Type A2

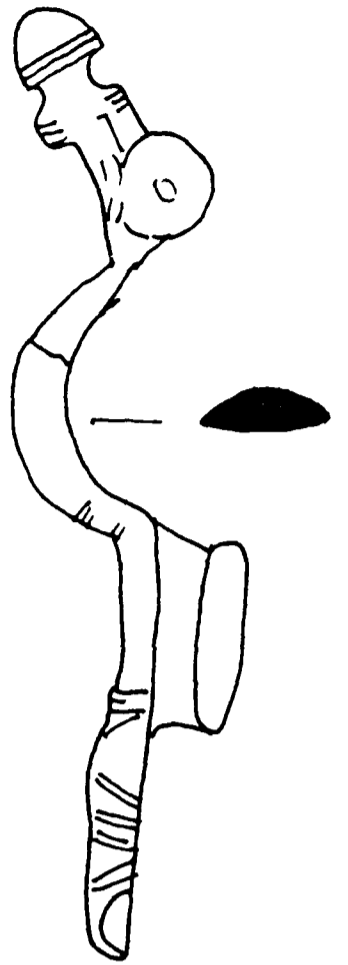
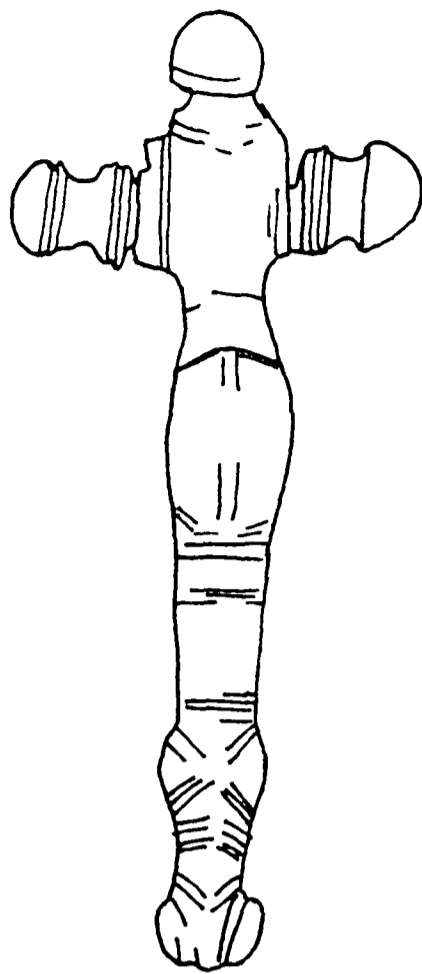


Fig 2.6  
Spong Hill C2656  
Associated with type A

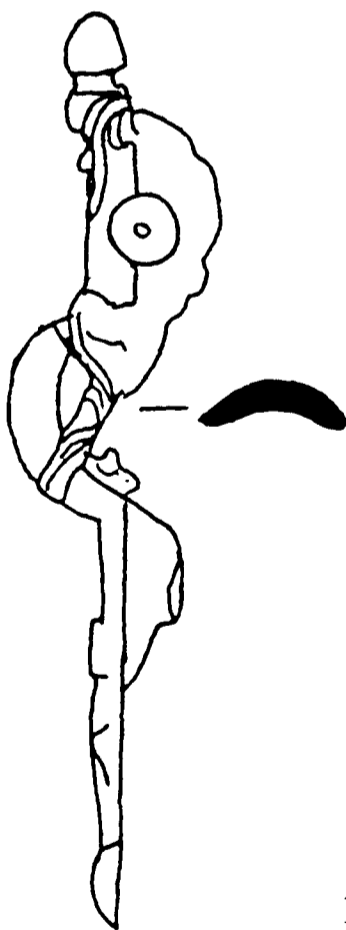
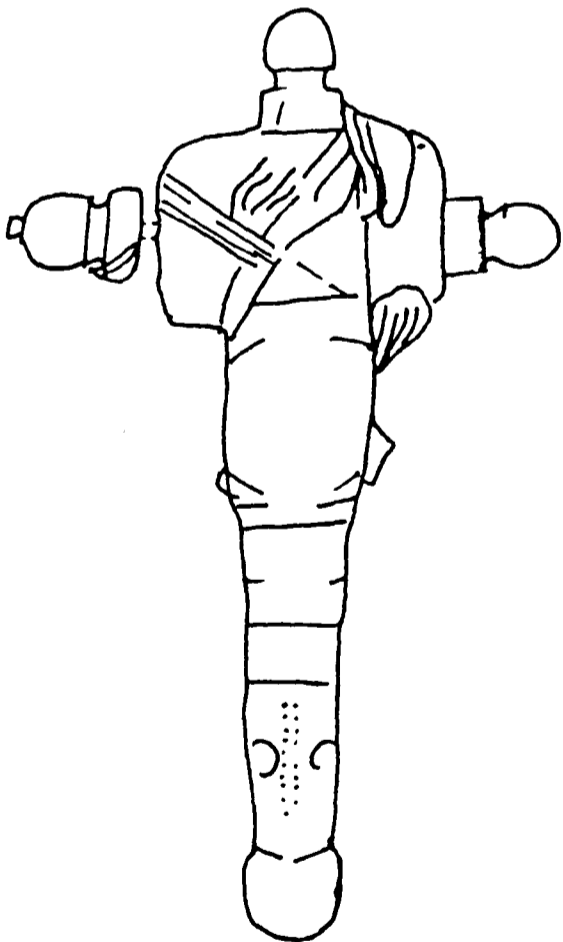


Fig 2.7  
Morningthorpe G346  
Type A3

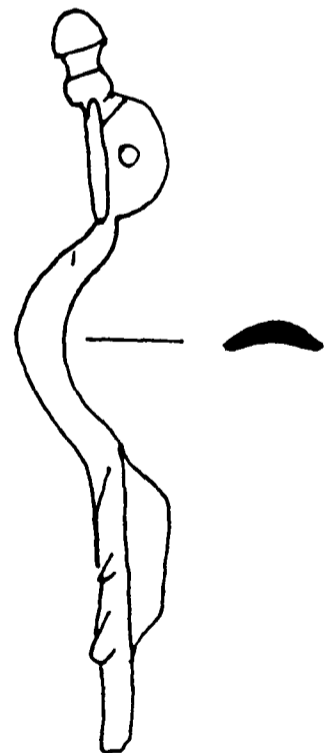
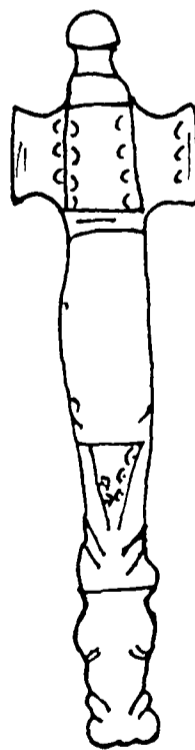


Fig 2.8  
Bifrons G 15 (1)  
Associated with type A3

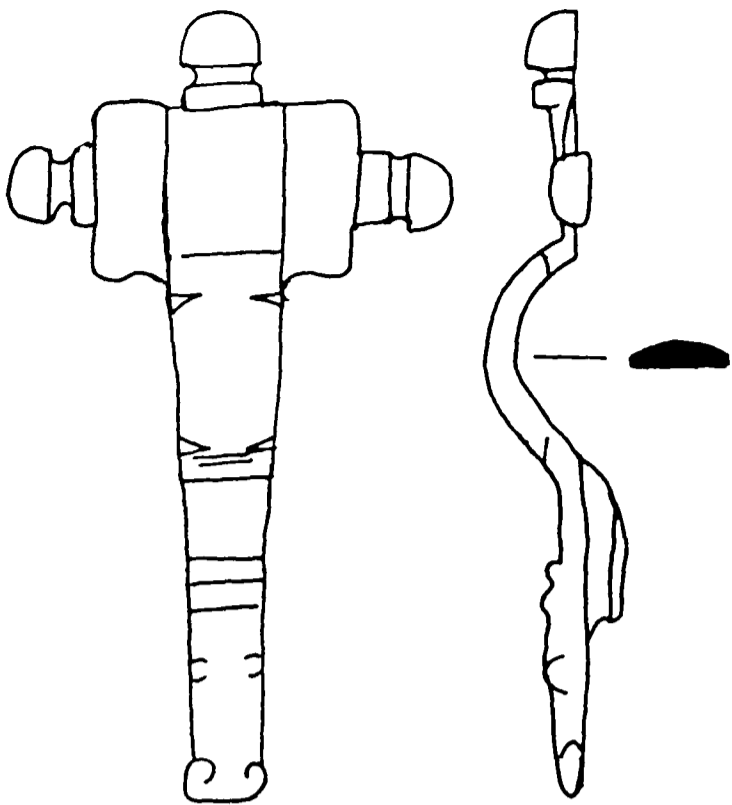


Fig 2.9  
Holywell Row G69  
Type B1 (small)

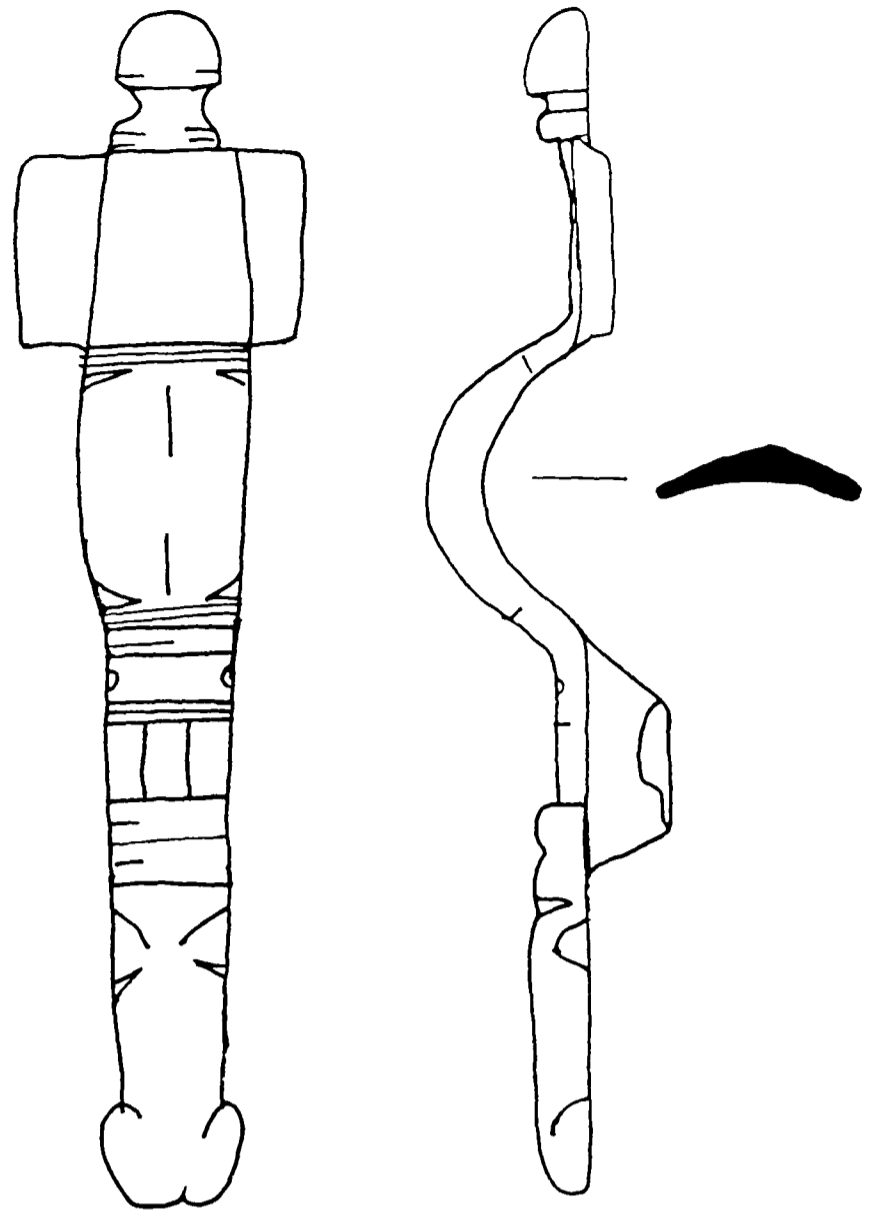


Fig 2.10  
Little Wilbraham G73(2)  
Type B1 (large)

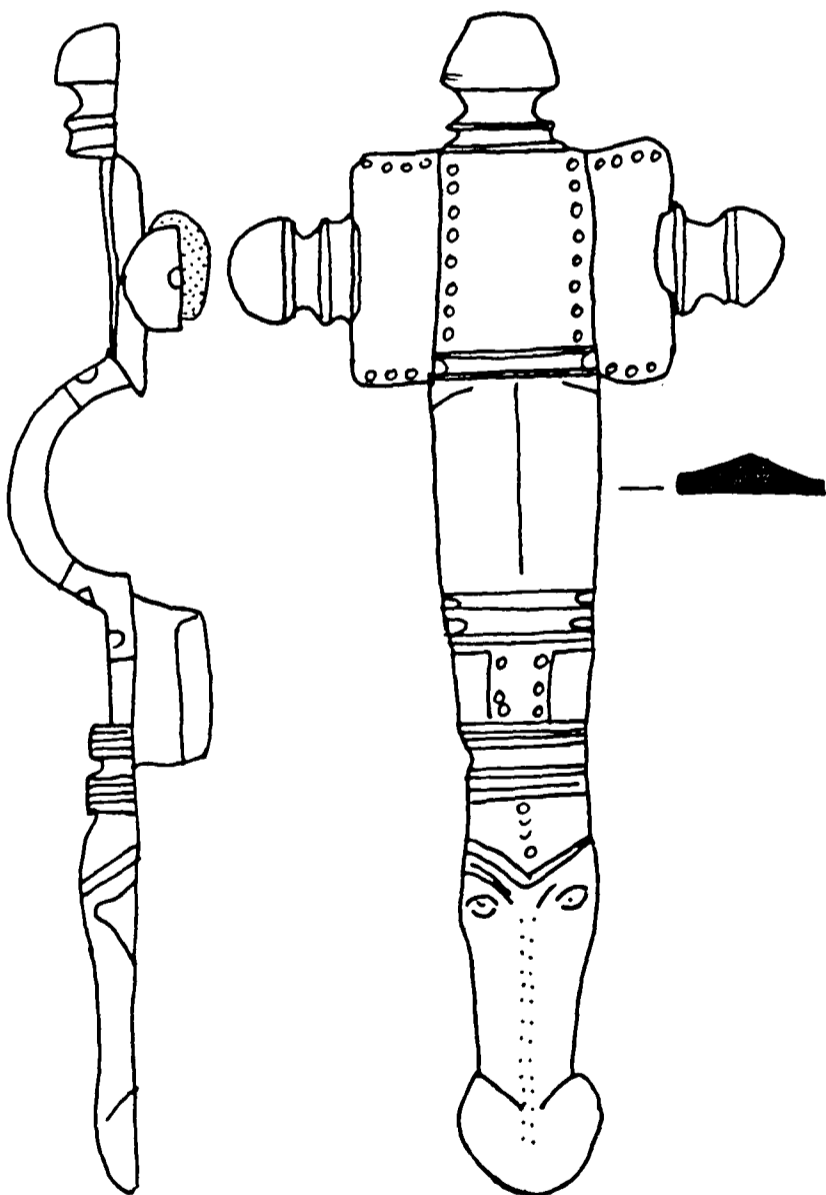


Fig 2.11  
Bergh Apton G5  
Type B2 (large)

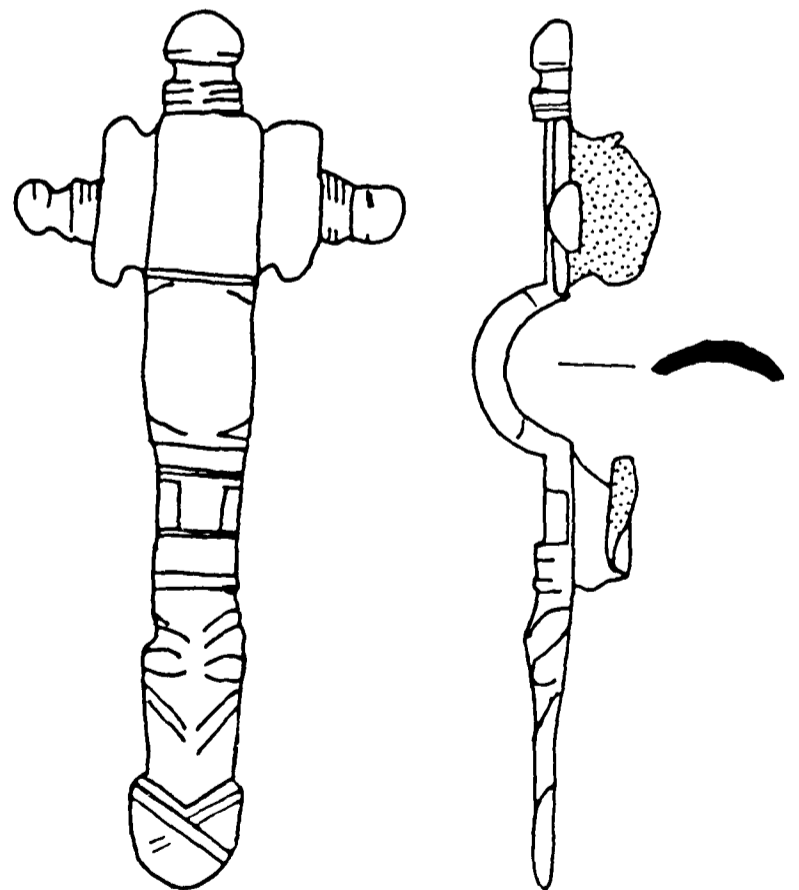


Fig 2.12  
Morningthorpe G353(2)  
Type B2 (small)

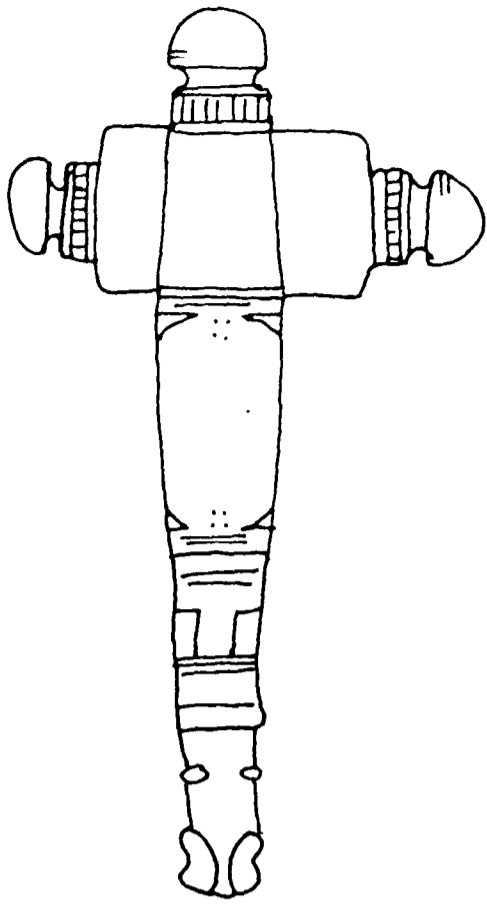


Fig 2.13  
Barrington 10  
Type B3 (small)

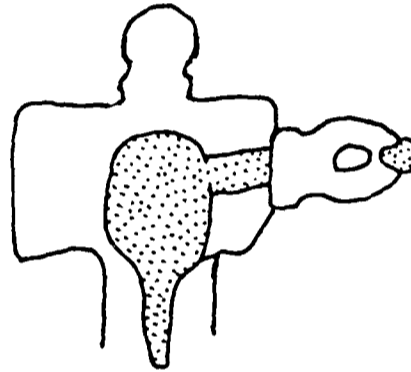
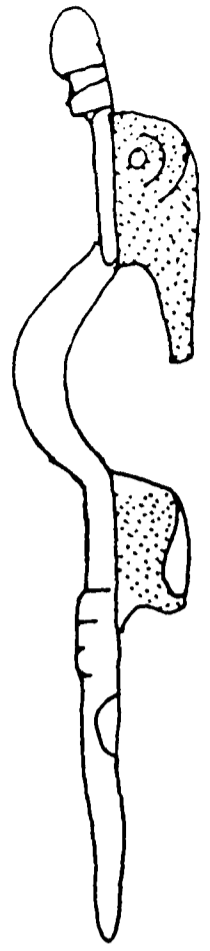
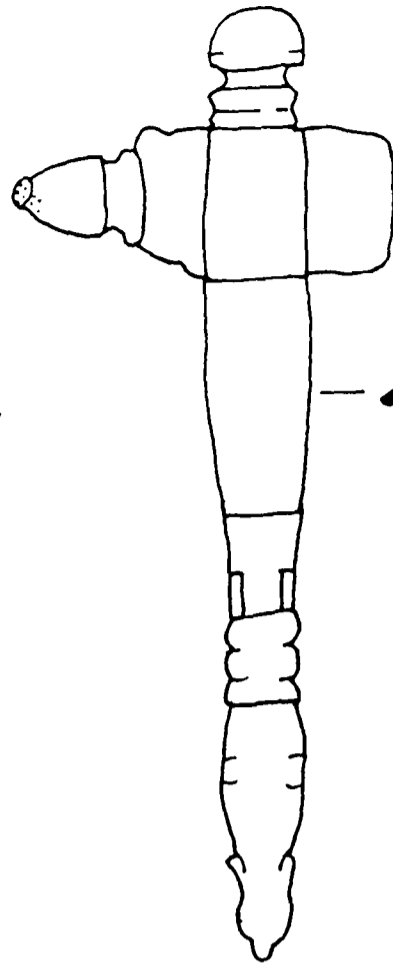
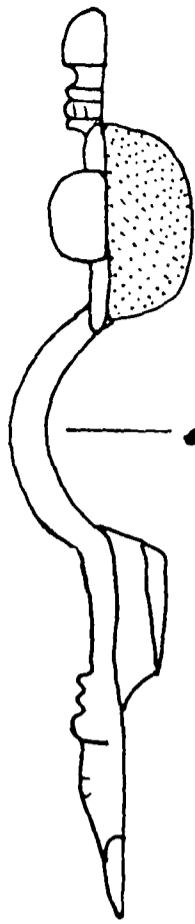


Fig 2.14  
Sleaford G182(2)  
Type B3 (small)

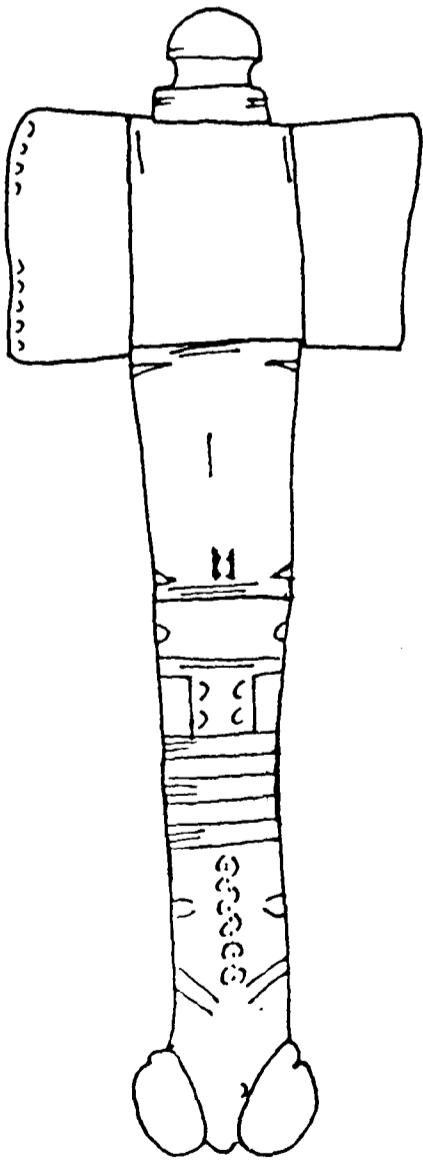


Fig 2.15  
Haslingfield 5  
Type B3 (large)

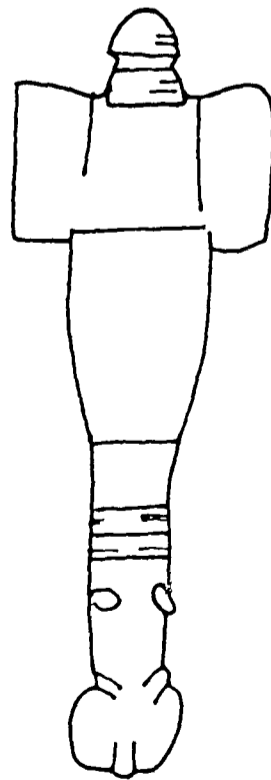
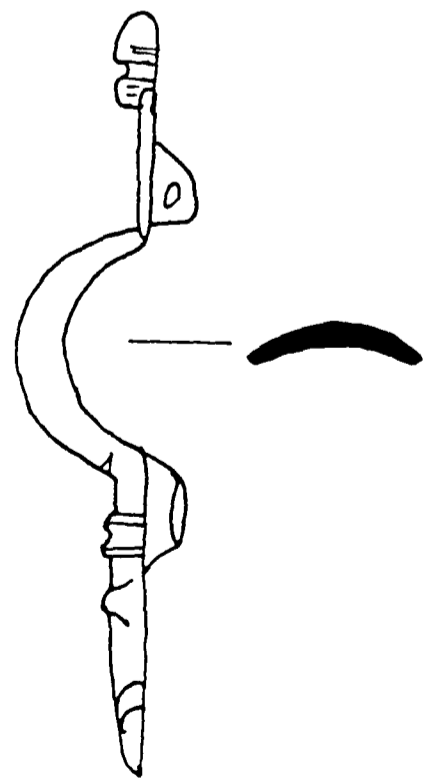


Fig 2.16  
Girton G2  
Type B3 (small)



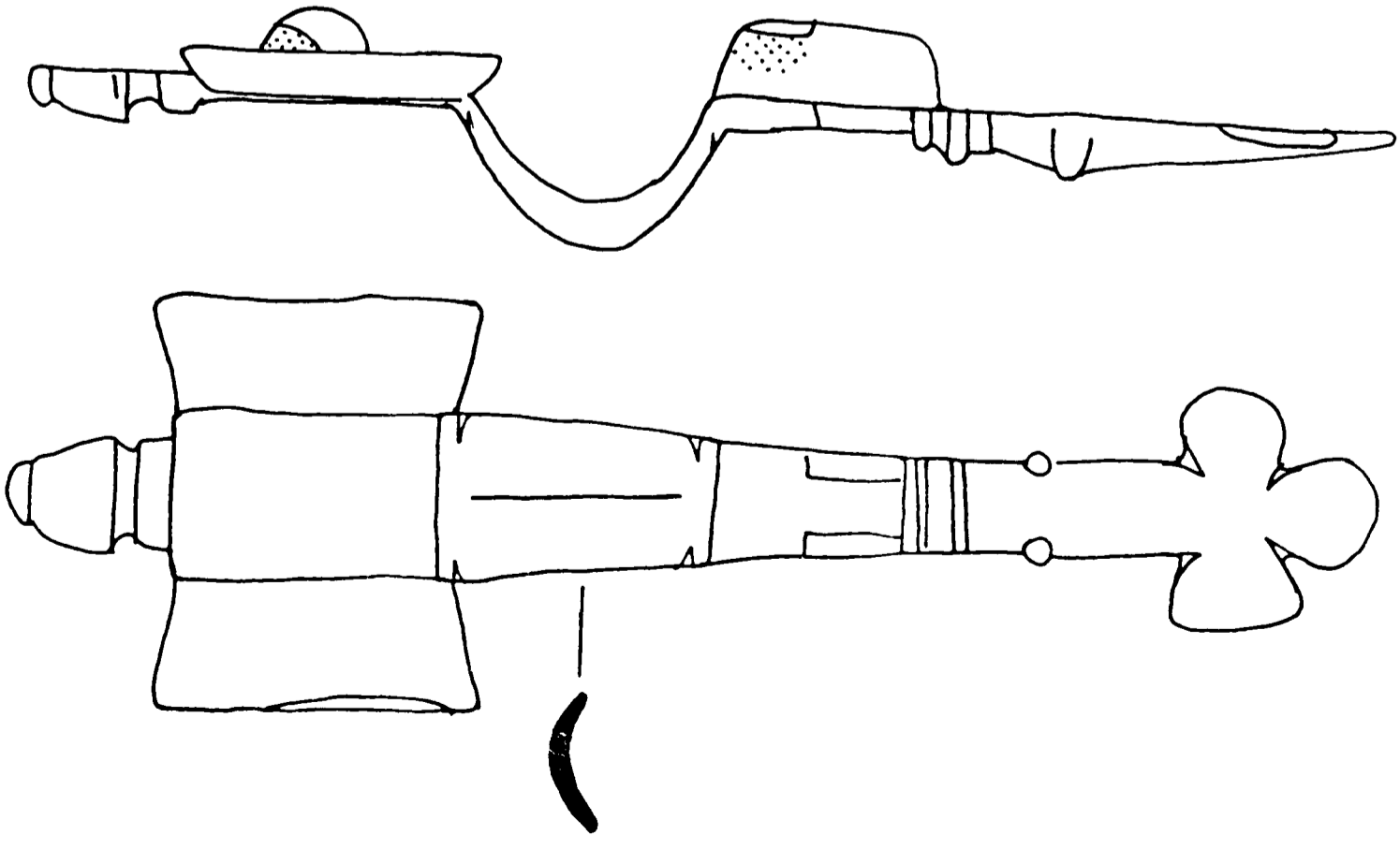


Fig 2.17  
Lakenheath 9  
Type C1

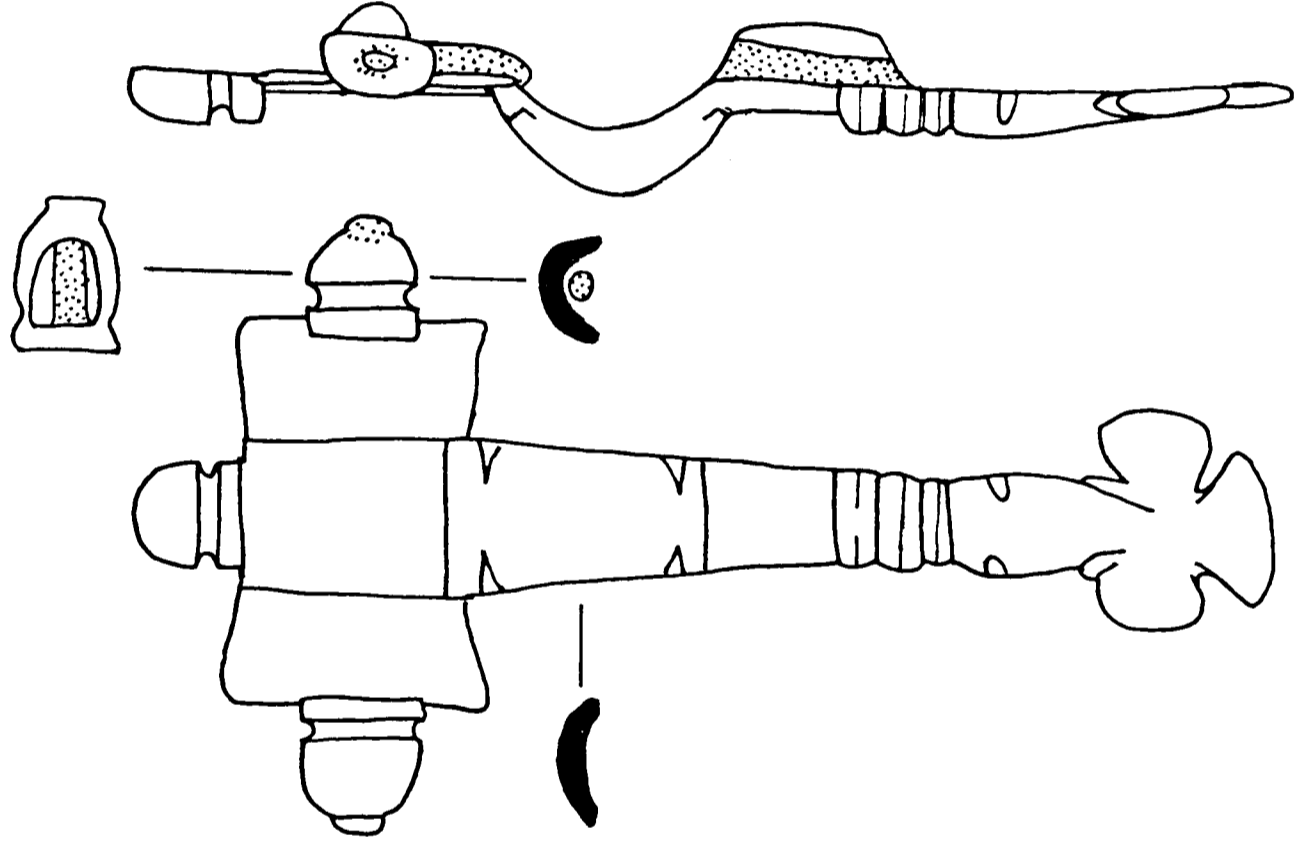


Fig 2.18  
Holywell Row G79(2)  
Type C2

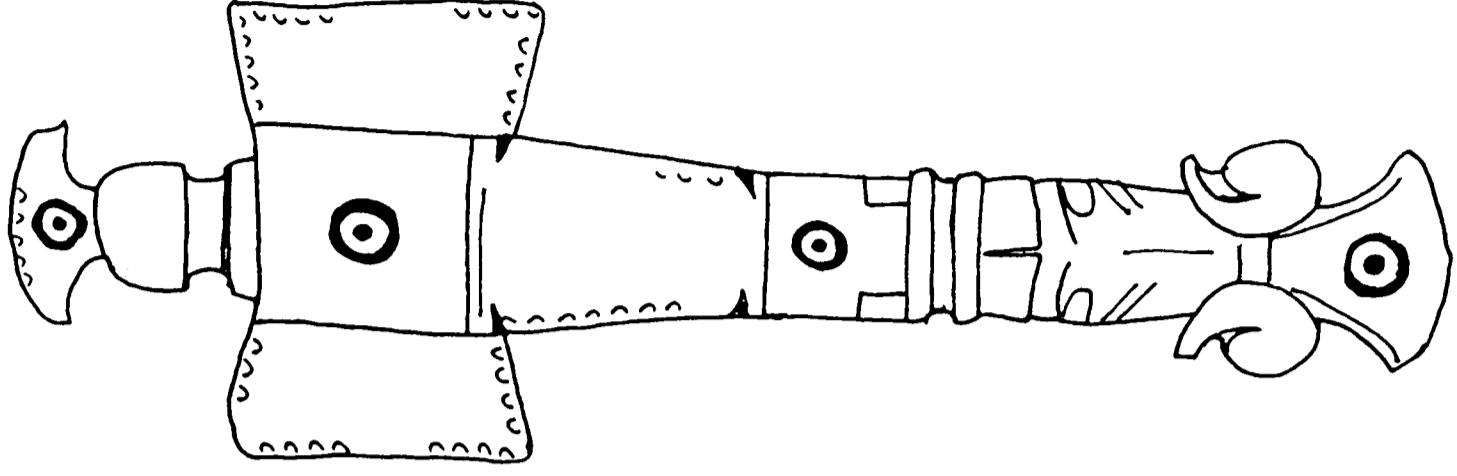


Fig 2.19  
Bury St Edmunds  
Type C2

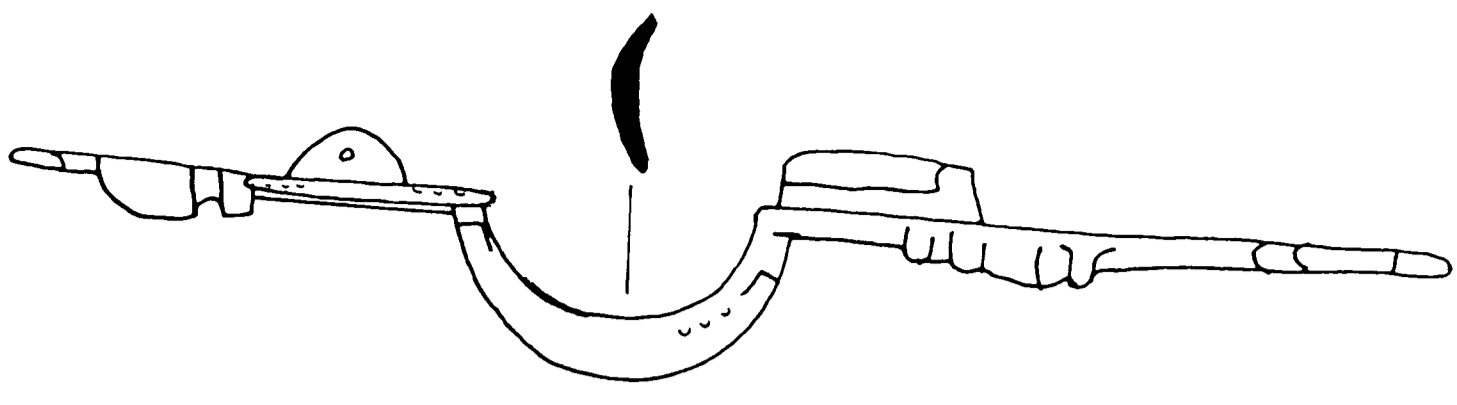


Fig 2.20  
Lakenheath 10  
Type C1

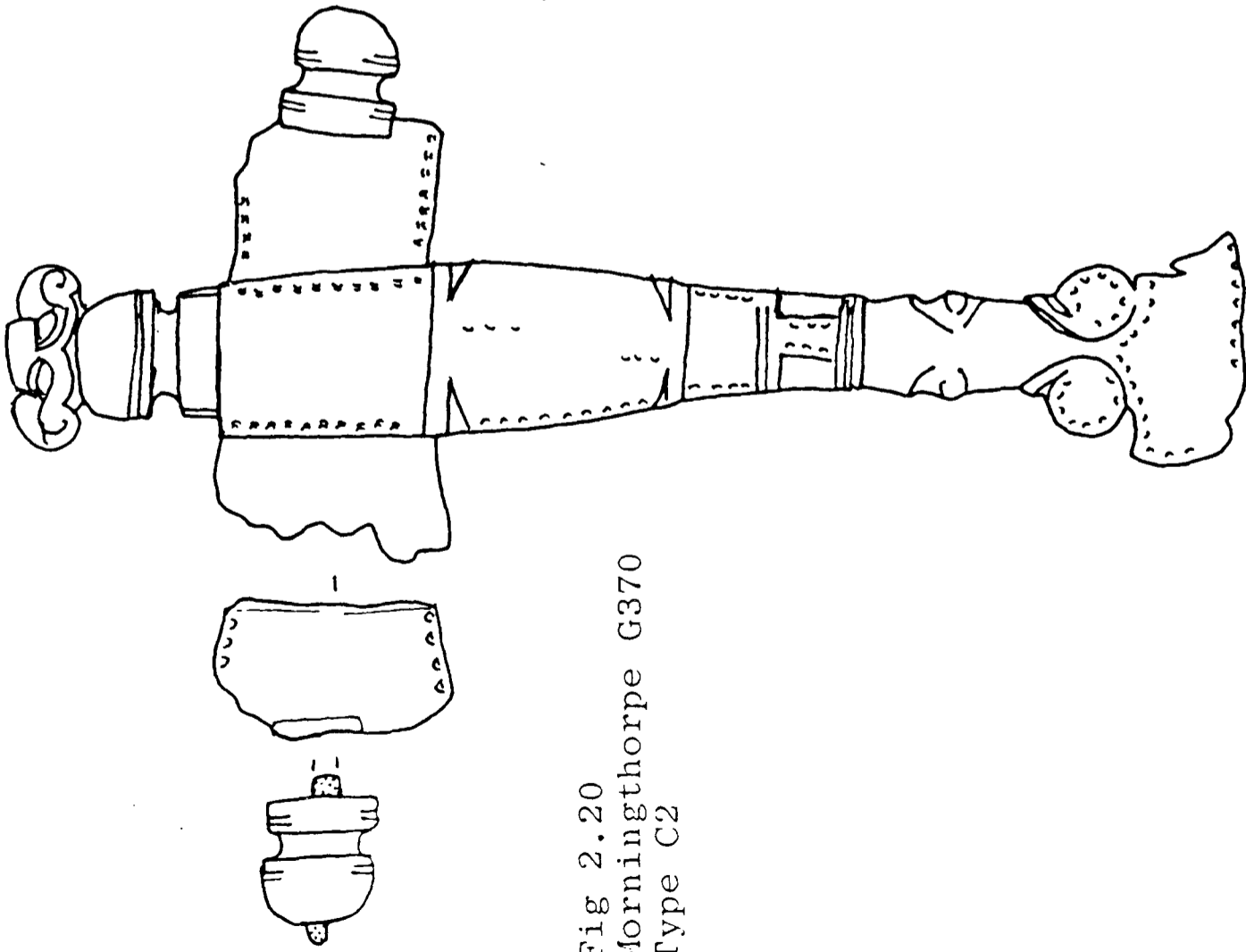


Fig 2.20  
 Morningthorpe G370  
 Type C2

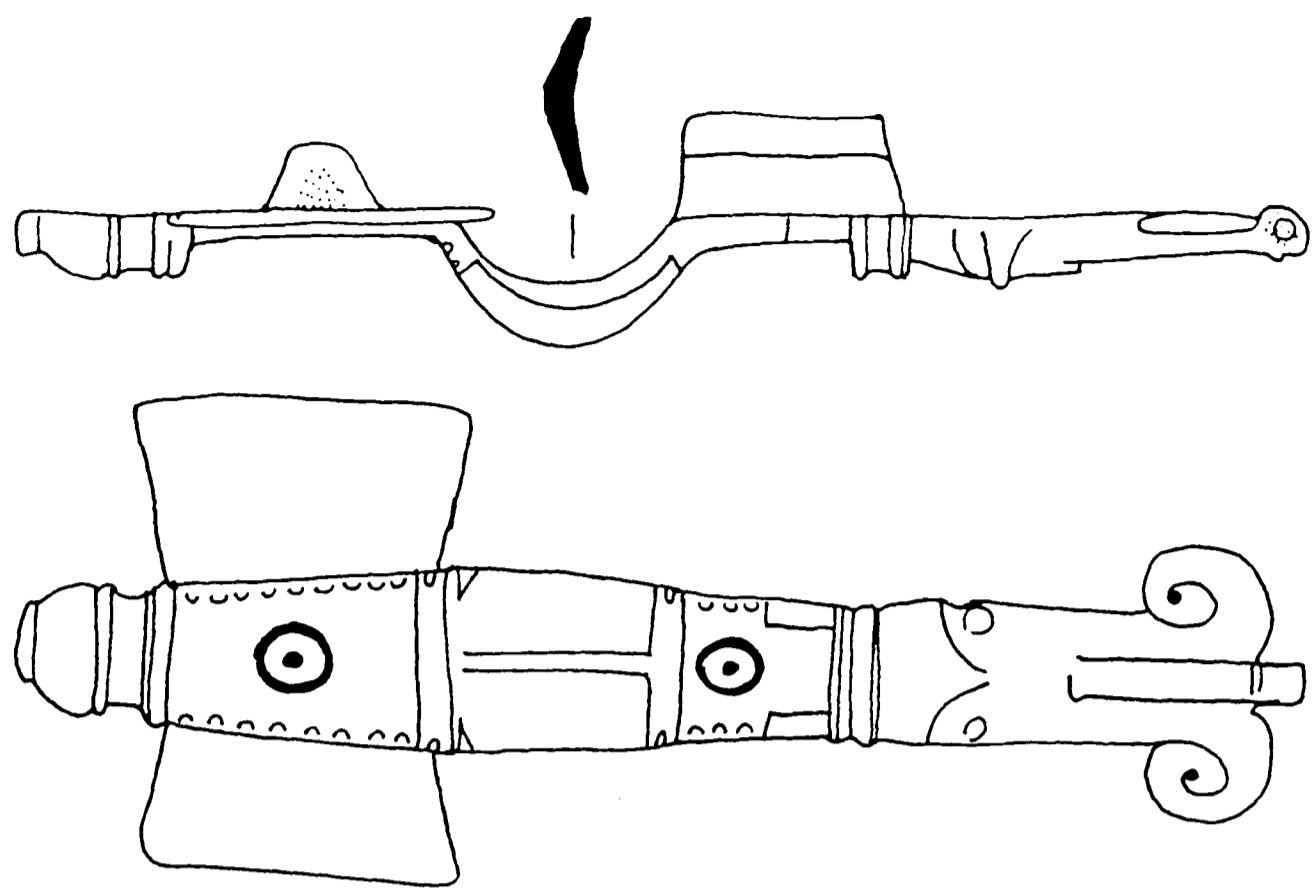
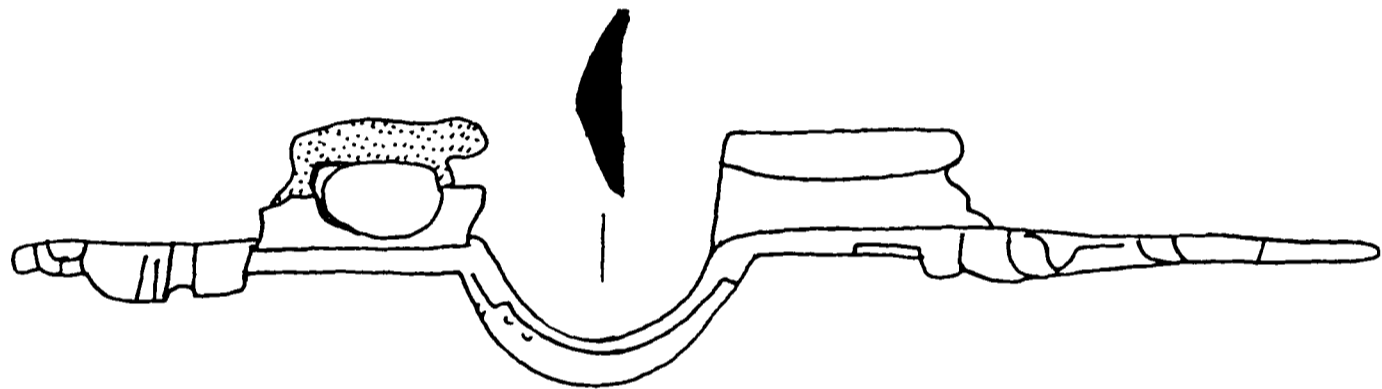


Fig 2.21  
 Ixworth 3  
 Associated with type C1

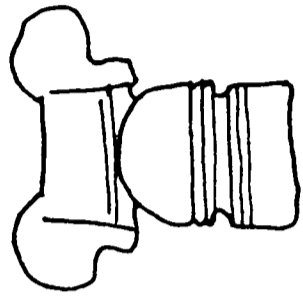


Fig. 2.24 Morningthorpe  
G133, Type D1

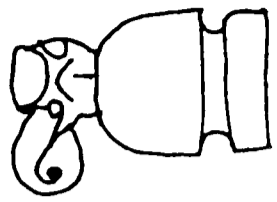


Fig. 2.25 St Johns  
Type D1

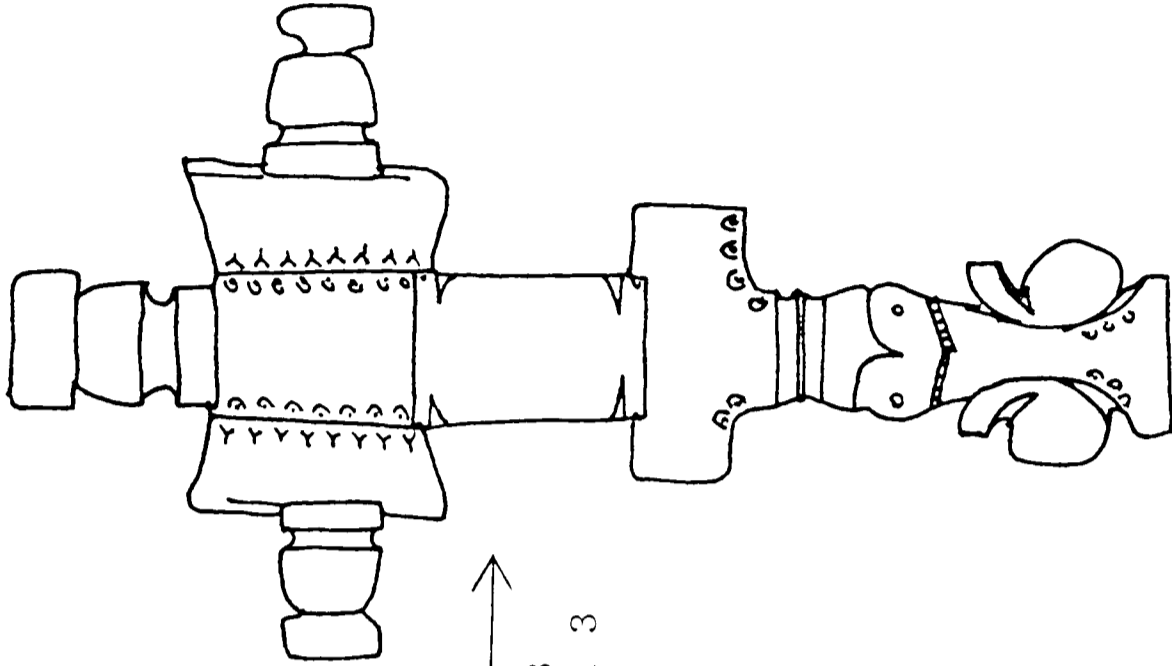


Fig. 2.23  
Sleaford 3  
Type D1

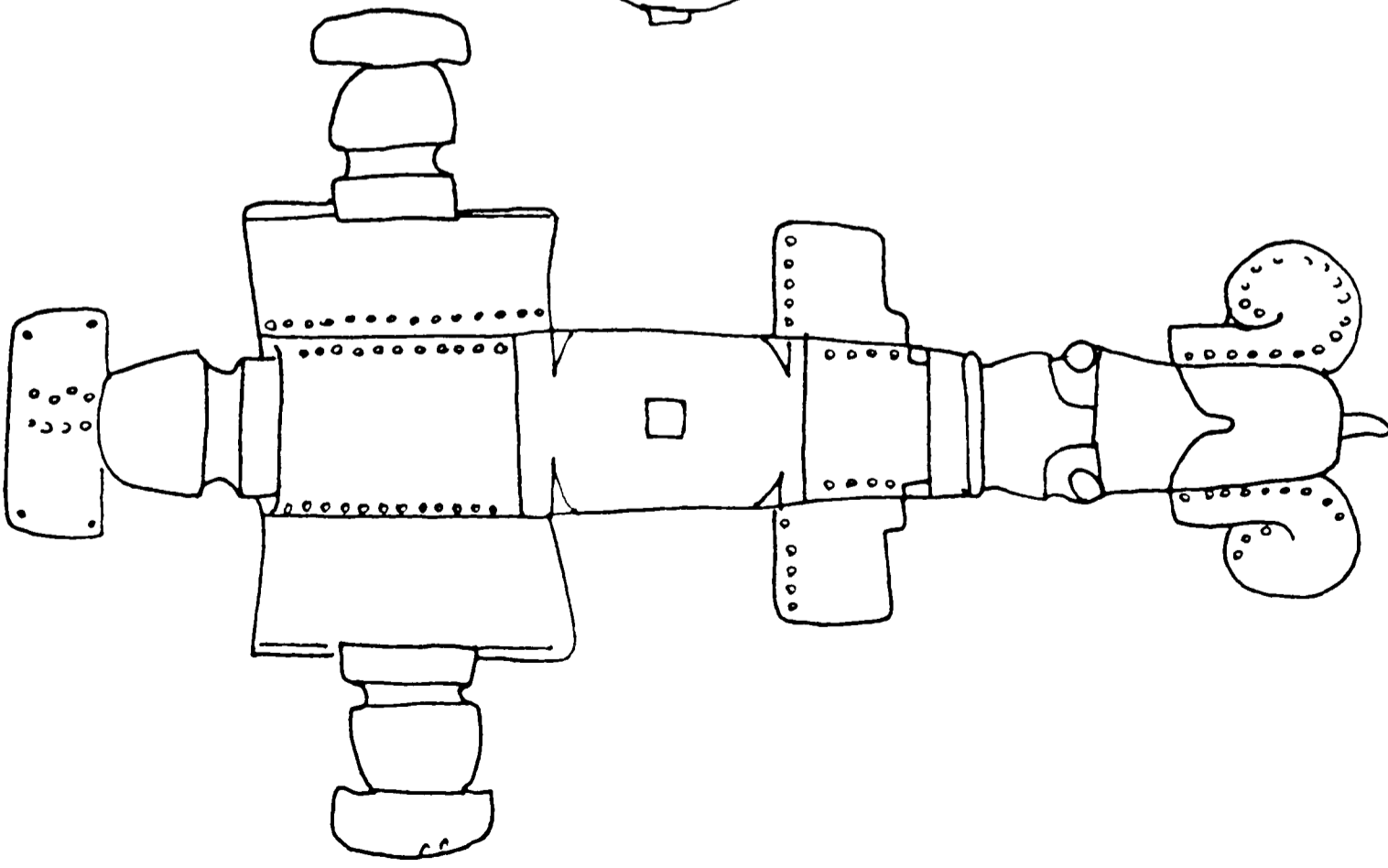
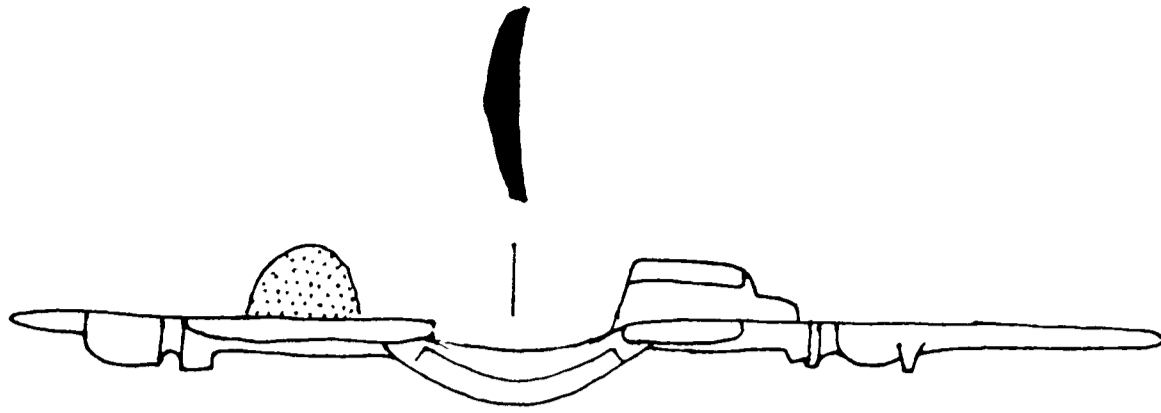
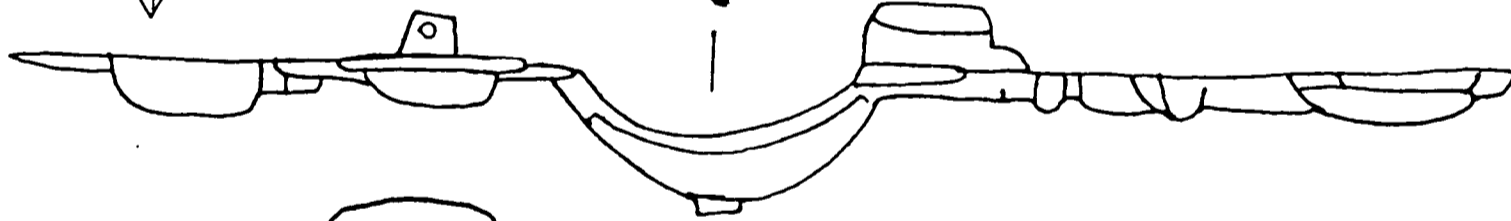


Fig. 2.22  
Nassington 2  
Type D1



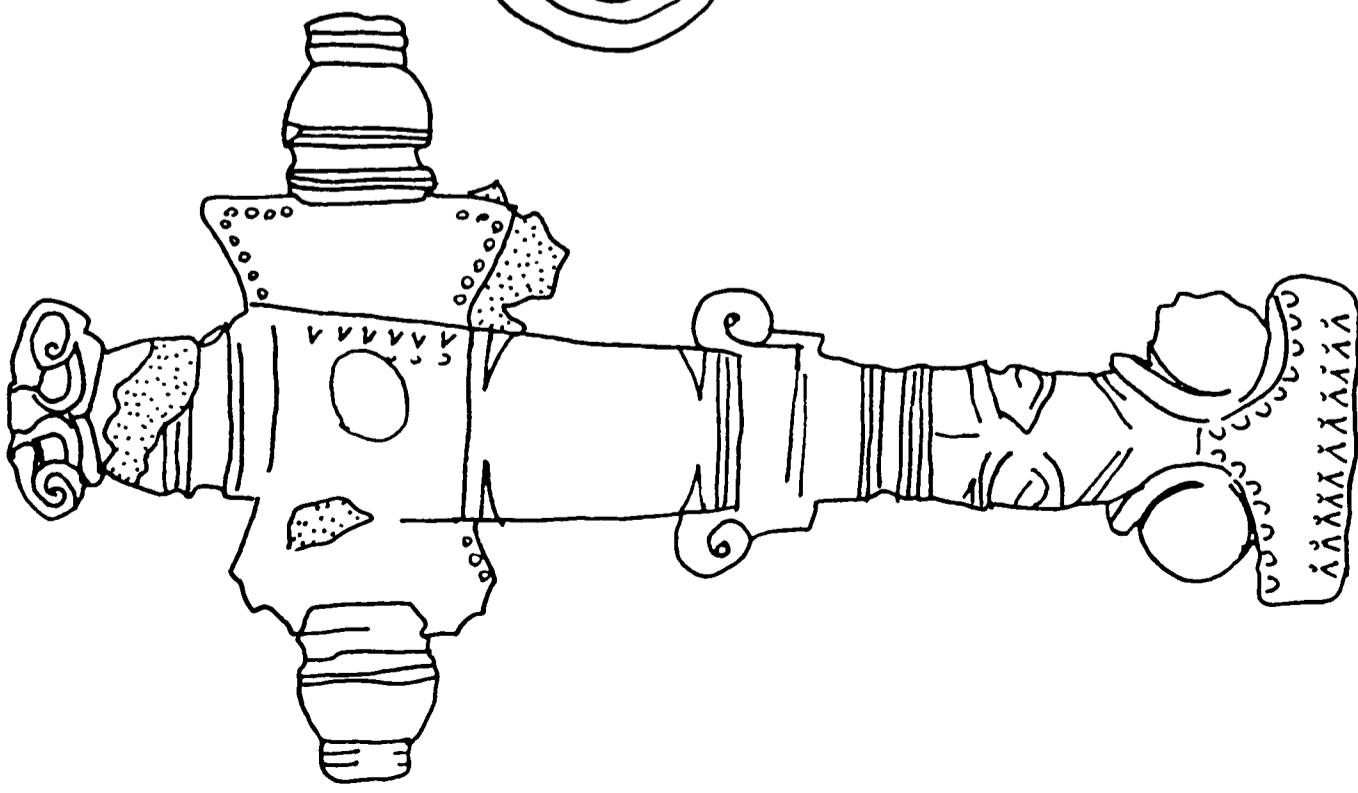


Fig 2.26  
Morningthorpe G208  
Type D2

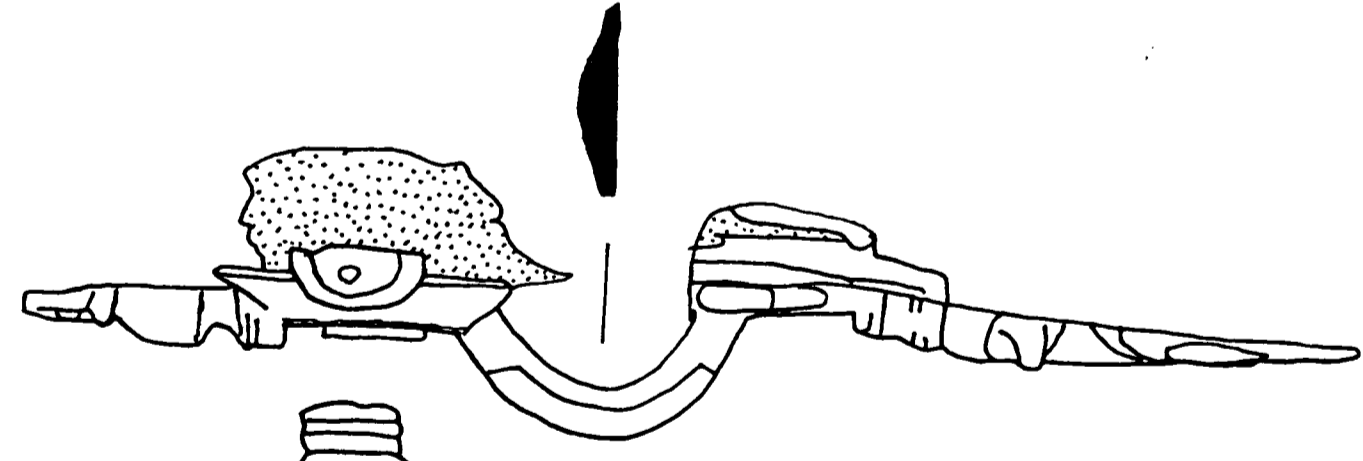


Fig 2.27  
Holywell Row G21  
Type D2

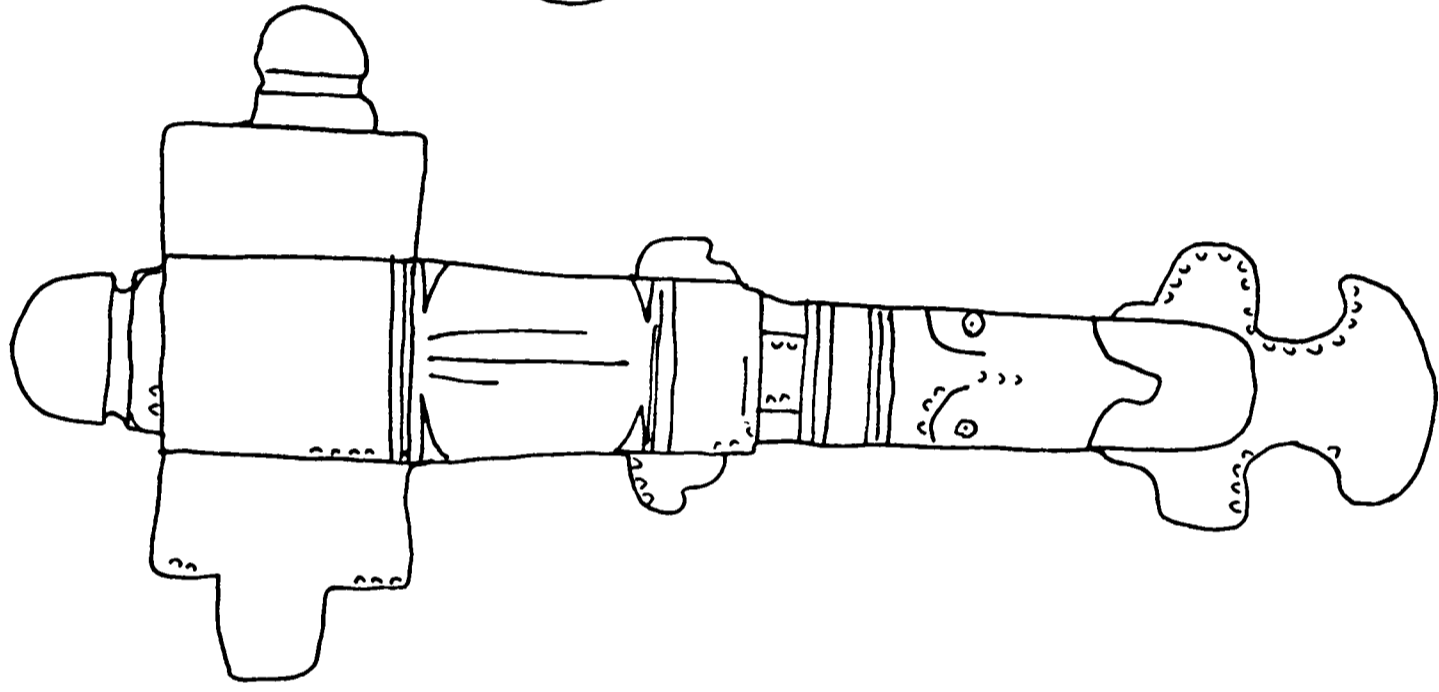


Fig 2.28  
Holywell Row  
G99(2)

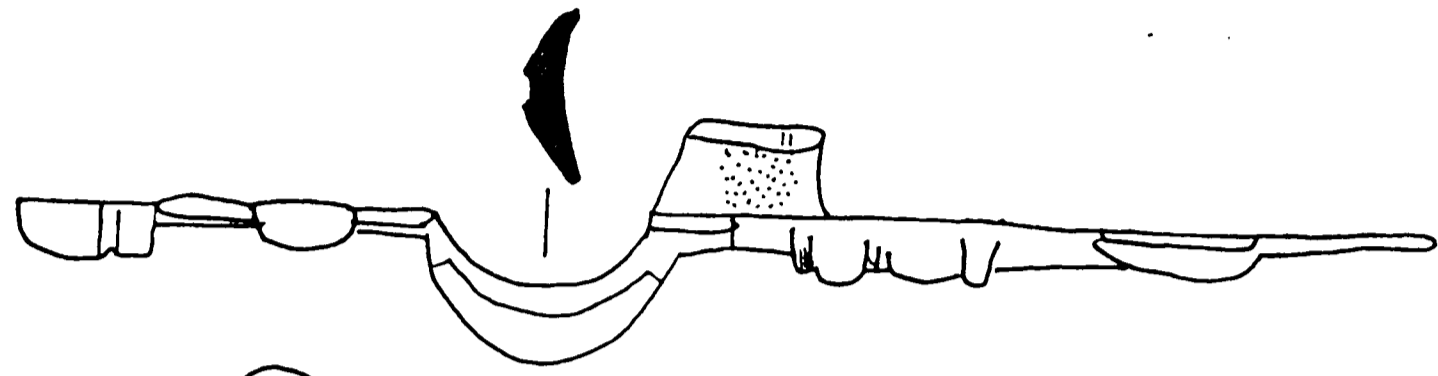


Fig 2.29  
Woodstone 4

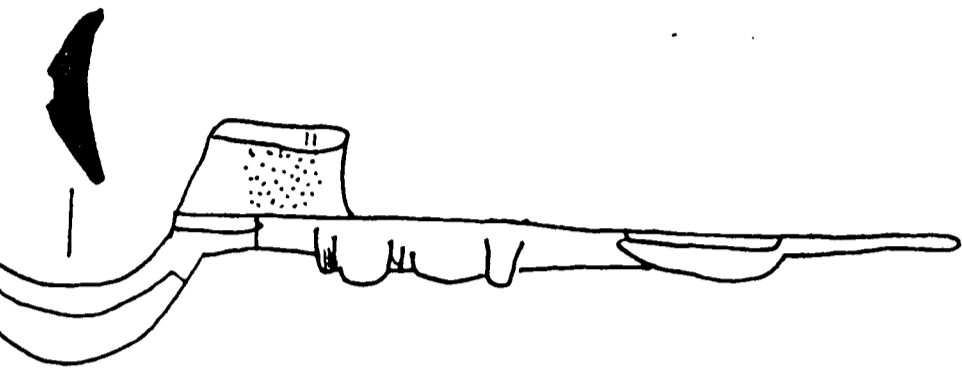


Fig 2.30  
Lakenheath 4



Fig 2.31  
Morningthorpe  
G209



Fig 2.32  
Spong Hill  
G39

Type D2 lappets

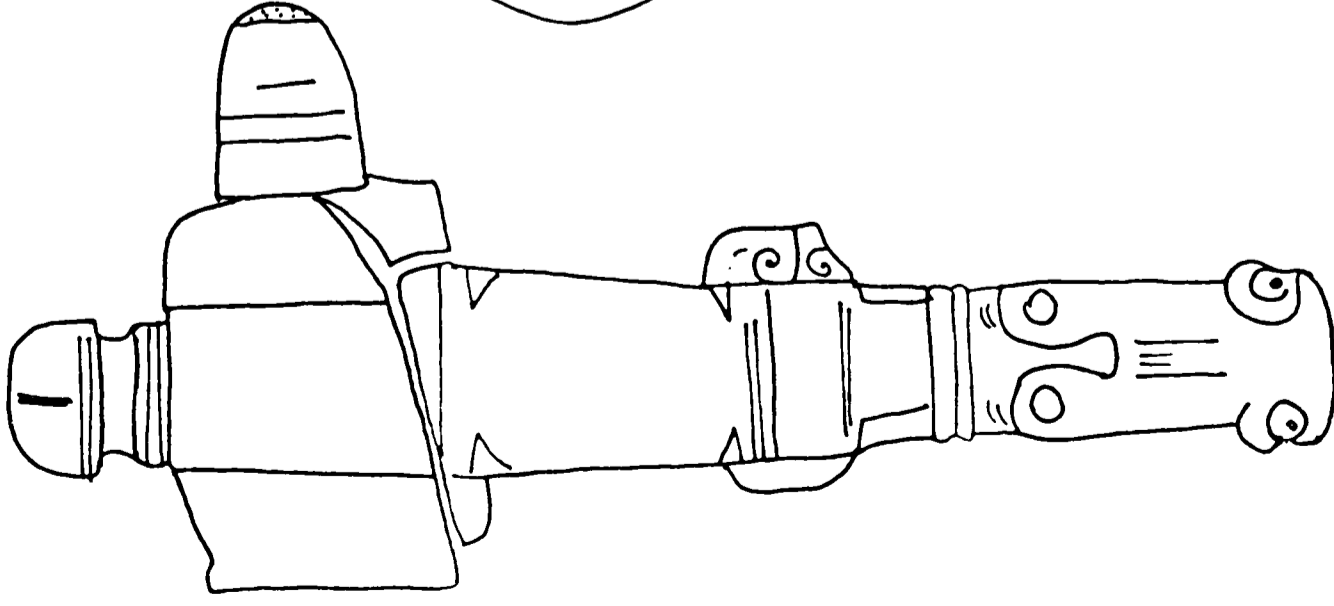


Fig 2.33  
Brooke 6  
Type D3

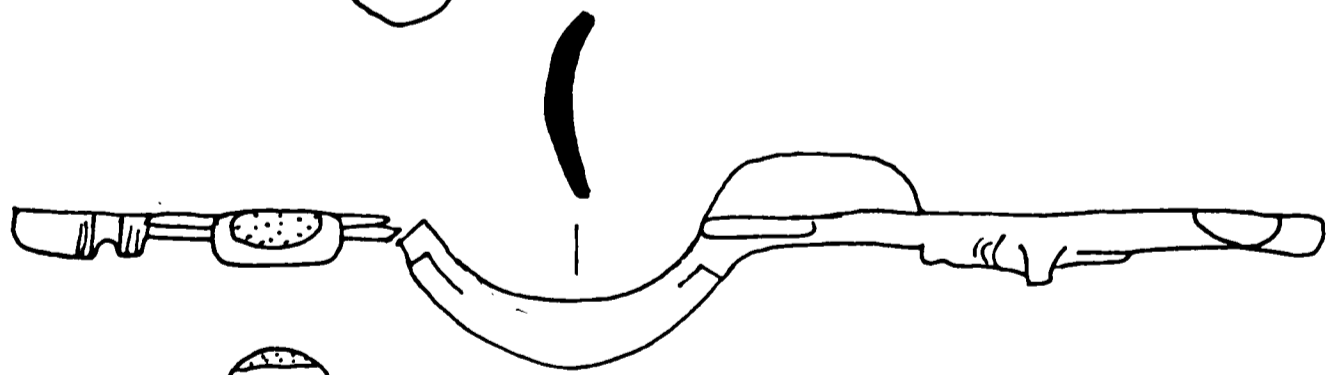


Fig 2.34  
Bulmer 2  
Type D3

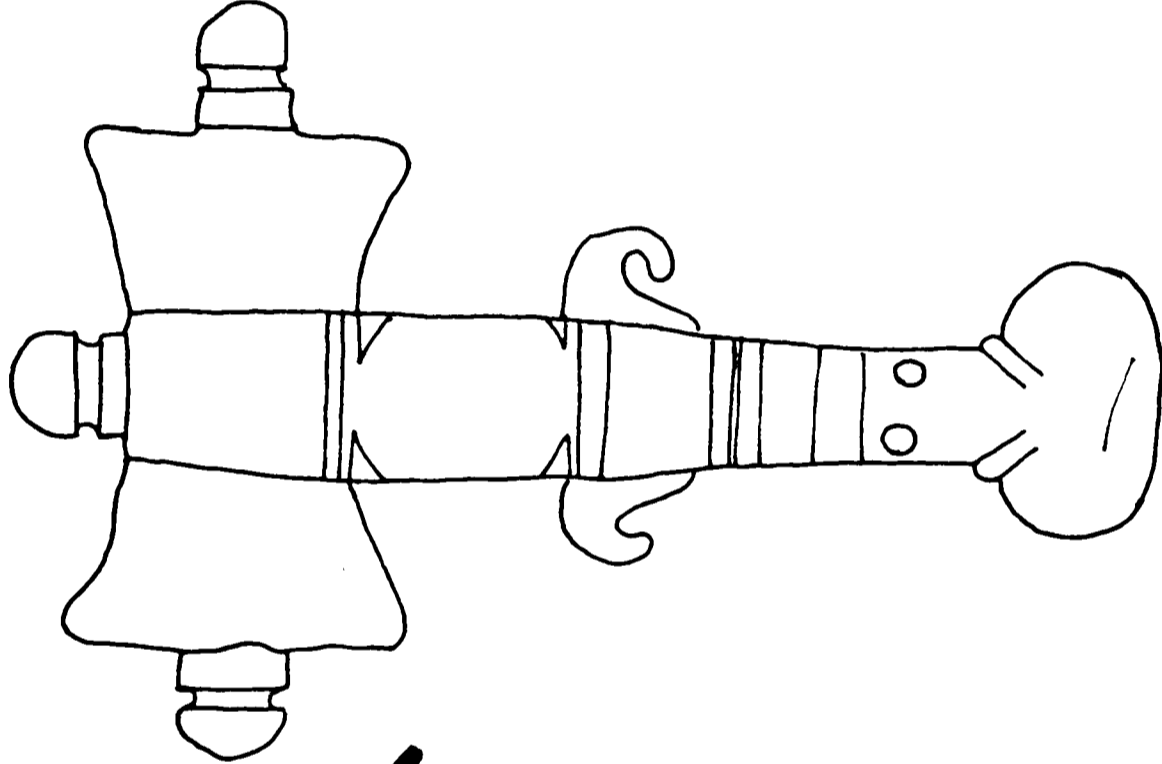


Fig 2.36  
Goodmanham  
Type D3

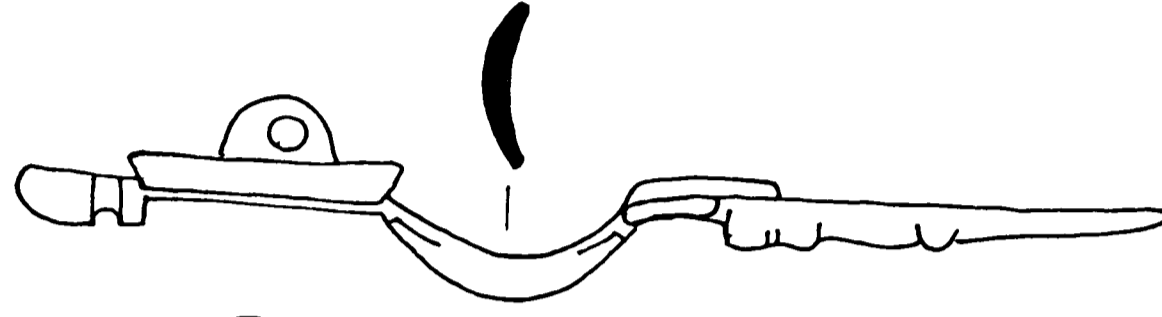


Fig 2.37  
Kenninghall  
Type D3



Fig 2.35  
Girton G39(1) and (2)  
Type D3

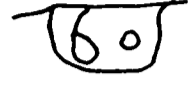


Fig 2.38  
Little Wilbraham G116  
Type D3

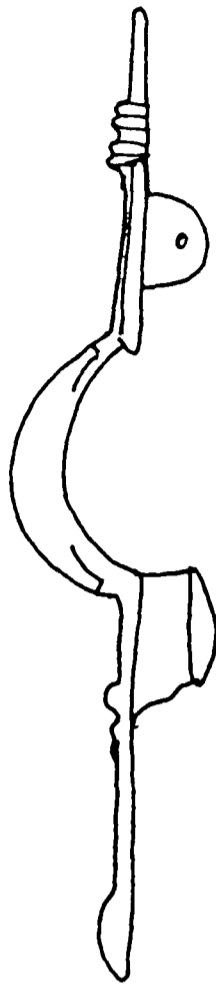
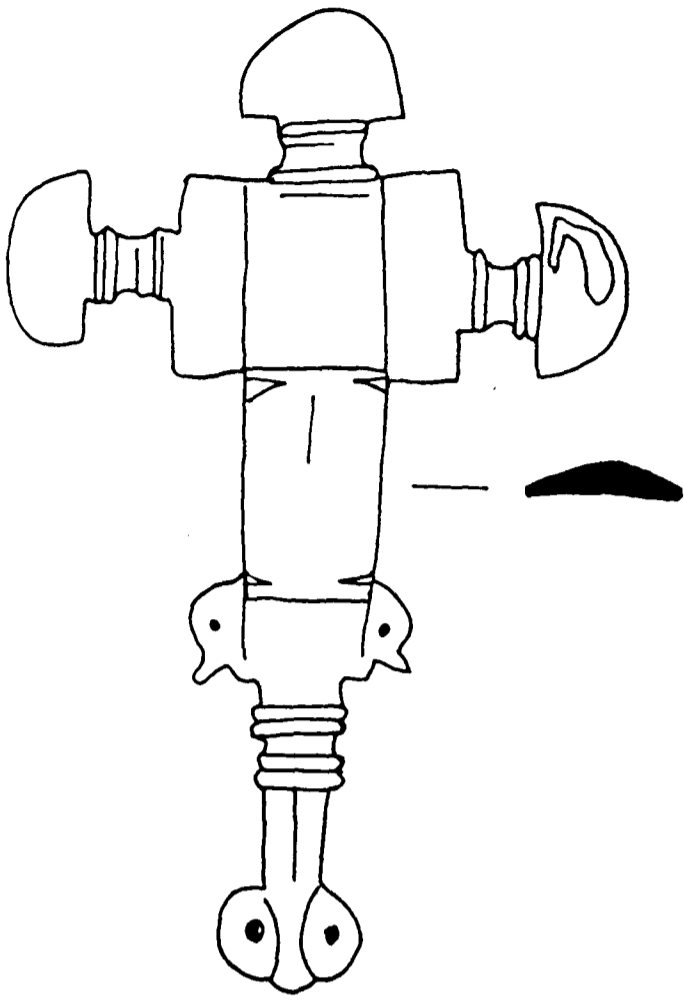
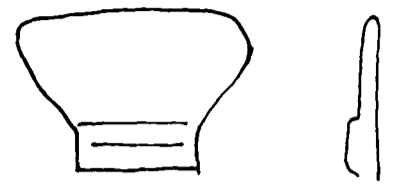


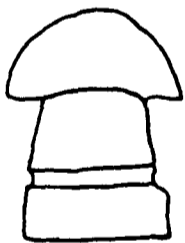
Fig 2.39  
Haslingfield 4  
Type D4



Haslingfield 7



Haslingfield 8



Holywell Row G37



Kenninghall 2



Kenninghall 10



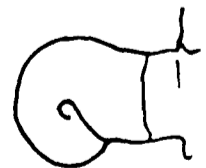
Sancton 2



Sewerby G28

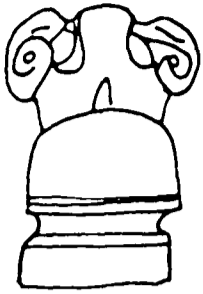


Sleaford G80



Spong Hill G45

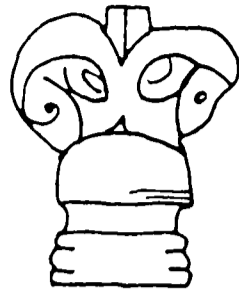
Fig 2.40 Various lappet and top knob styles from type D4 brooch



Holywell Row G58



Lakenheath 6



Lakenheath 1



Lakenheath 16



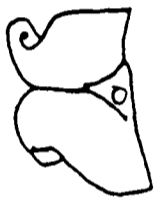
Sewerby G57



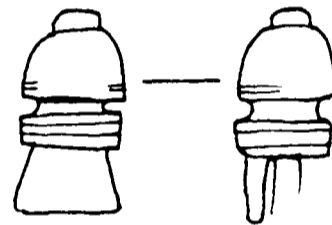
Sleaford G233



St Johns 2



Tuddenham 1



Tuddenham 4



Type D5 lappets and top knobs



Morningthorpe G358(1)  
Type D3



Morningthorpe G396



Type D3



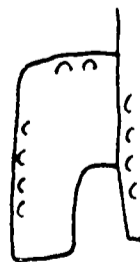
St Johns 10  
Type D3



Woodstone 1  
Type D3



Asgarby 1  
Type D3



Barrington A1  
Type D4



Barrington A G6  
Type D4

Fig 2.41 Various lappet and top knob styles from type D brooches

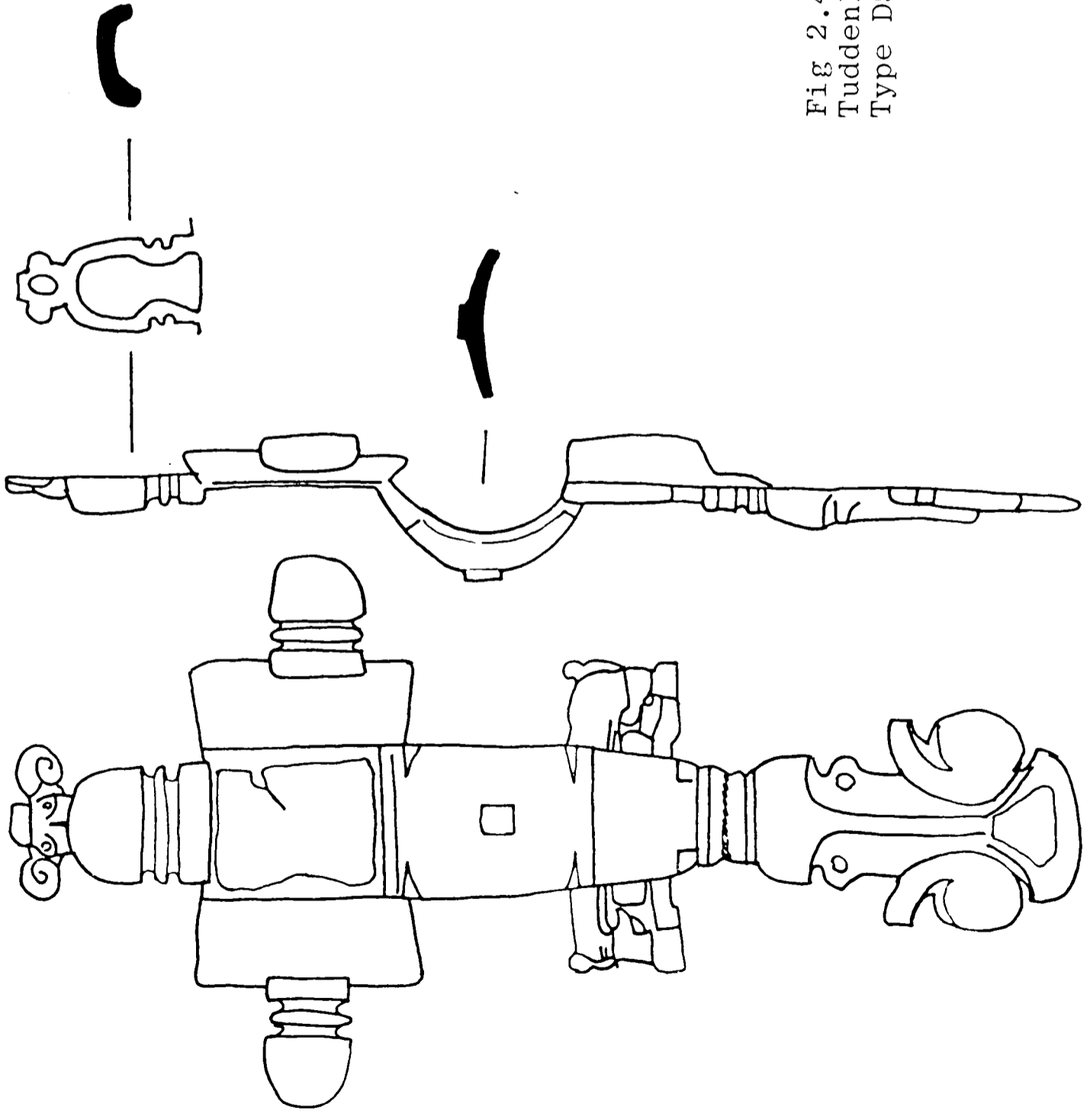


Fig 2.42  
Girton 2  
Type D5a

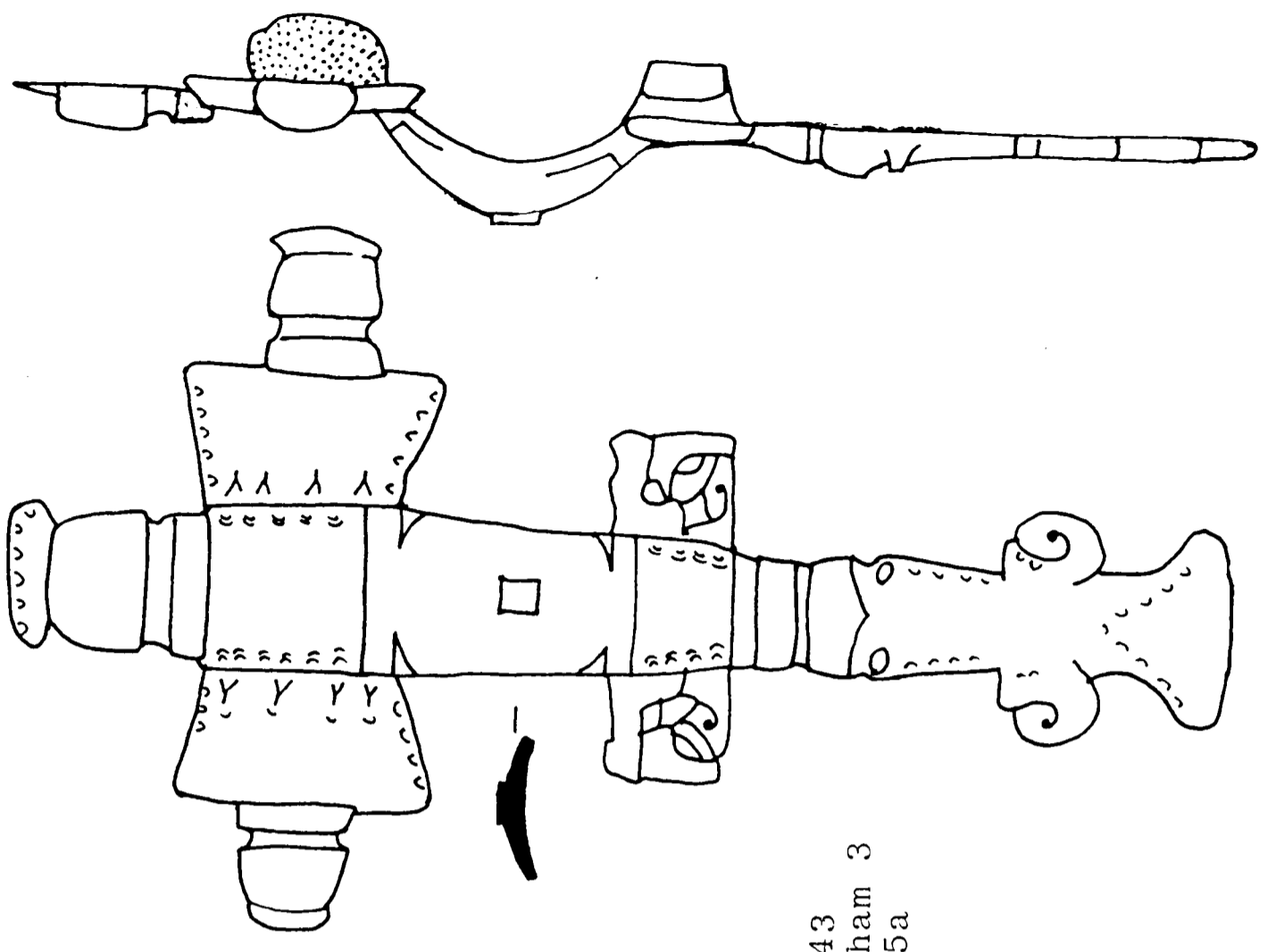


Fig 2.43  
Tuddenham 3  
Type D5a

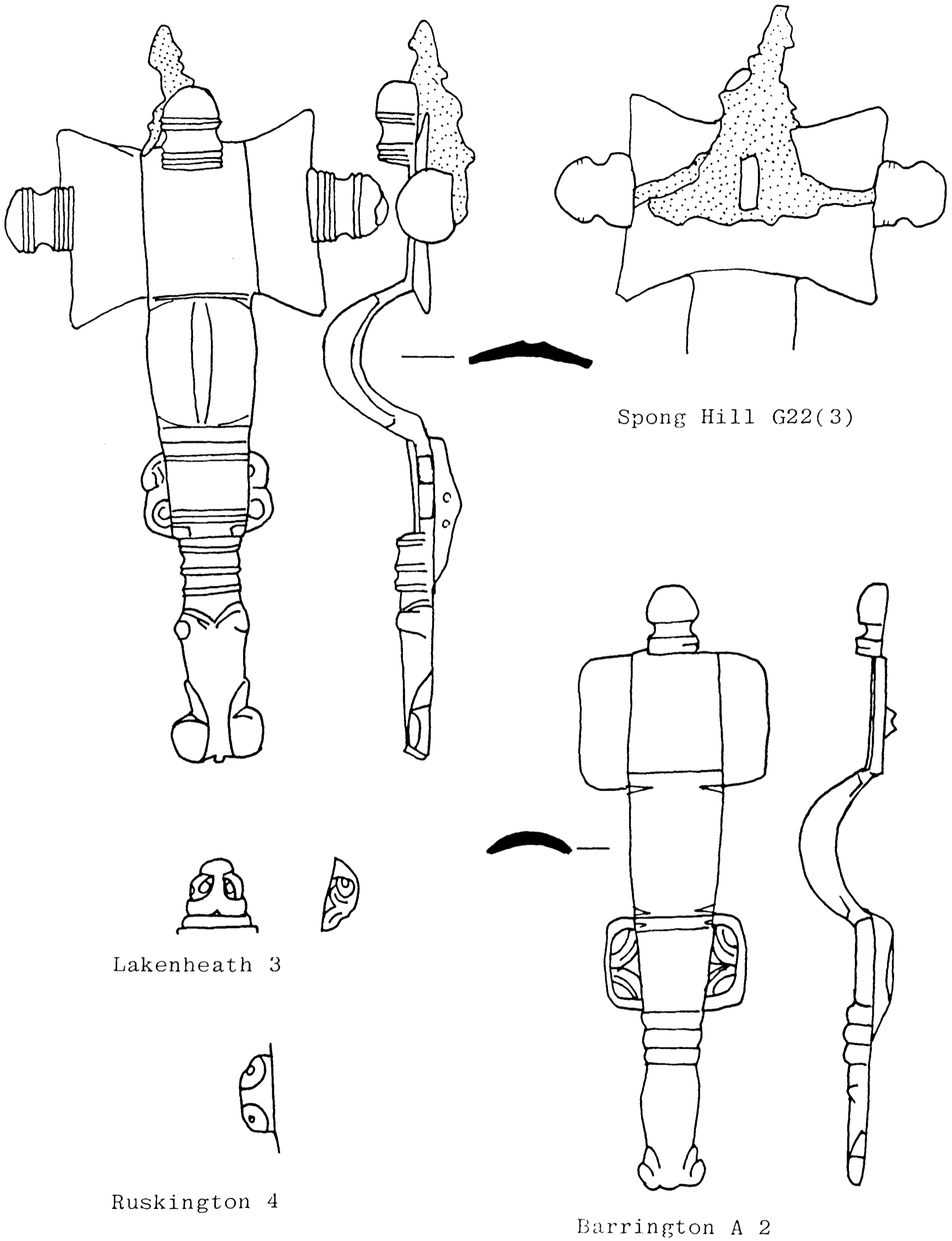
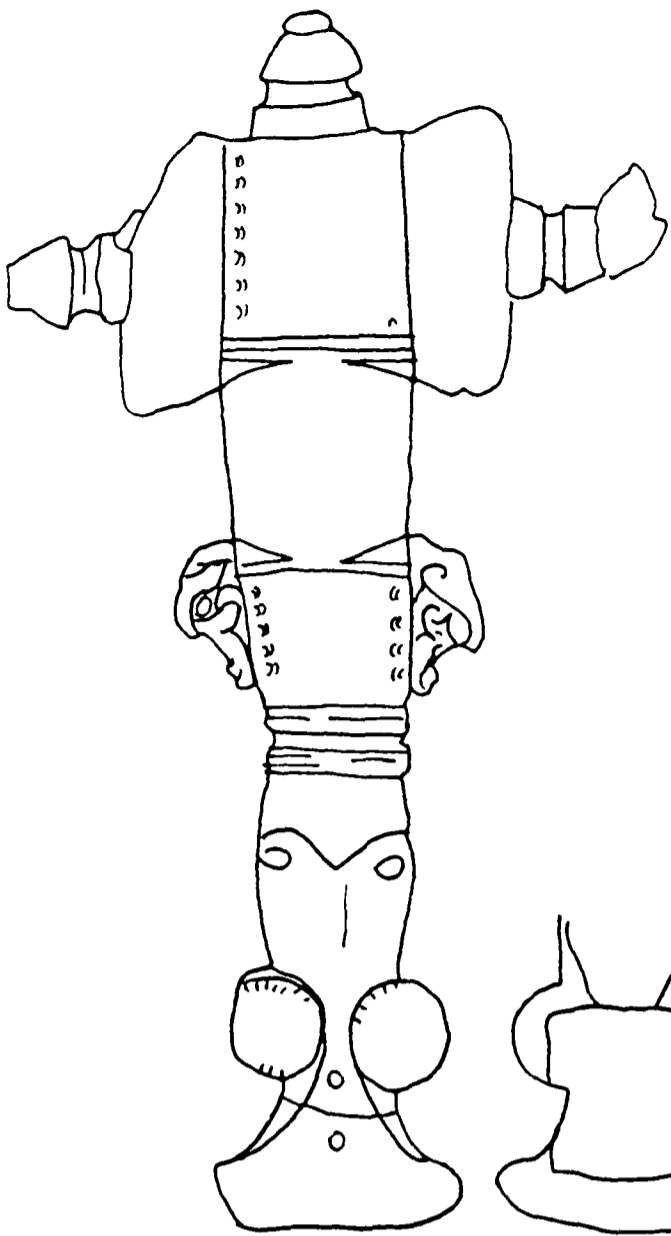


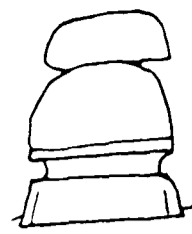
Fig 2.44 Various type D5b brooches and parts of brooches



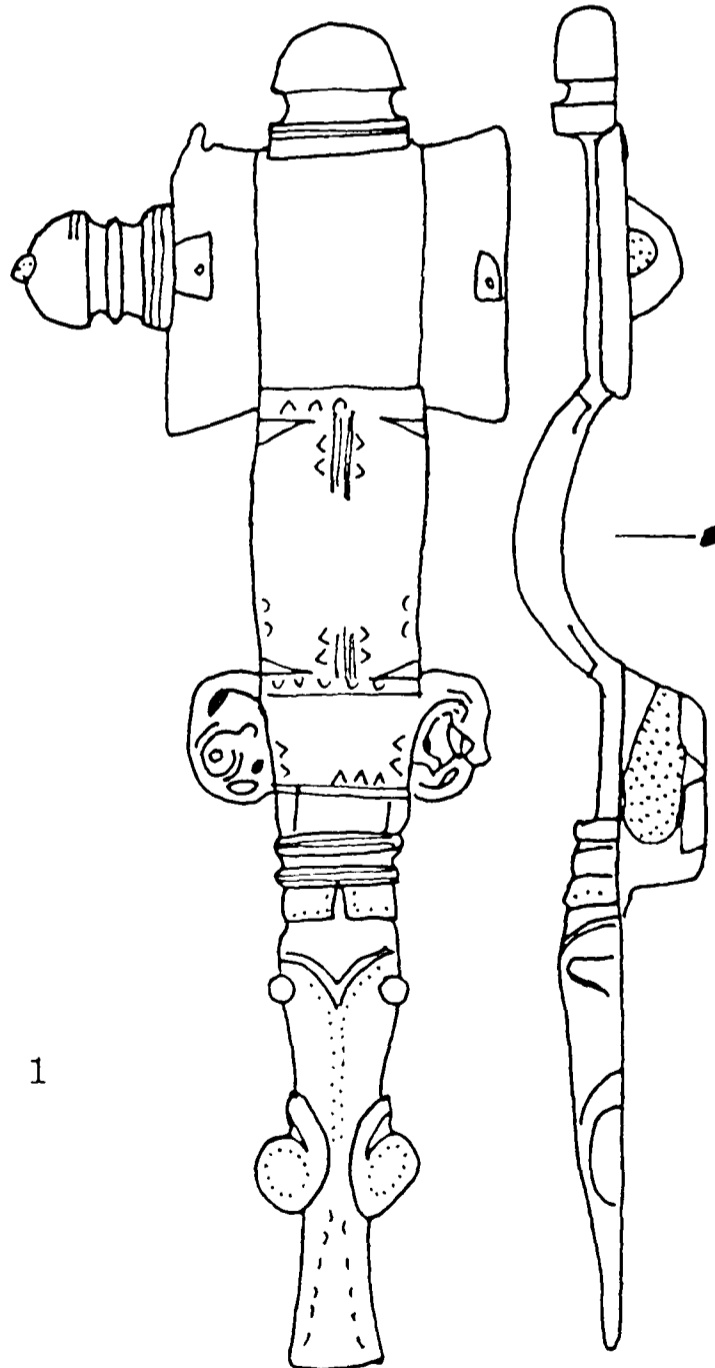
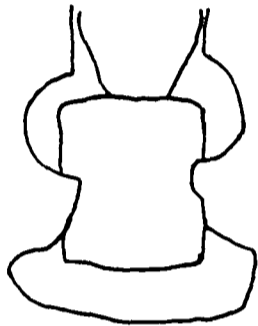
Morningthorpe G96



Morningthorpe G129



Ruskington 1



Northwold



Girton 3



Fonaby 4



Darlington 1



Holme Pierpoint 1

Fig 2.45 Various types of D5 brooch and parts of brooches

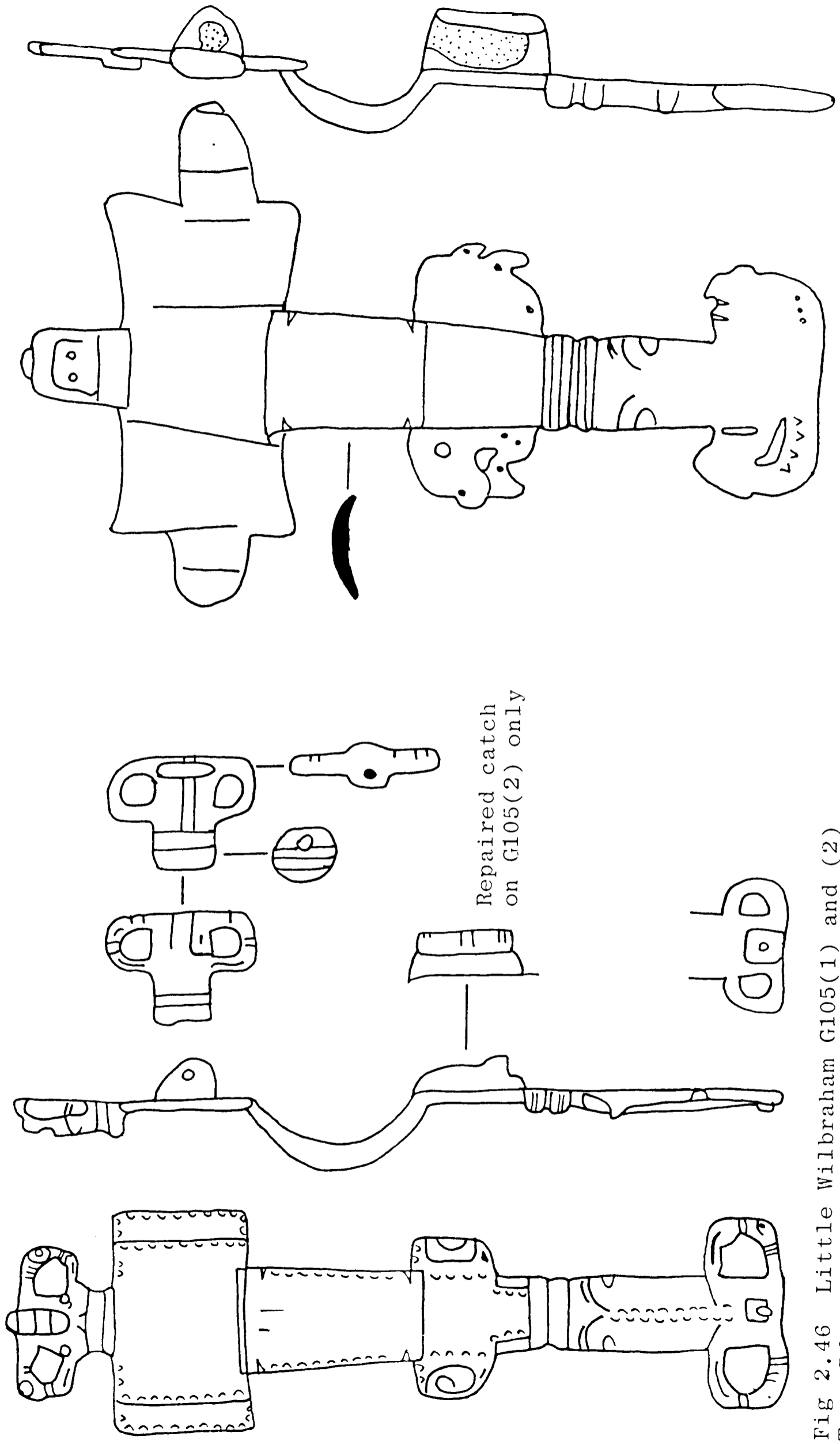
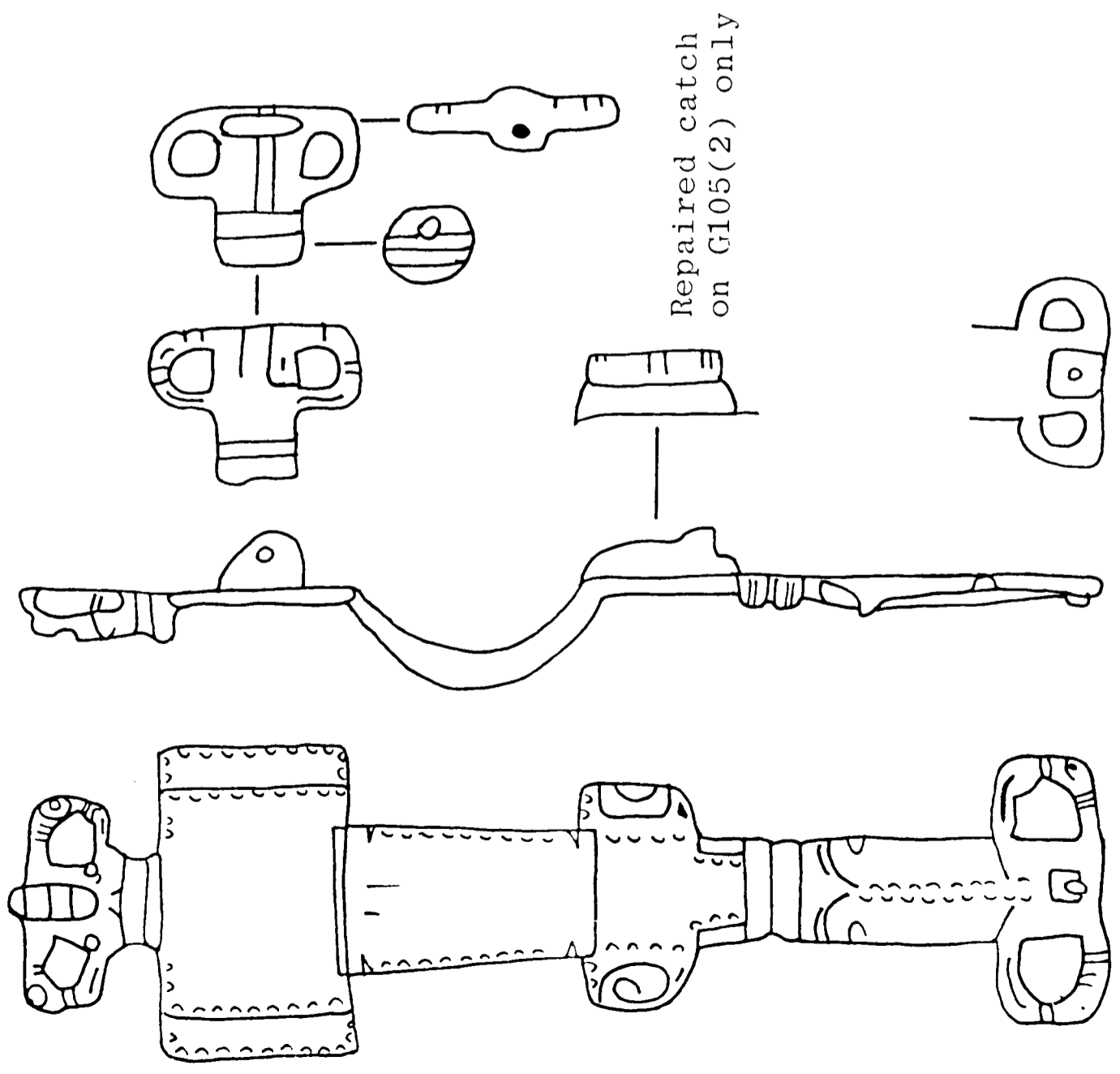


Fig 2.47 St Johns 6  
Type D6



Repaired catch  
on G105(2) only

Fig 2.46 Little Wilbraham G105(1) and (2)  
Type D6

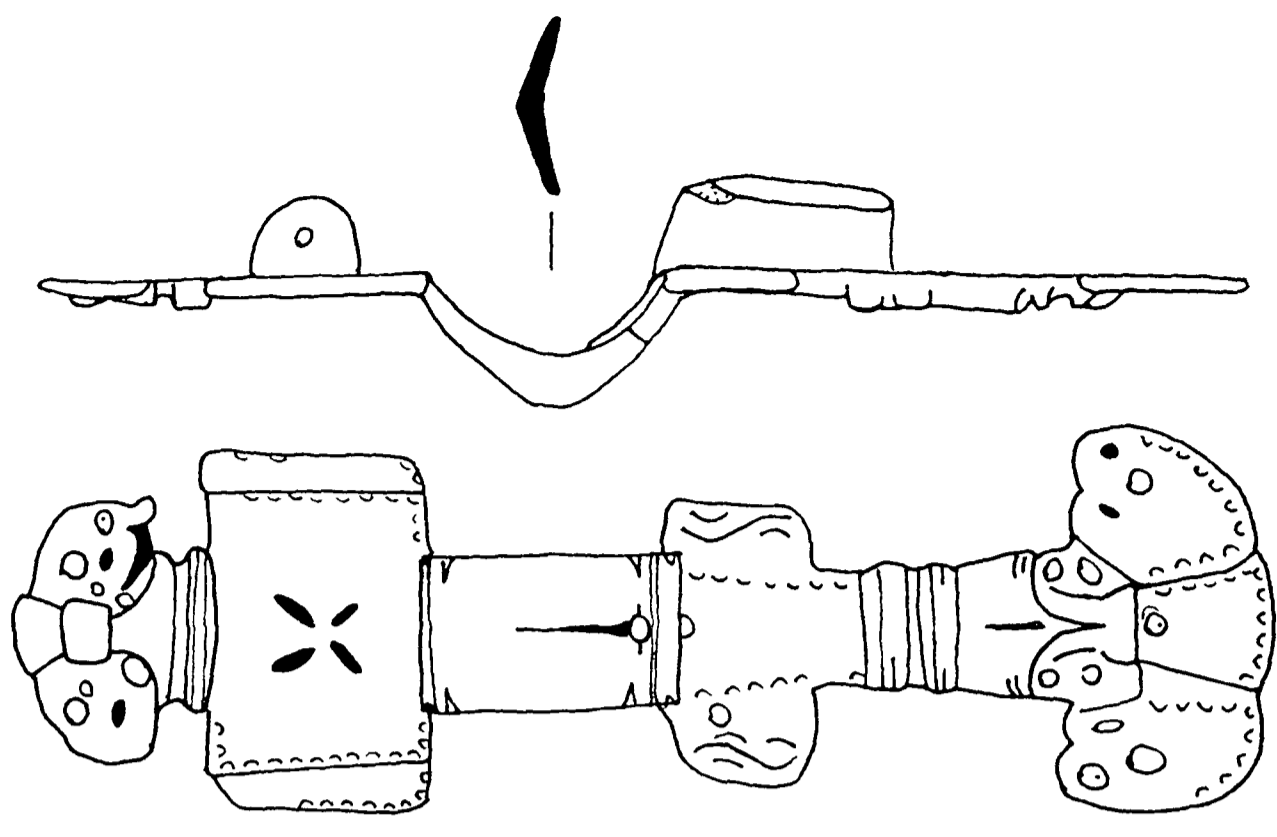
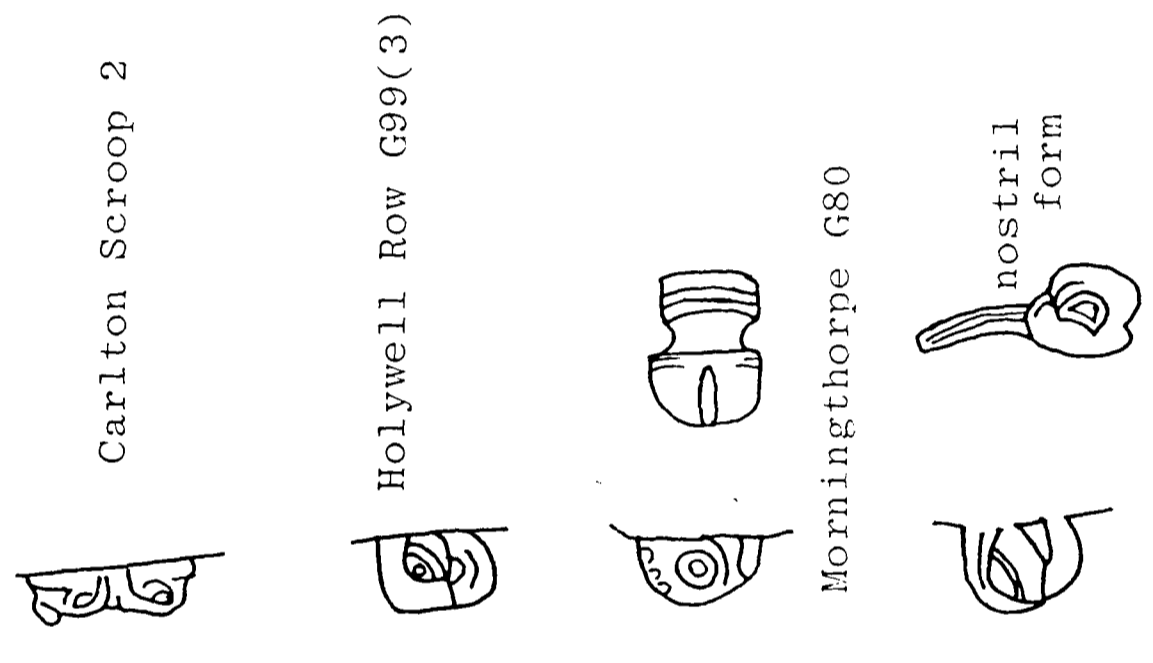


Fig 2.50 Haslingfield 1  
Type D6



Carlton Scroop 2

Holywell Row G99(3)

Morningthorpe G80

Sleaford G12(1)

Fig 2.49 Various types  
of D6 brooch elements

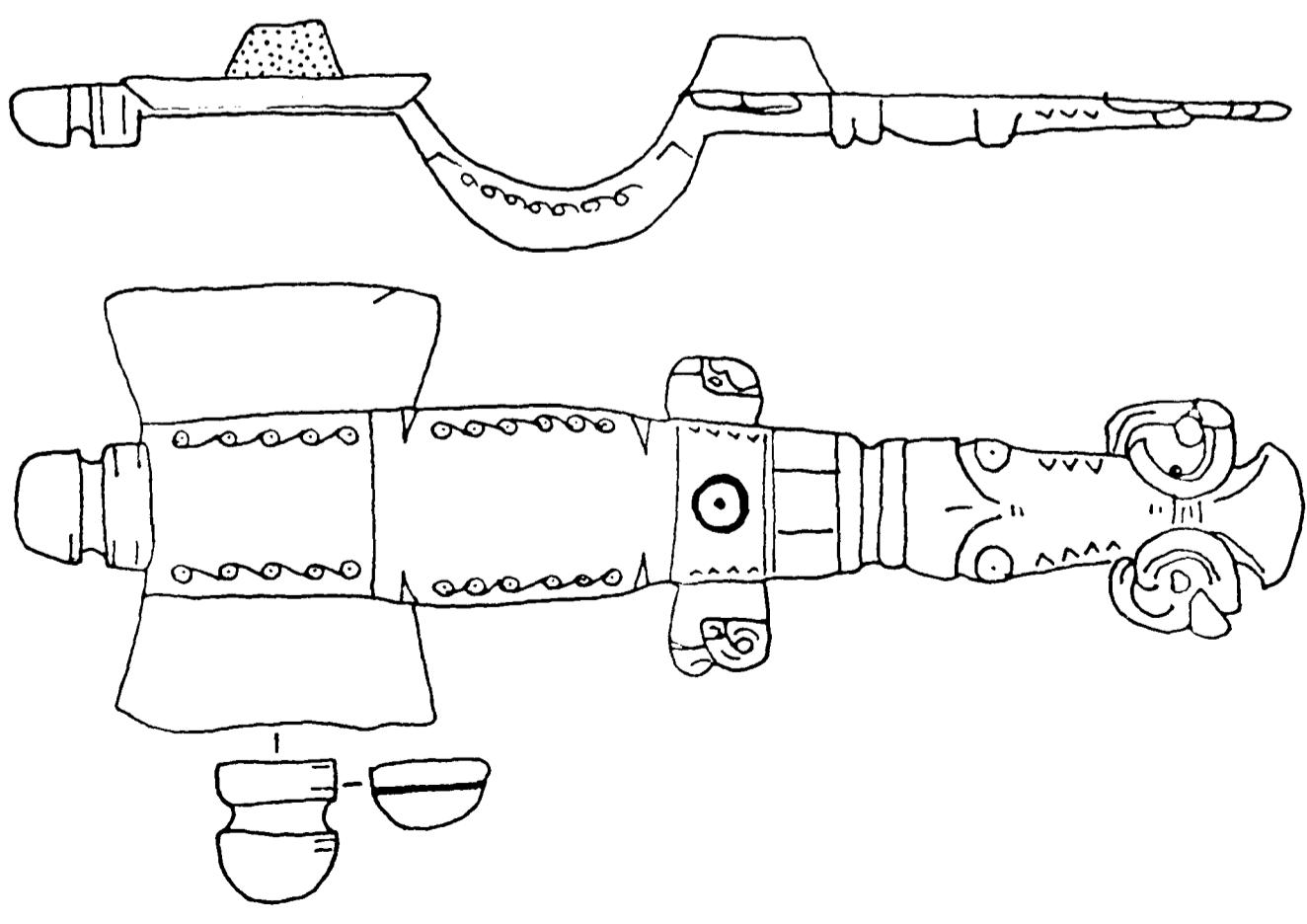


Fig 2.48 Haslingfield 9  
Type D6a

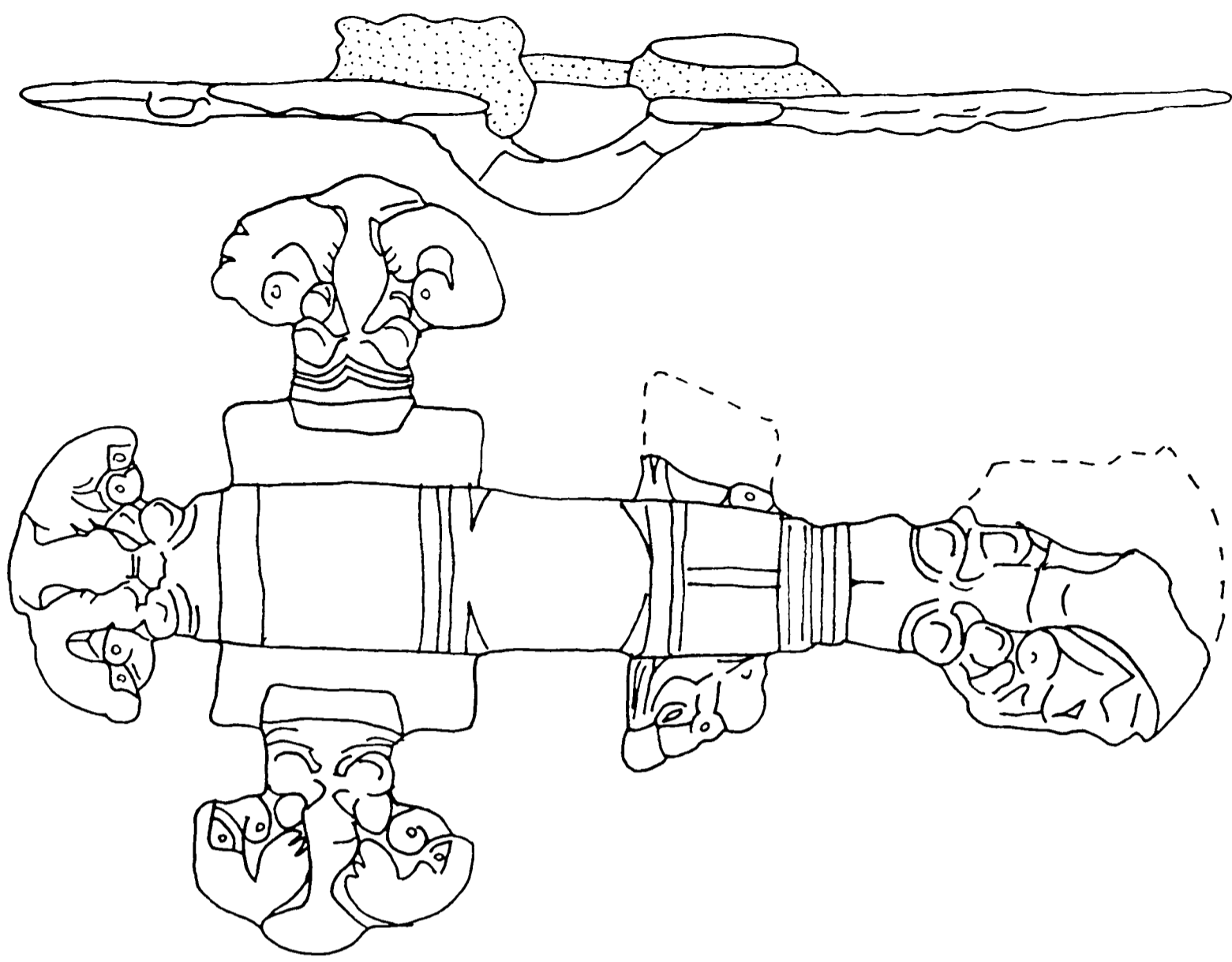


Fig 2.52 Fonaby 6 Associated with type Z11

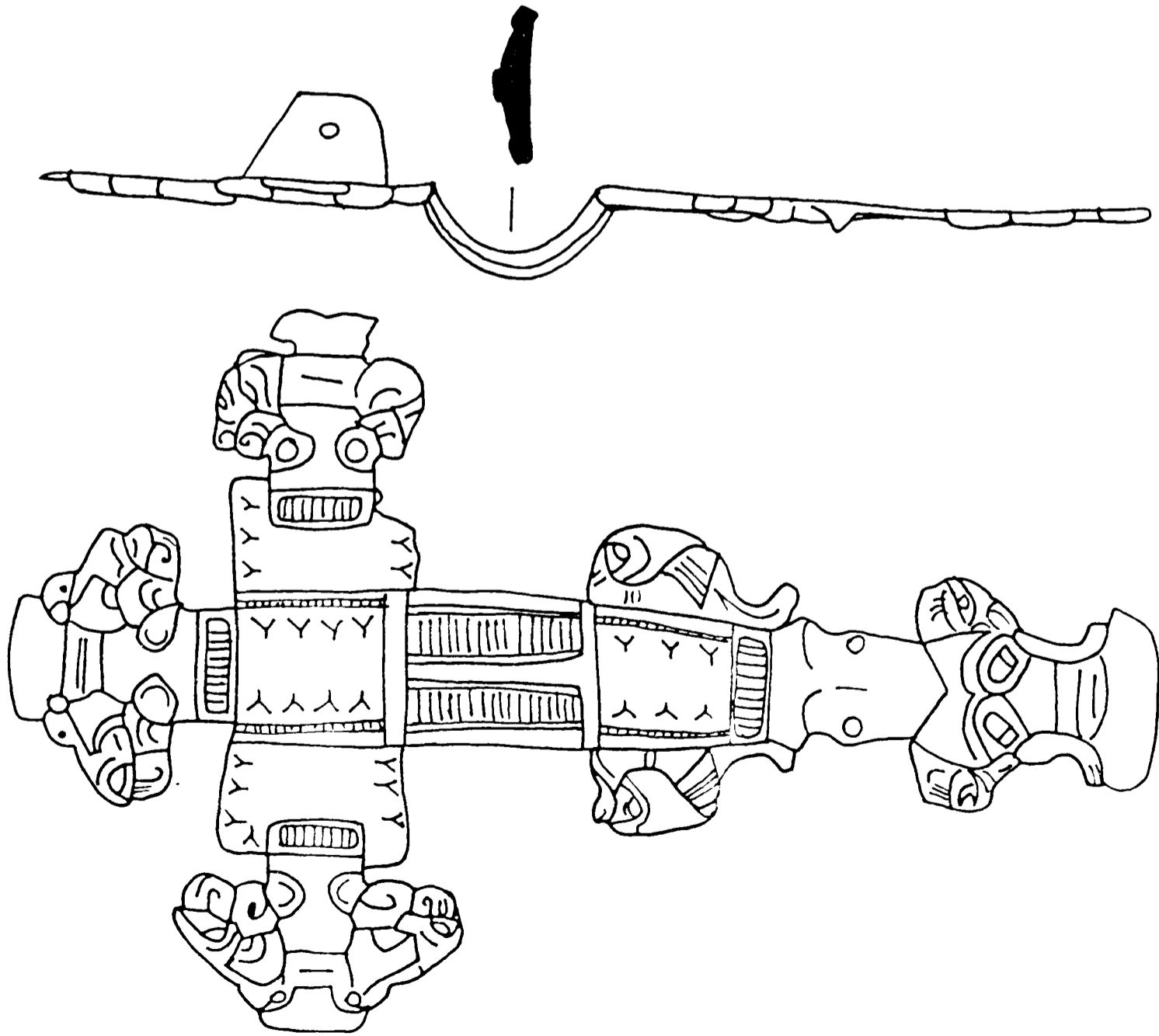


Fig 2.51 Mitchell's Hill/Type Z1a <sup>2</sup>

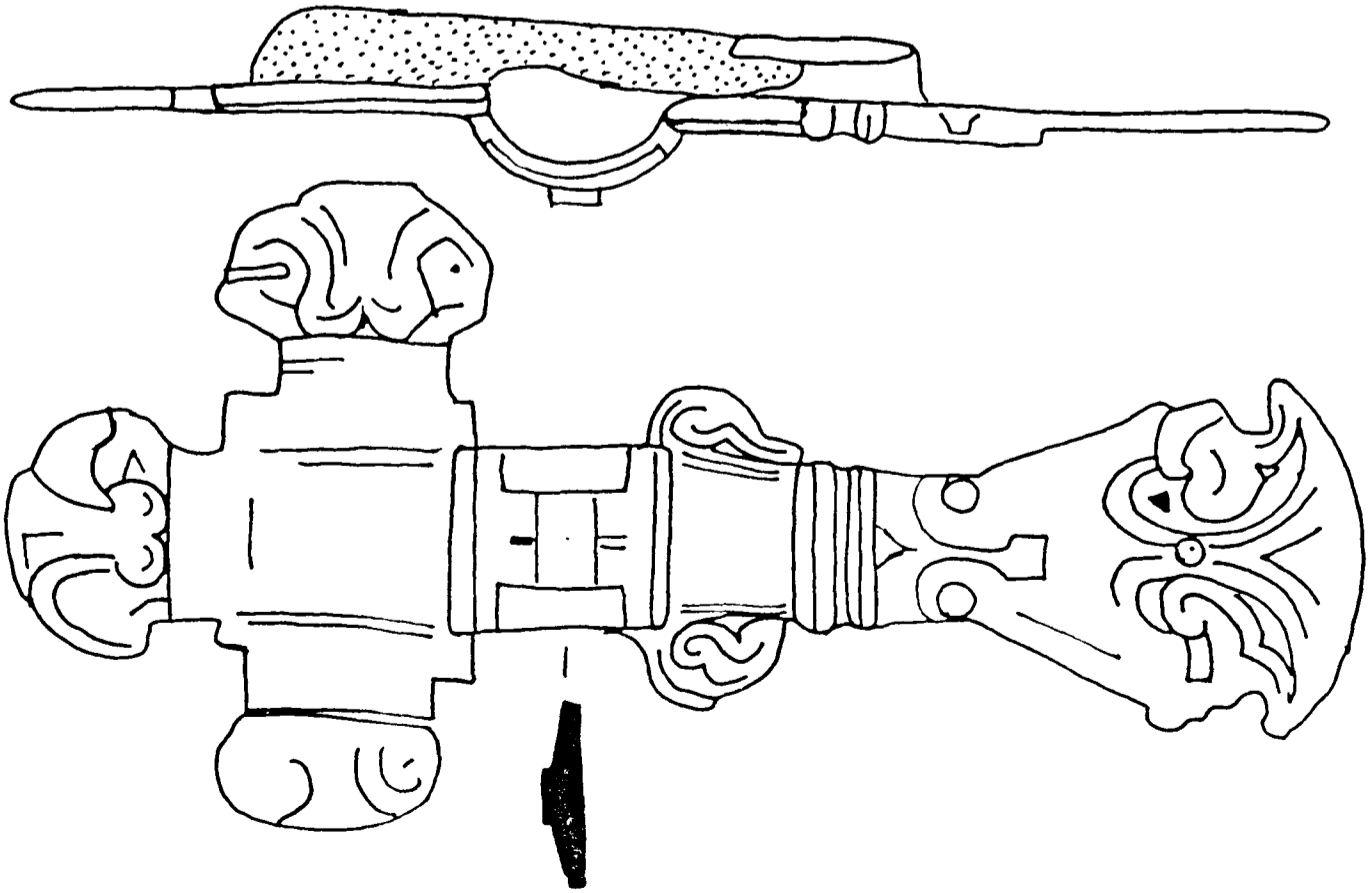


Fig 2.53 Sleaford G86 Type Z1b



Fig 2.54 Lappet styles from type Z1b brooches

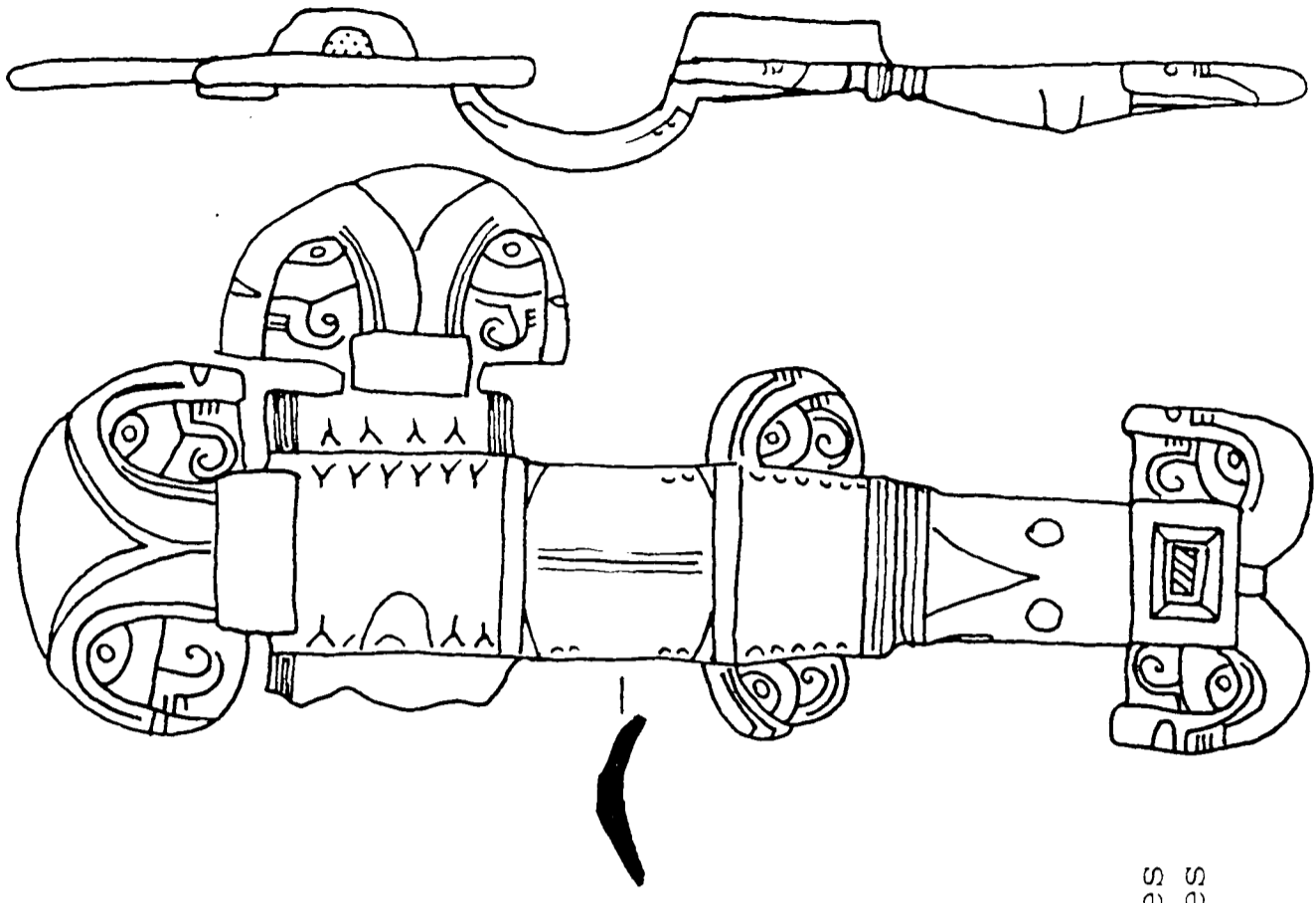


Fig 2.55 Sleaford G169 Associated with type Z2b

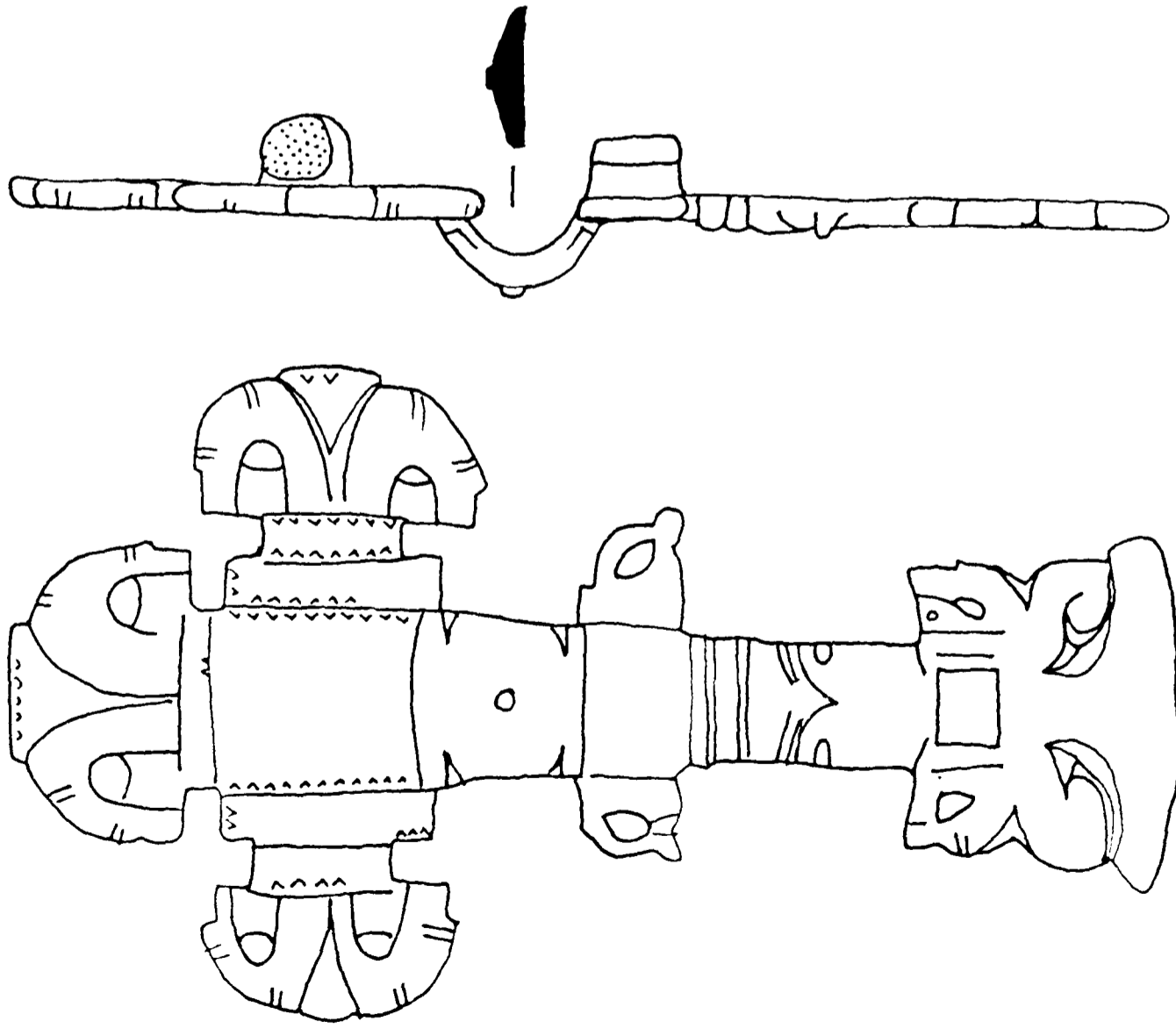


Fig 2.56 Barrington B G82 Type Z2a

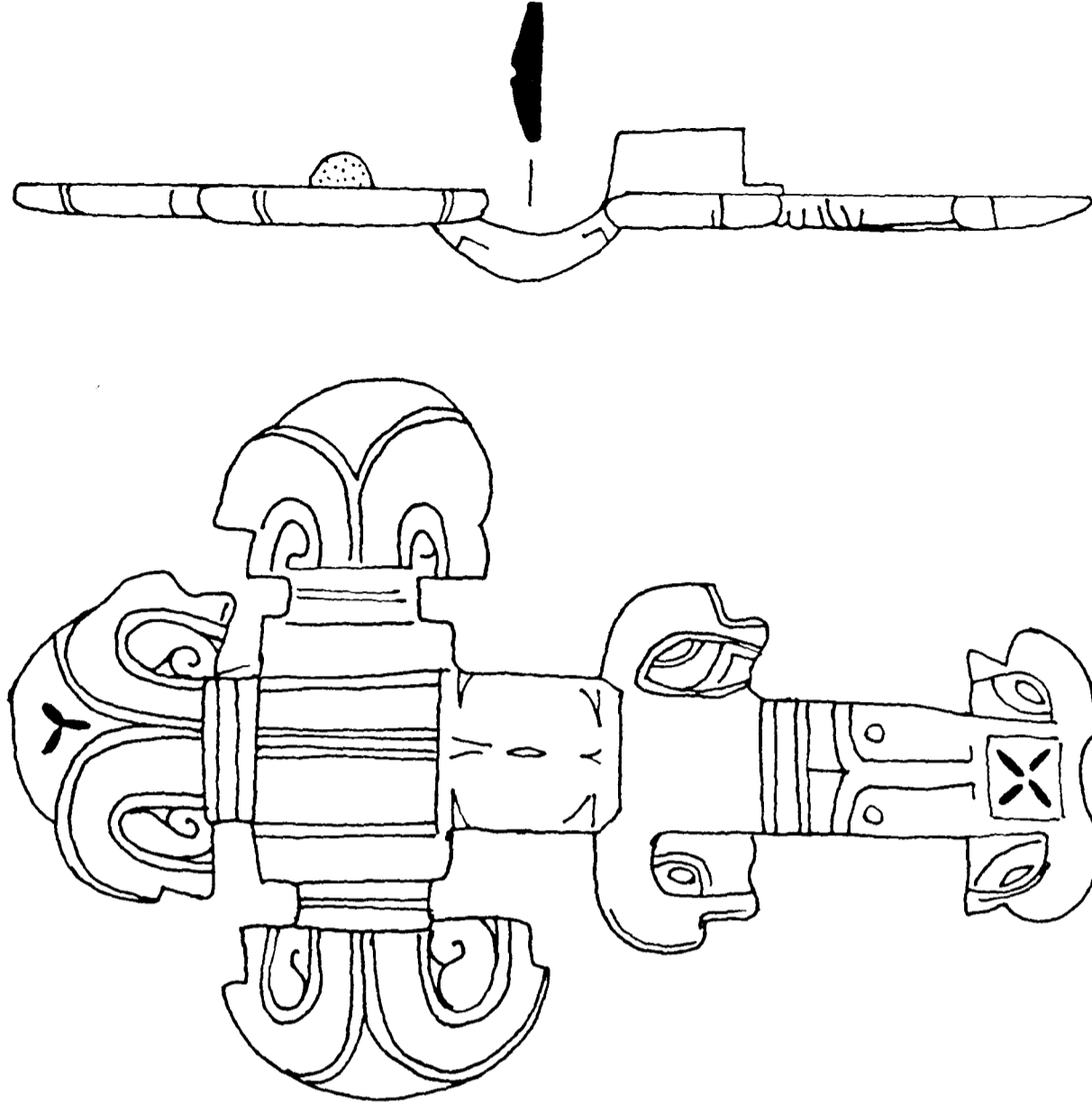


Fig 2.57 Ruskington 8 Type Z2b

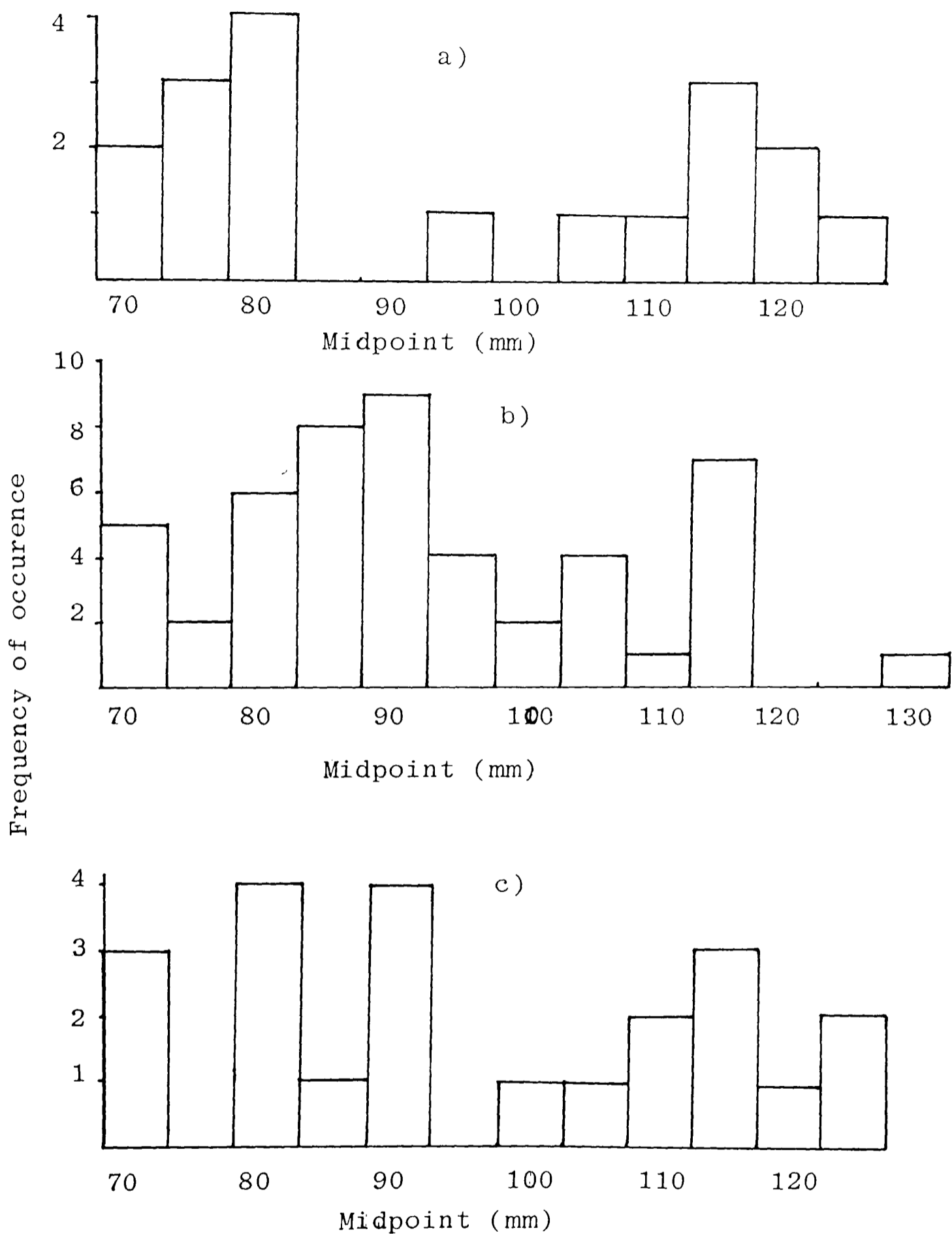


Fig 2.58 Lengths of type B brooches a) B1, b) B2, c) B3

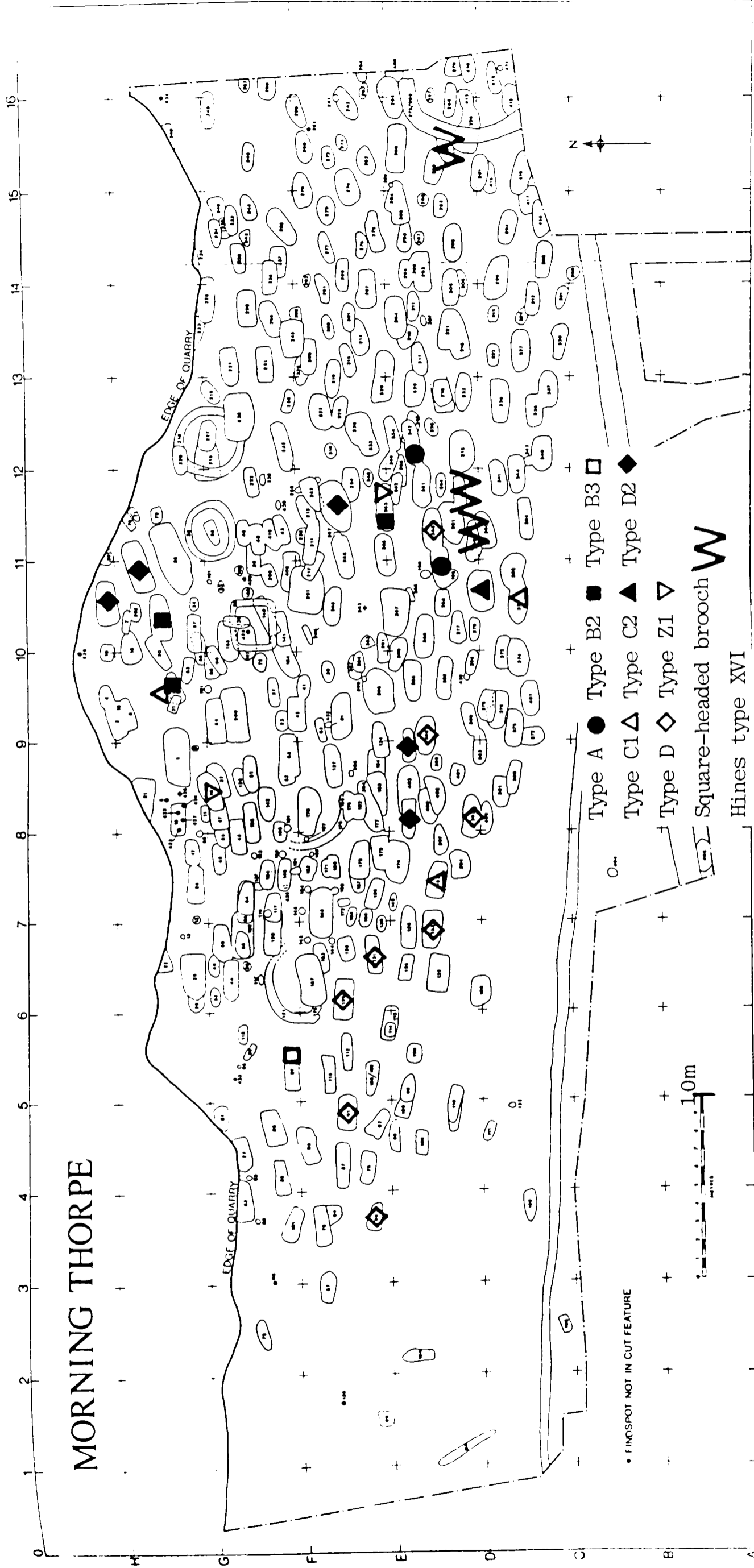


Figure 5 Plan of excavation.

Fig 2.60 Plan of Morning Thorpe cemetery, with cruciform and square-headed brooches  
From Green et al (1987) fig 5

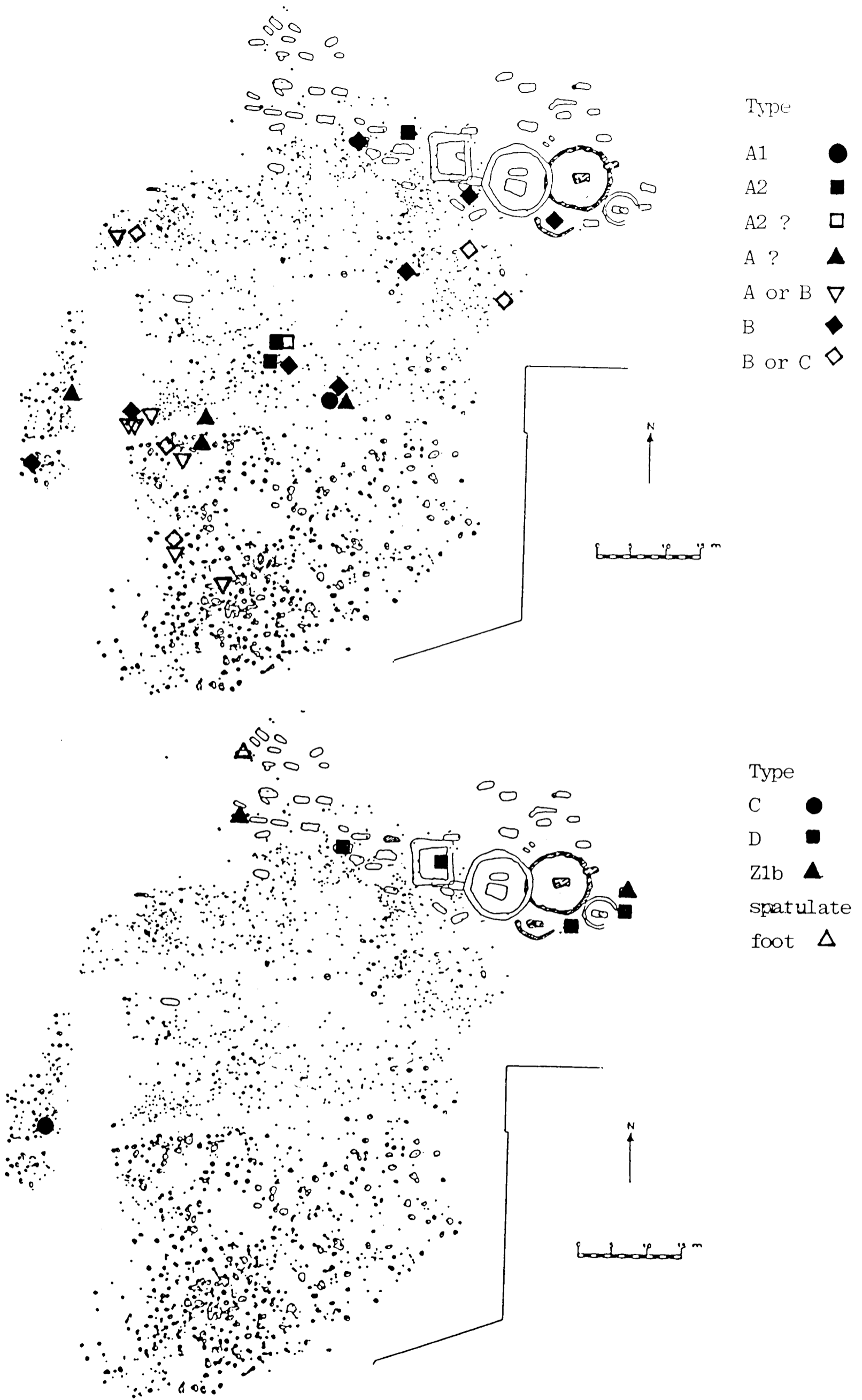


Fig 2.61 Spong Hill plan - distribution of cruciform brooches

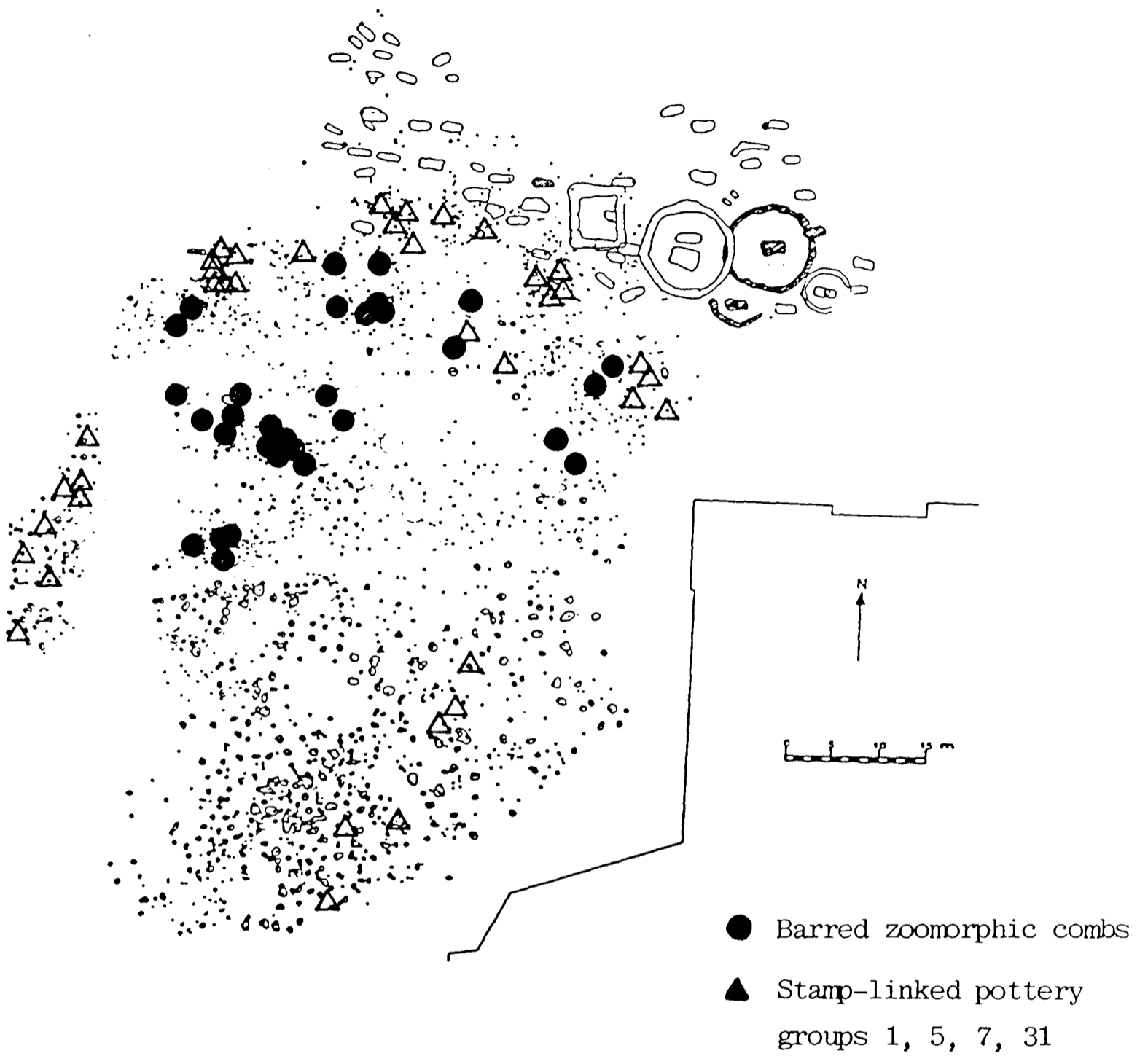


Fig 2.62 Spong Hill plan - distribution of barred zoomorphic combs and stamp-linked pottery groups

References : Hills and Penn 1981, 20  
 Hills 1981, 125

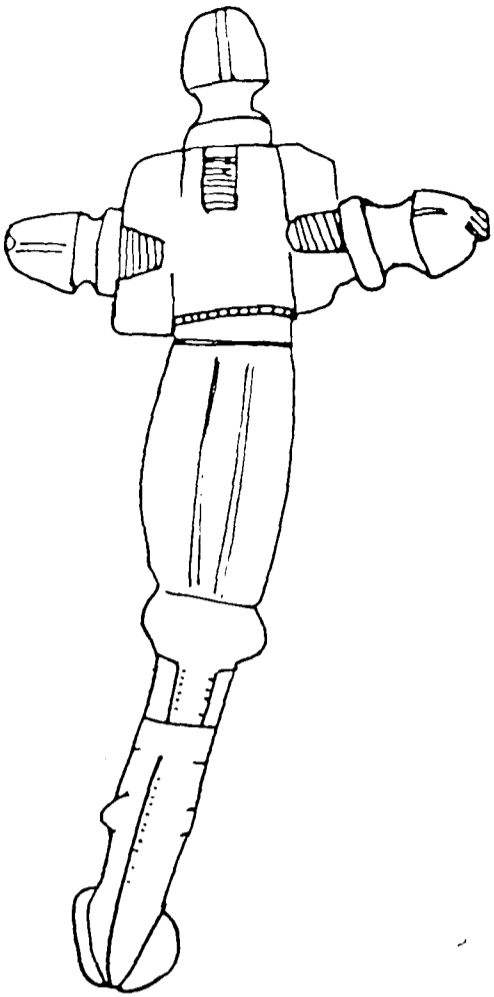


Fig 2.63 Borgstedt,  
Schleswig-Holstein  
KS 4024e

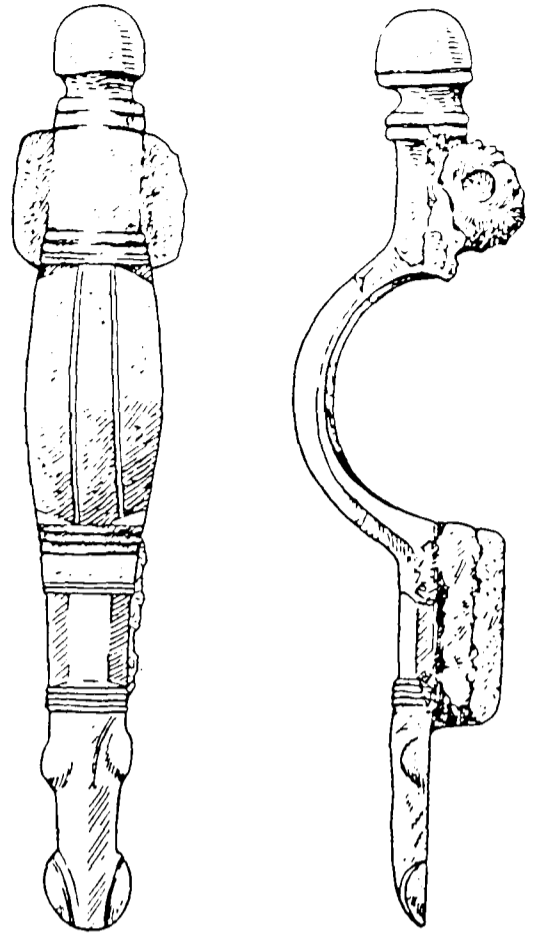


Fig 2.64 Bornwird, Frisia  
sl. larger than 1:1

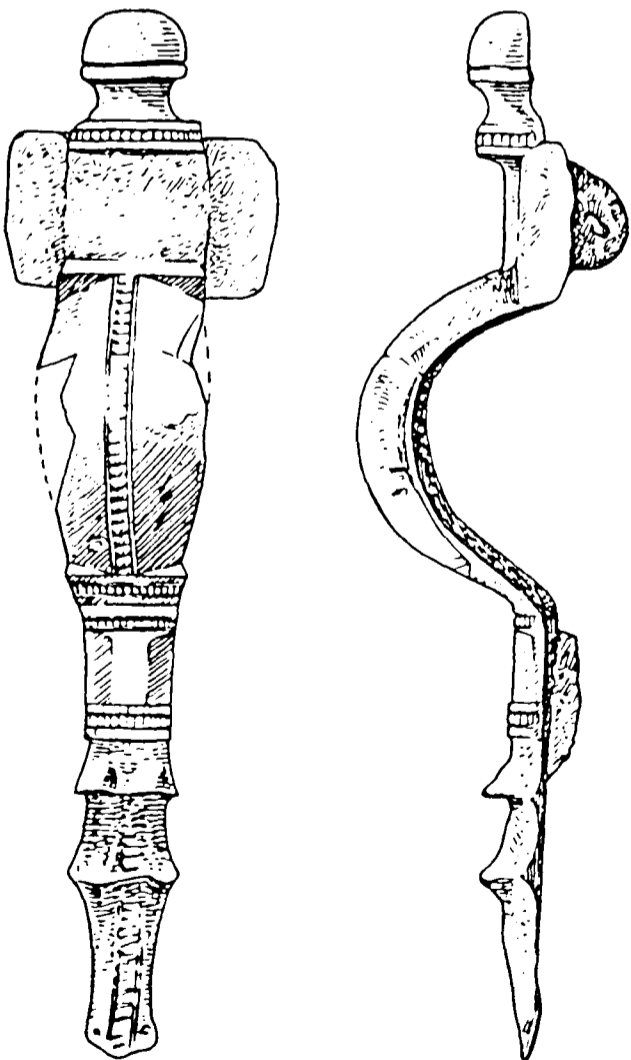


Fig 2.65 Bornwird, Frisia  
sl. larger than 1:1

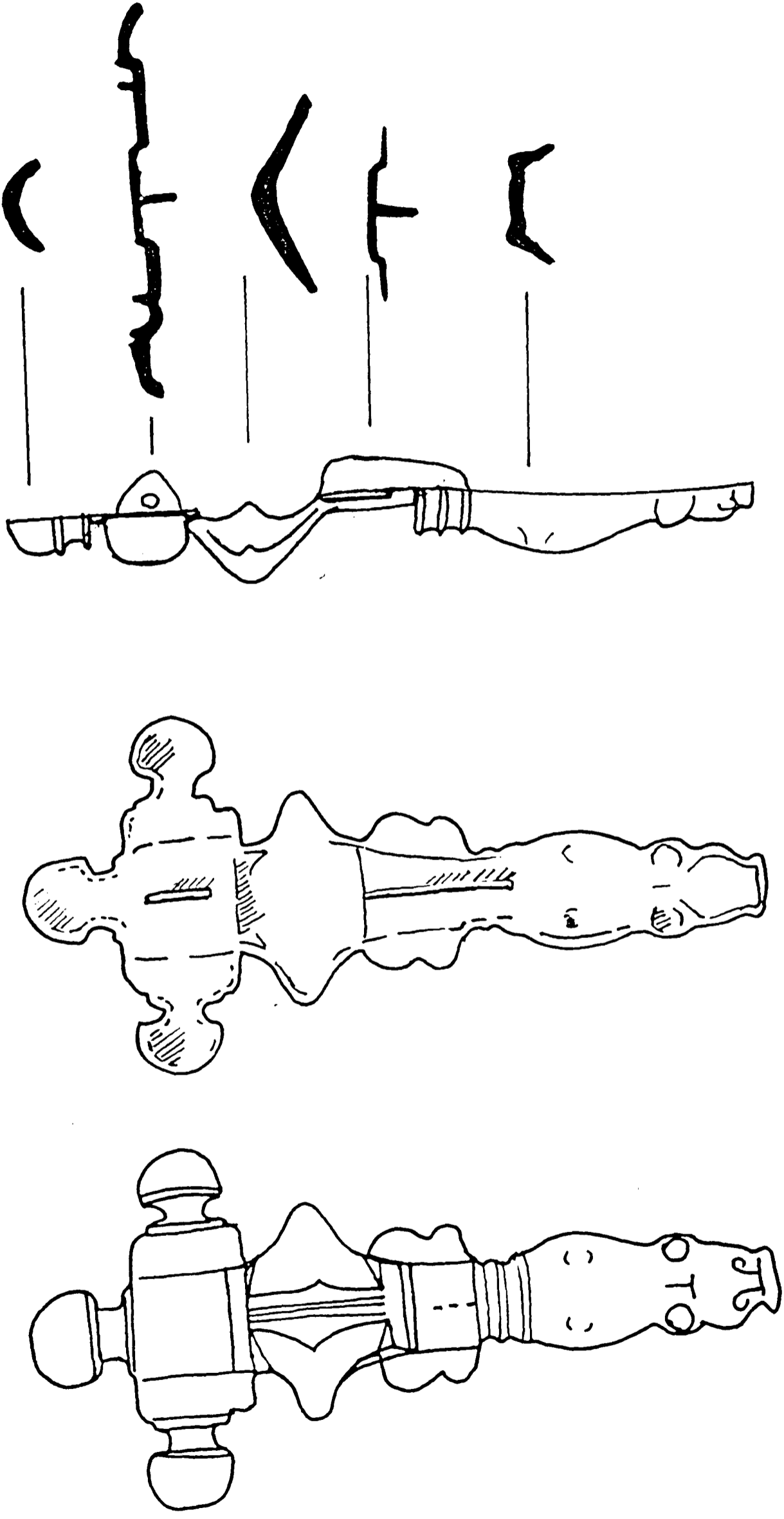


Fig 2.66 Typical Reichstein Typ Mundheim variant, based on a brooch from Sagland, Helleland pgd, Rogaland, Norway. Front, reverse, profile and various cross-sections

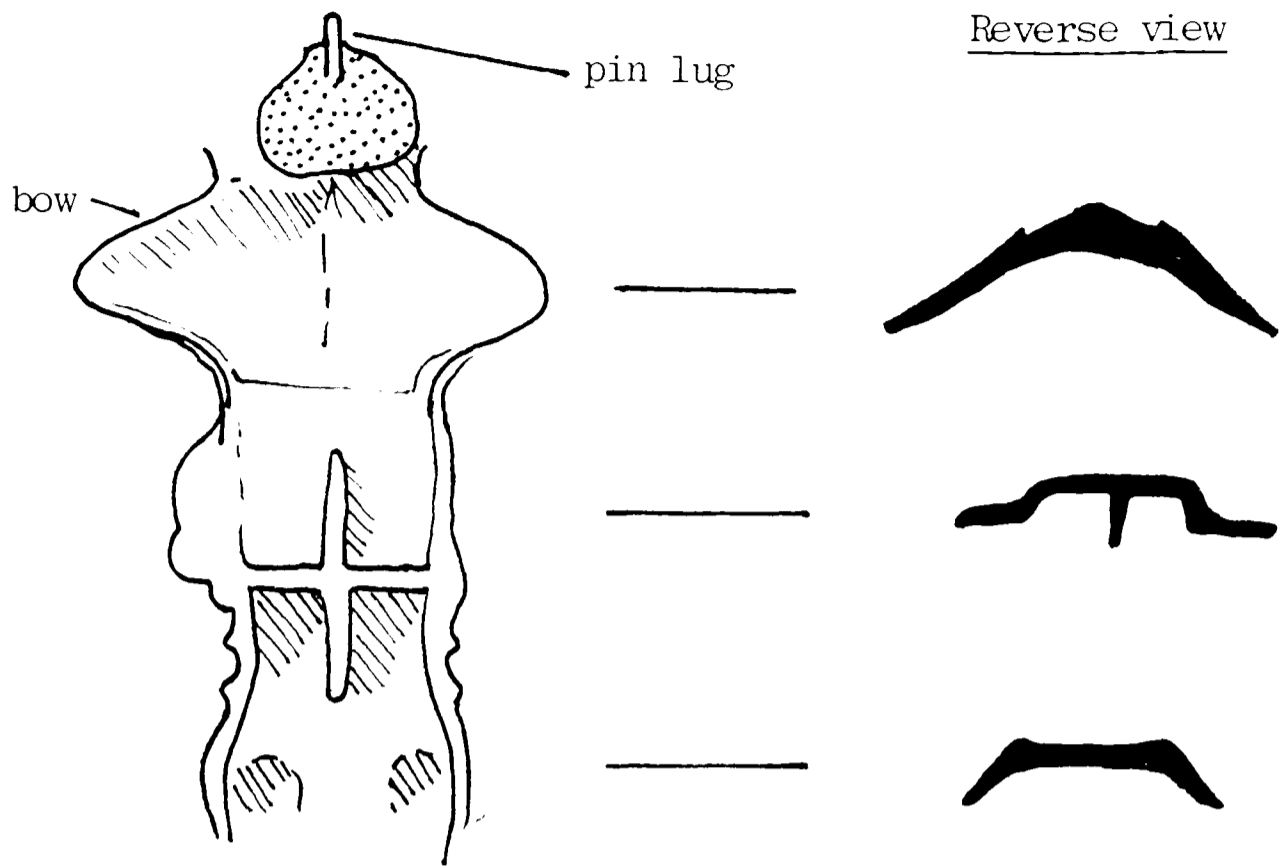
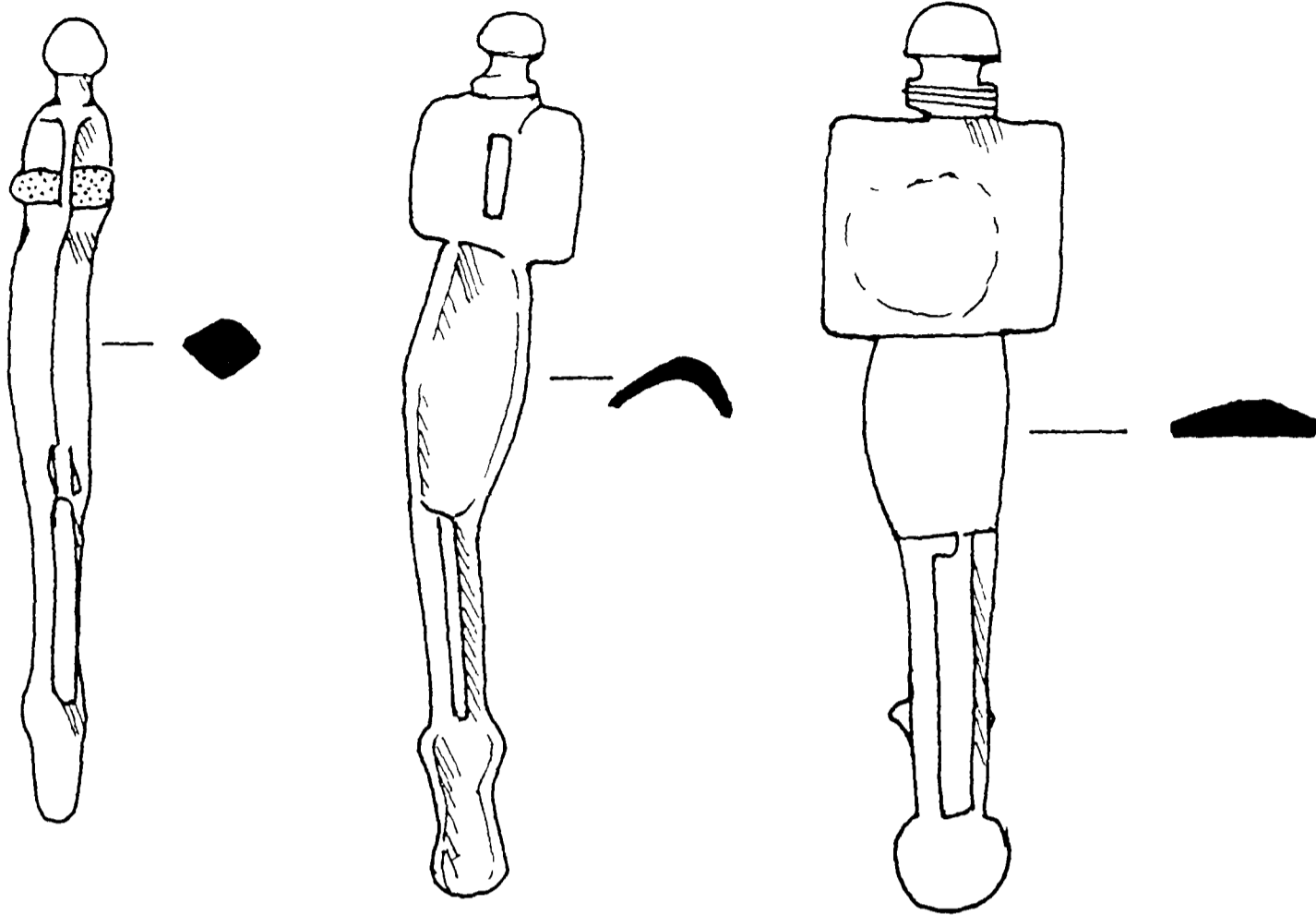


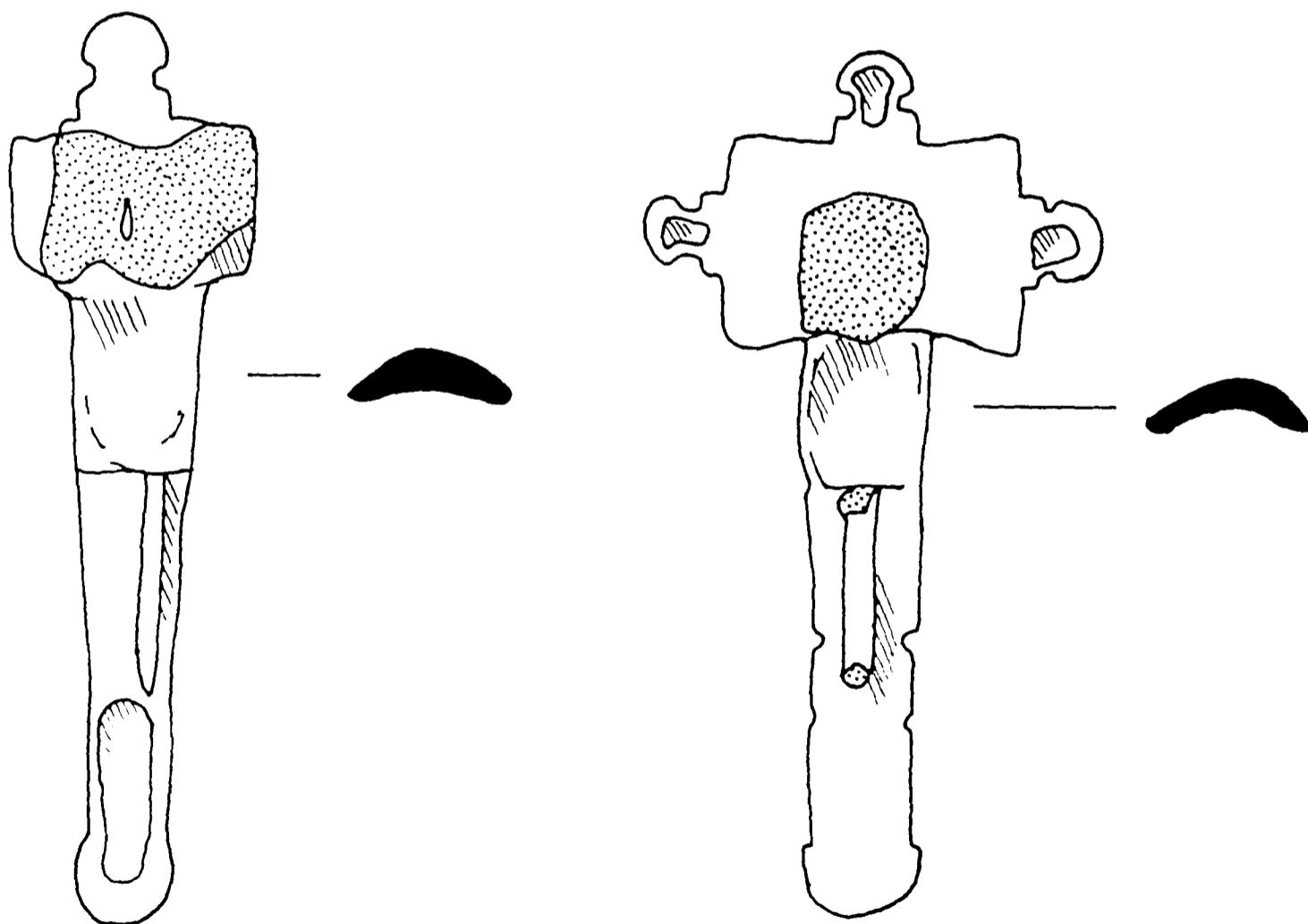
Fig 2.67 Unusual catch construction. Nøding Holme, VA, Norway,  
Oslo C8891. Reichstein (1975) Typ Mundheim



Glentham 1 (type A1)

Bifrons G23 (type A3?)

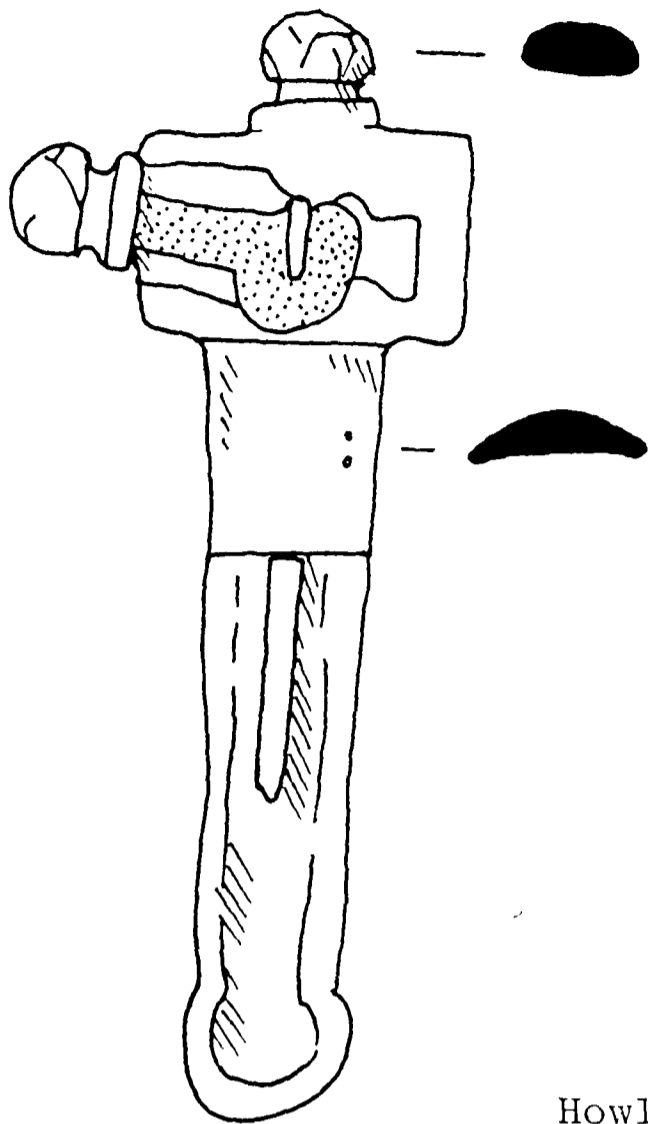
Barrington A 11 (type A2)



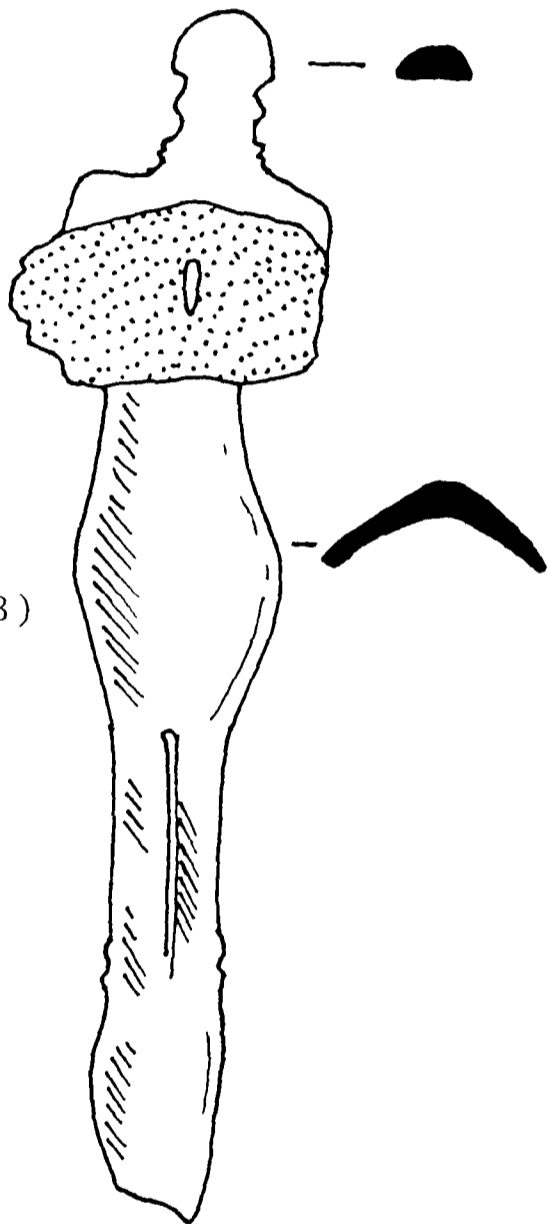
Baginton 2 (small type B2)

Ancaster (small type B2)

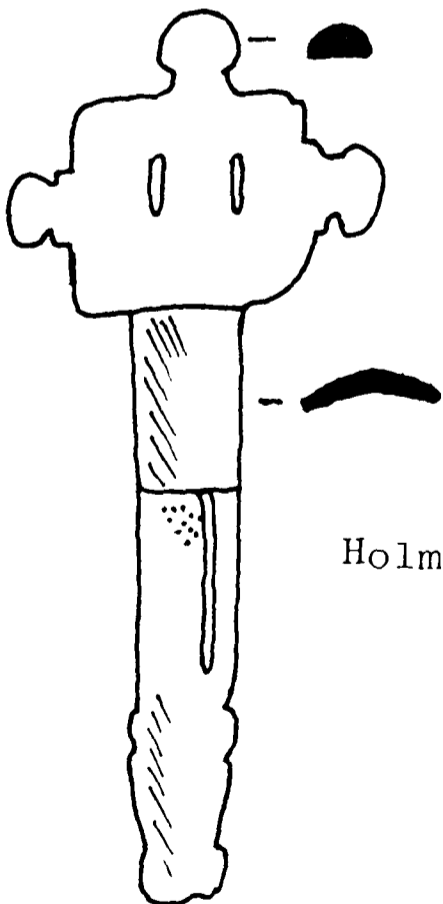
Fig 3.1 Reverse and bow sections of type A and B brooches (not to scale)



Bifrons 1 (small type B2)

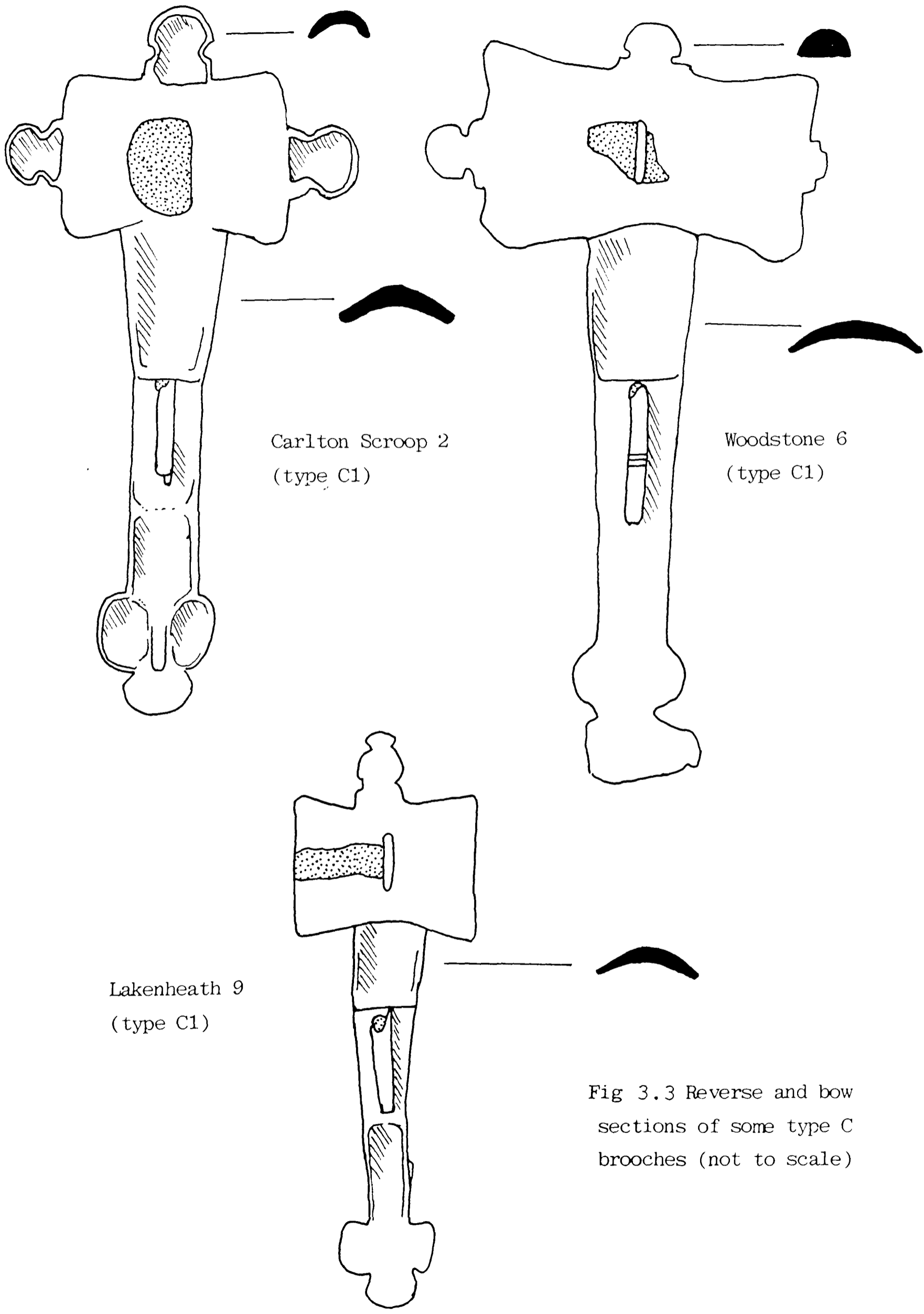


Howletts 2  
(assoc. small type B)



Holme Pierpoint 6 (small type B2)

Fig 3.2 Reverse and bow of some unusual type B brooches (not to scale)

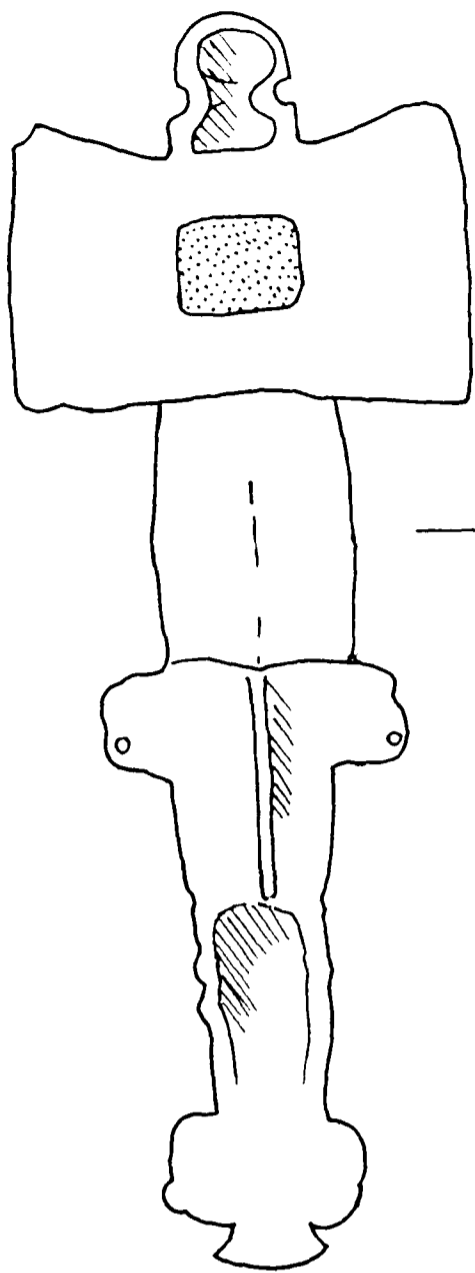


Carlton Scroop 2  
(type C1)

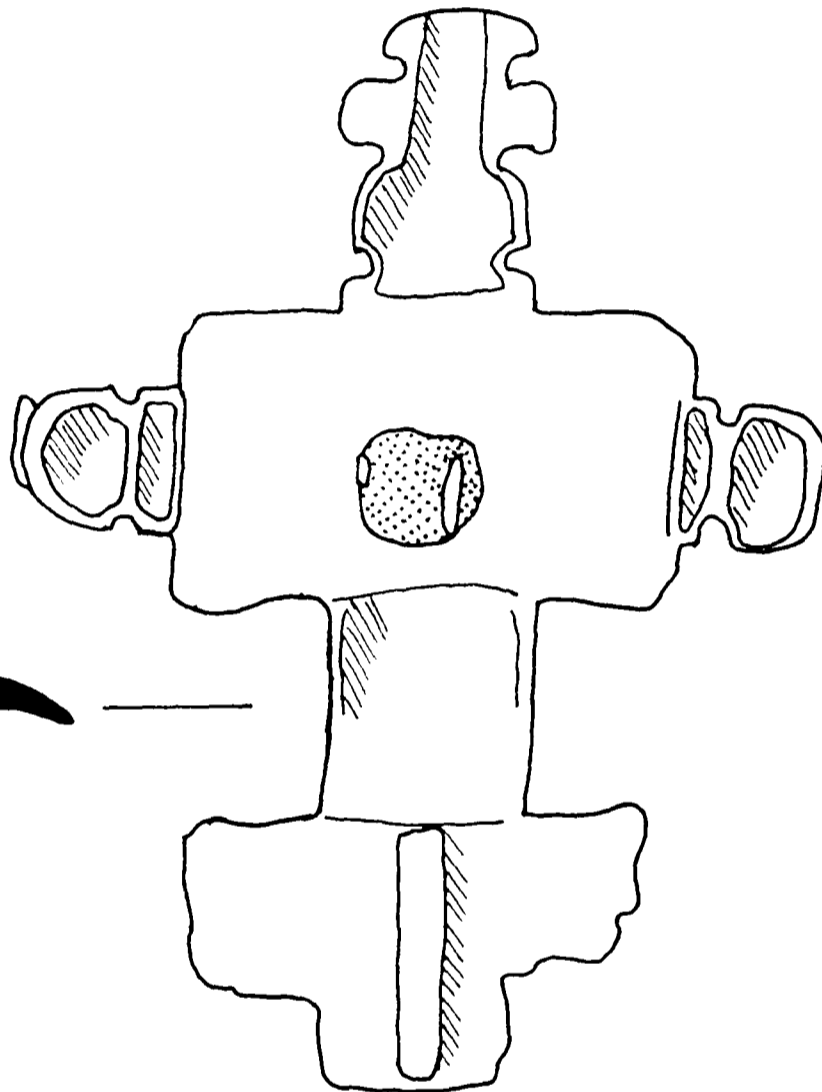
Woodstone 6  
(type C1)

Lakenheath 9  
(type C1)

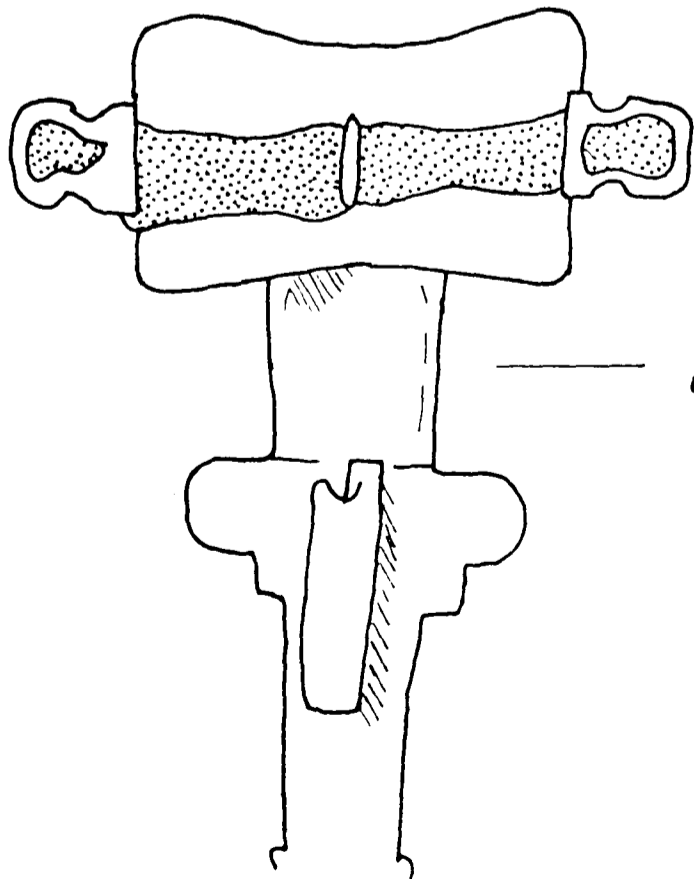
Fig 3.3 Reverse and bow sections of some type C brooches (not to scale)



Haslingfield 9 (type D6a)



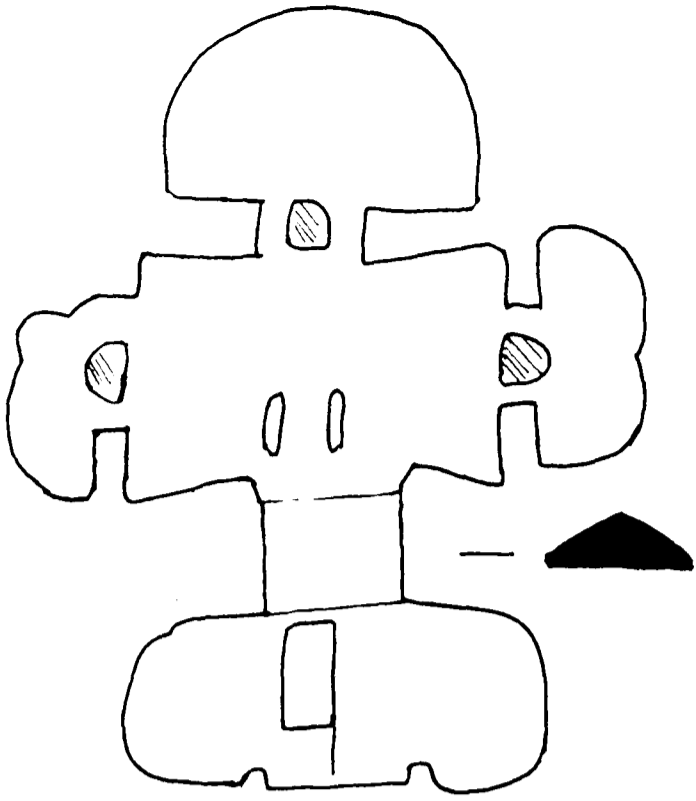
Holme Pierpoint 4  
(type D5a)



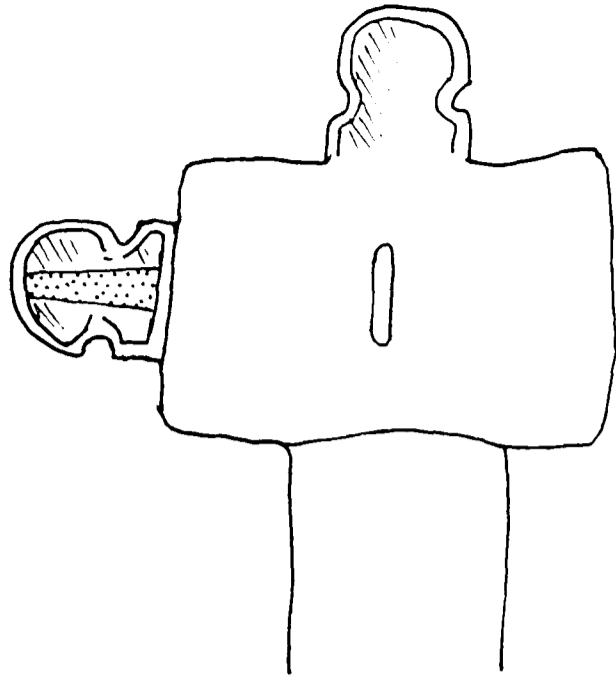
Holywell Row G99(1) (type D2)



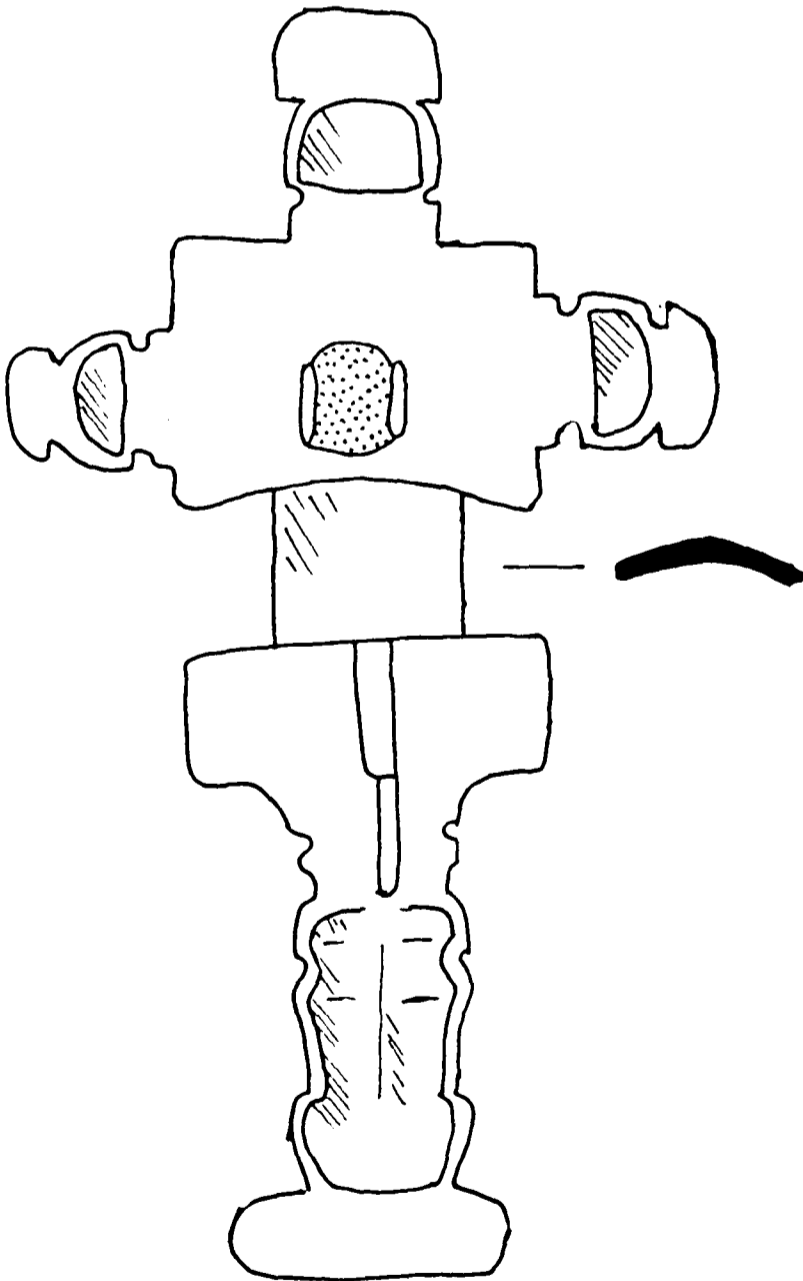
Fig 3.4 Reverse and bow sections of  
some type D brooches (not to scale)



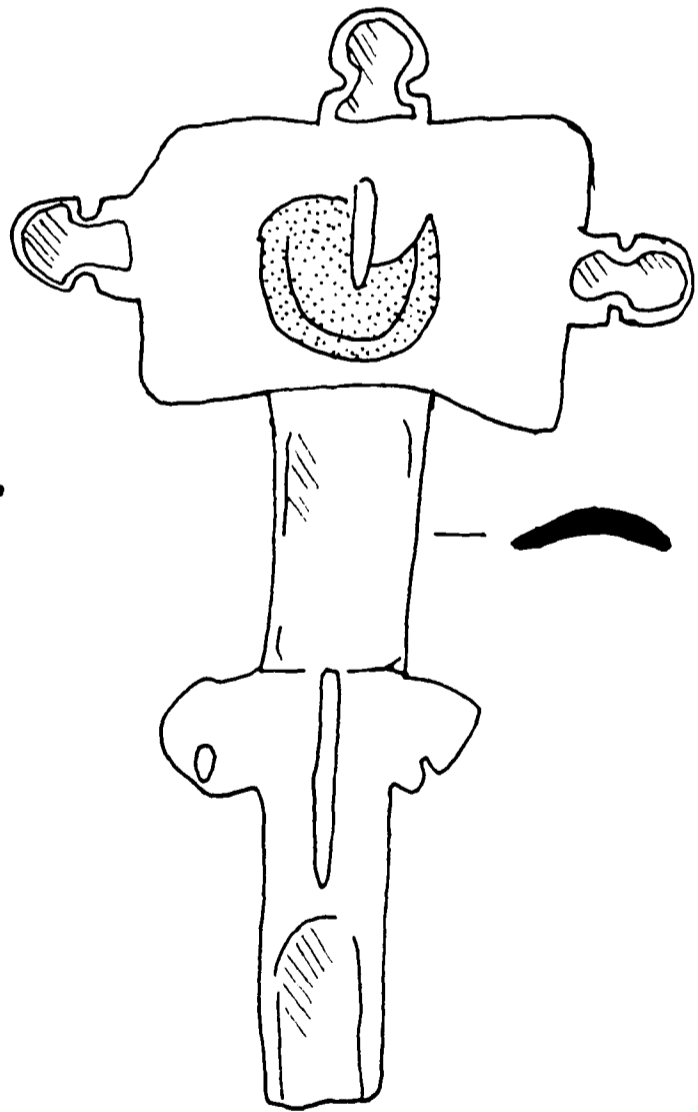
Nassington 6 (type D2?)



Ruskington 1 (type D5)

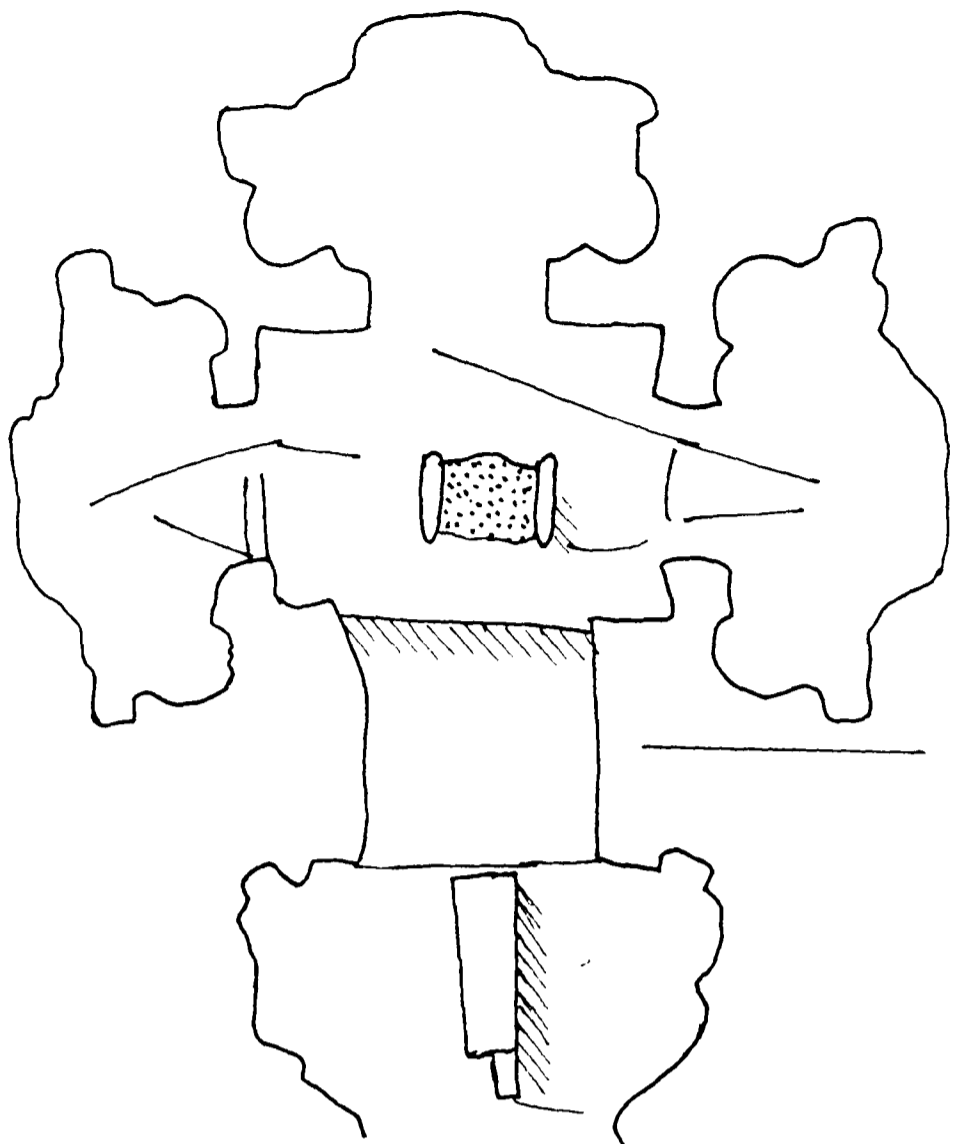


Tuddenham 2 (type D5)

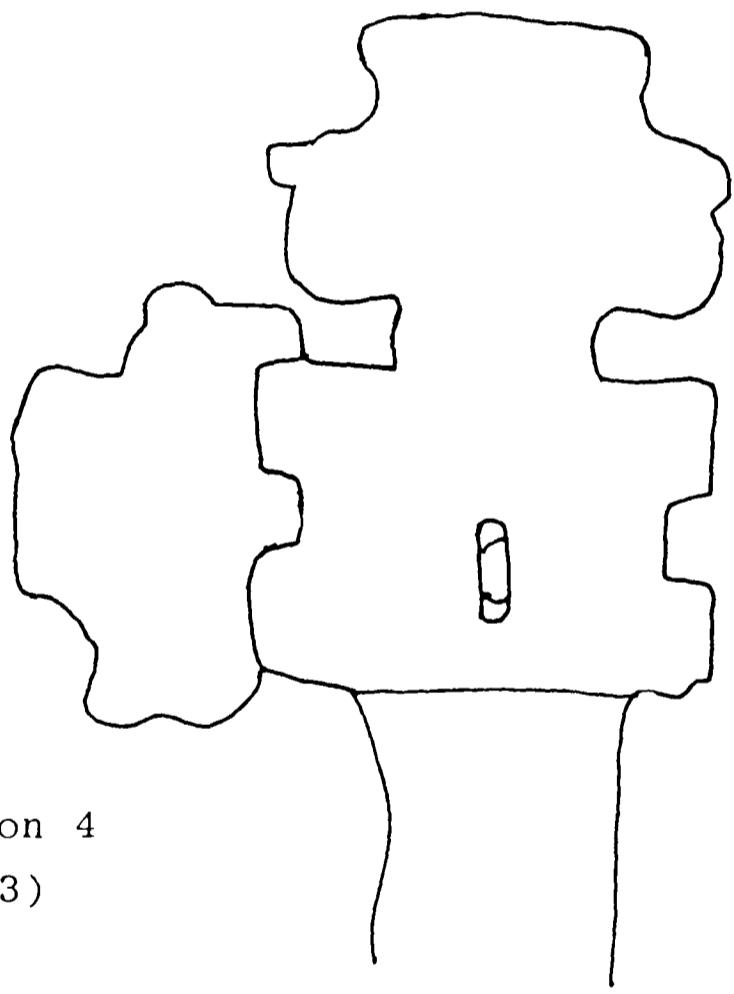
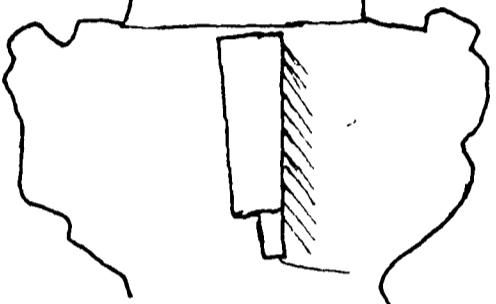


Woolsthorpe-by-Belvoir 2  
(associated with type D)

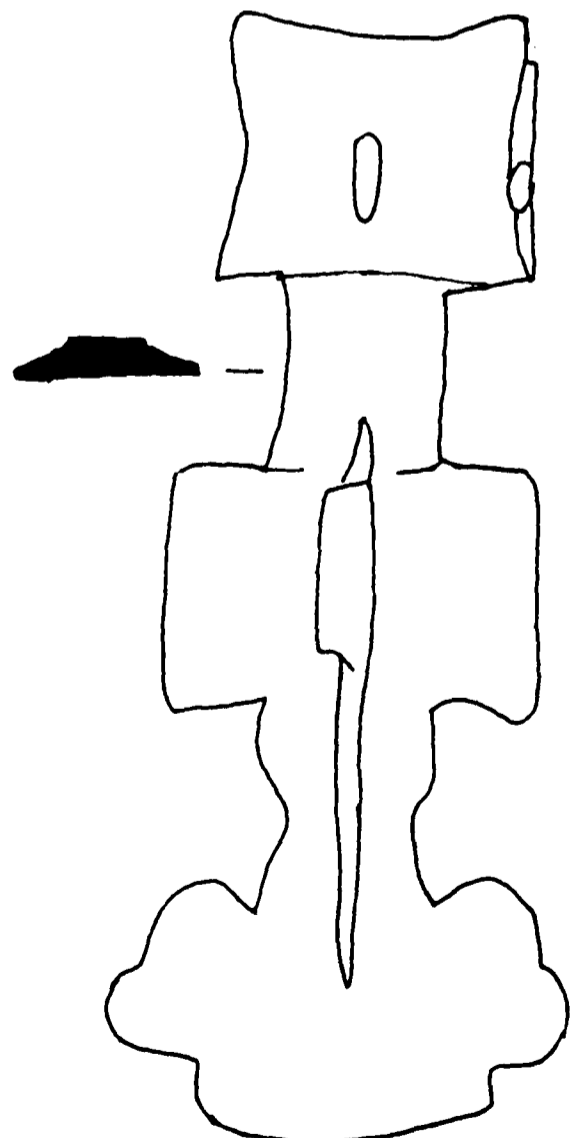
Fig 3.5 Reverse and bow sections of some type D brooches (not to scale)



Mitchell's Hill 2  
(type Z1a)

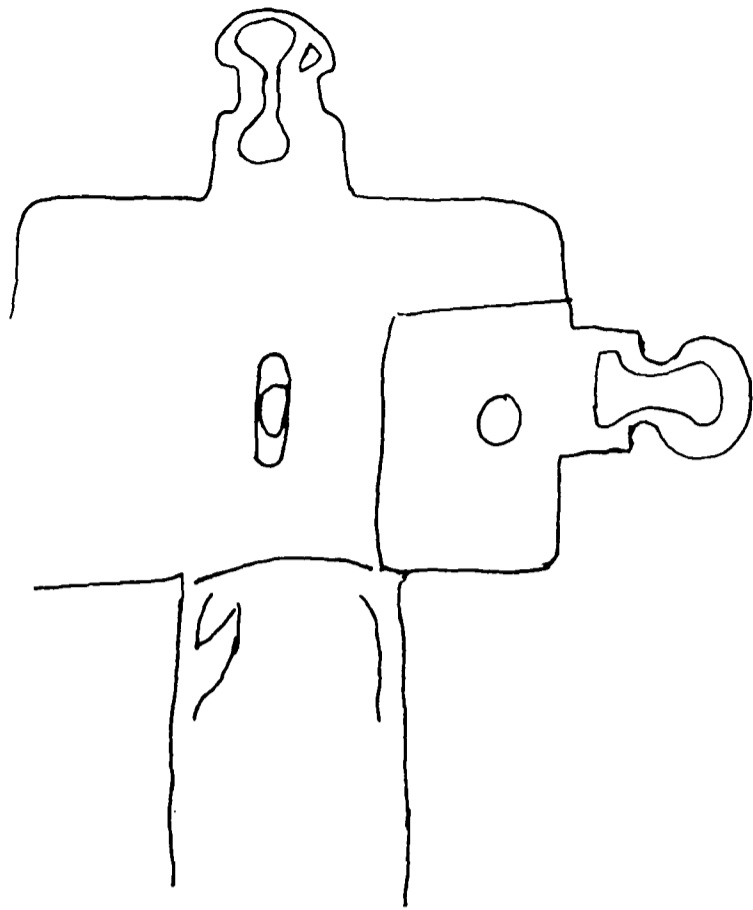


Lakenheath 8 (type Z1a)

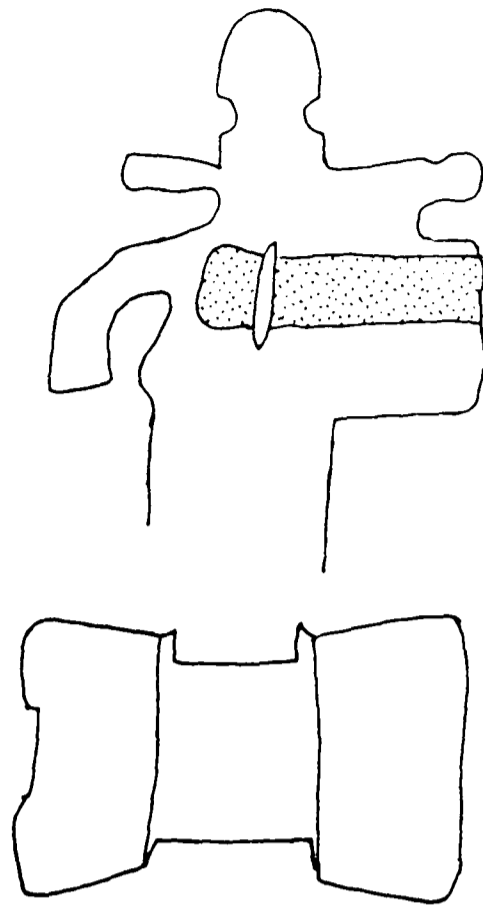


Baginton 4  
(type Z3)

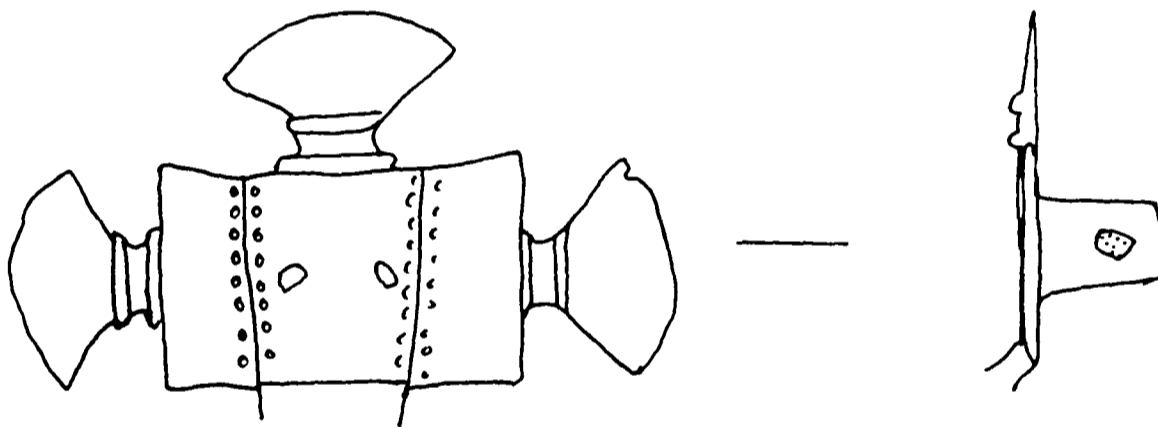
Fig 3.6 Reverse and bow sections  
of some type Z brooches (not  
to scale)



St Johns 10 (type D3)

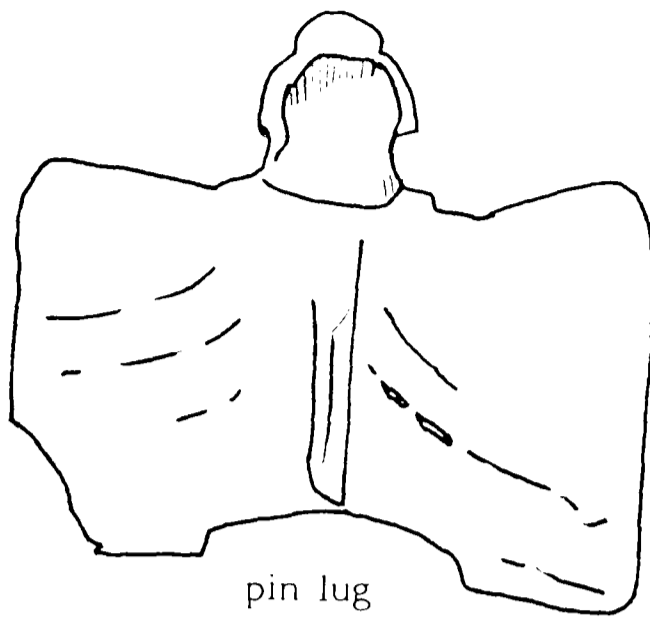


Holywell Row G99(2) (type D2)

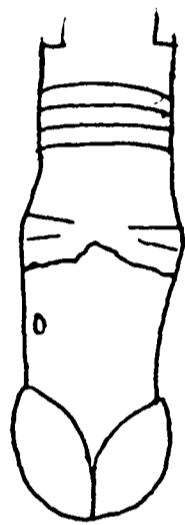


Barrington A 6 (type D3)

Fig 3.7 Mends on cruciform brooches



a) Partney 2 - reverse of casting  
 n.b. unequal thickness of topknob edges, as well as lines of corrosion

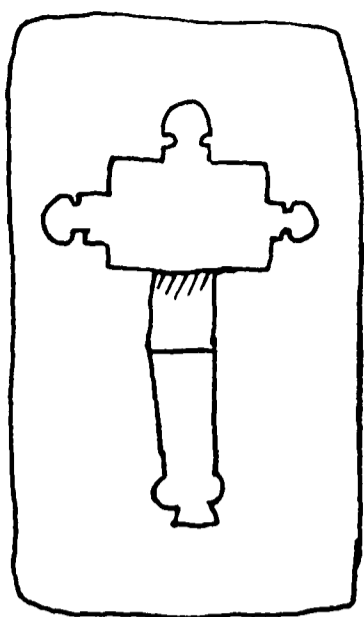


b) Goldbury Hill - front of casting

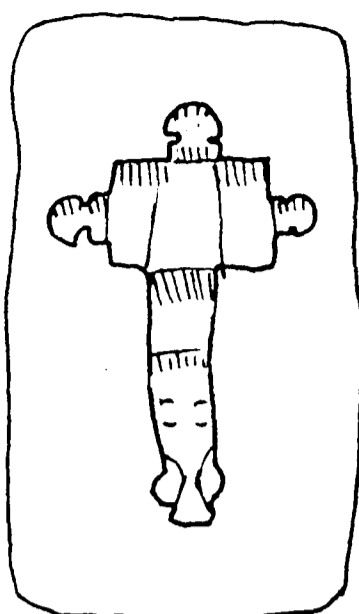
← point of join

Fig 3.8 Direction of casting a) from top knob  
 b) from foot

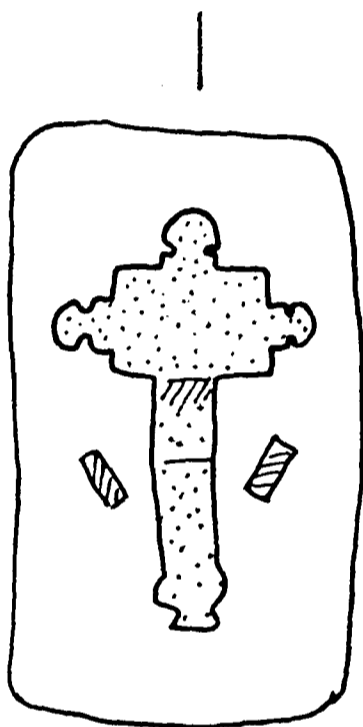
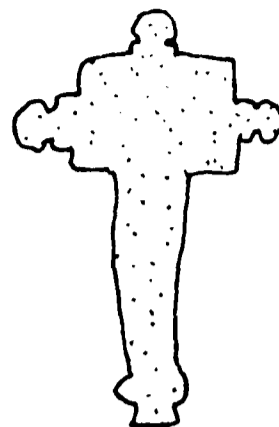
(Not to scale)



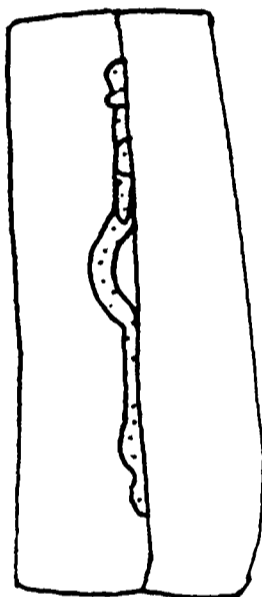
a)



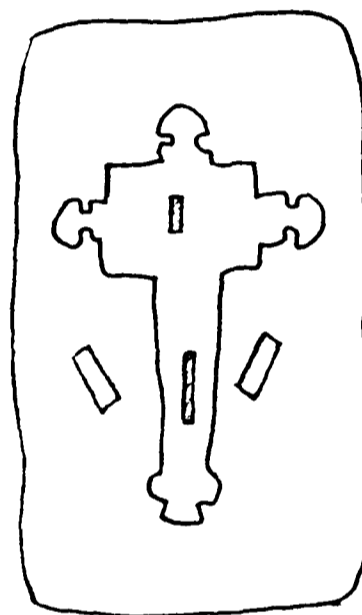
b)



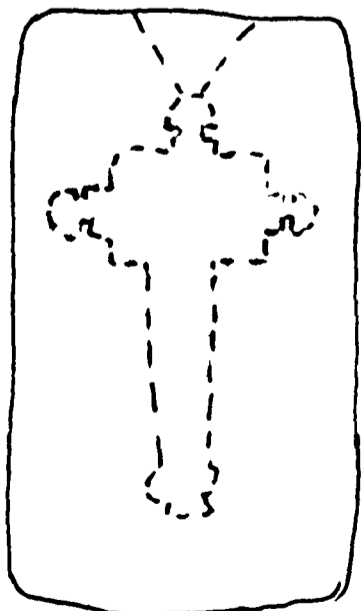
c)



d)




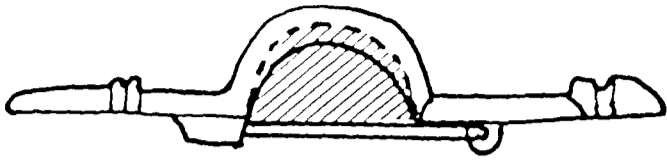
e)



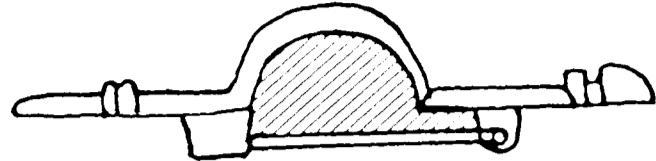
f)

Fig 3.9 Combination casting technique a) impress model into front half of mould, b) remove model, use impression to make wax secondary model (for pair) or c) run wax into impression, forming a thin layer (Norway) or a thicker layer (England), d) (cross-section) apply back of mould, e) remove back half, cut into mould to form pin lug and catch areas, f) reassemble, lute together with clay, form ingate, heat to melt out wax

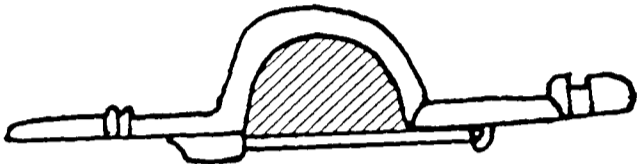
 wax



a) increased hollow behind bow



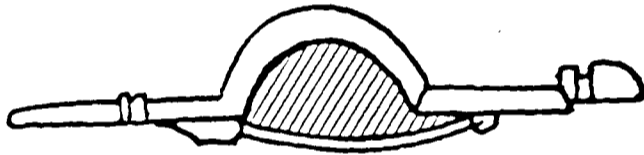
b) increased height of pin lug and catch



c) higher bow



d) increased distance between pin lug and catch



e) curved pin

Fig 3.10 Possible methods of increasing area for cloth under bow

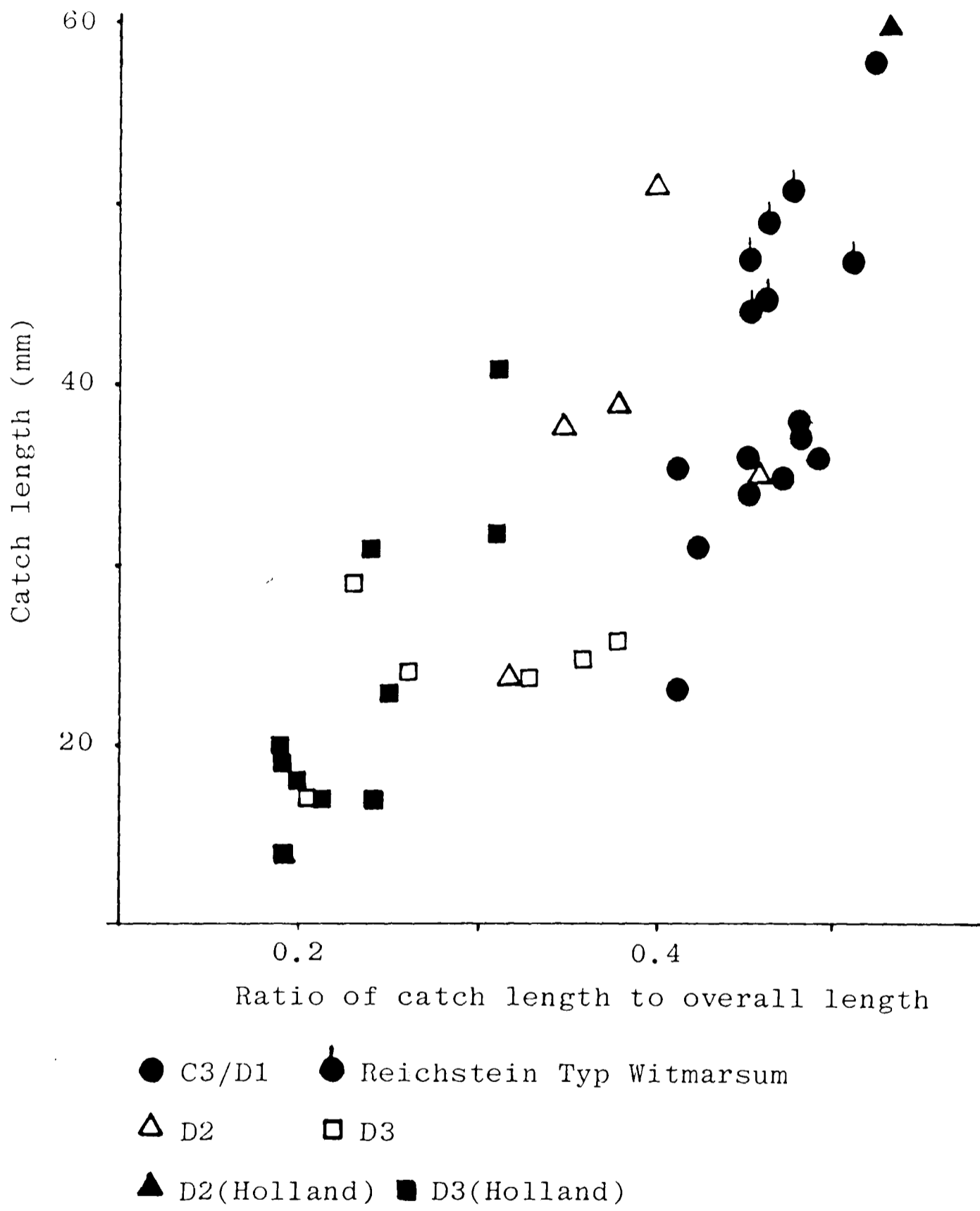


Fig 3.11 Catch dimension information, Germany, Denmark and Holland

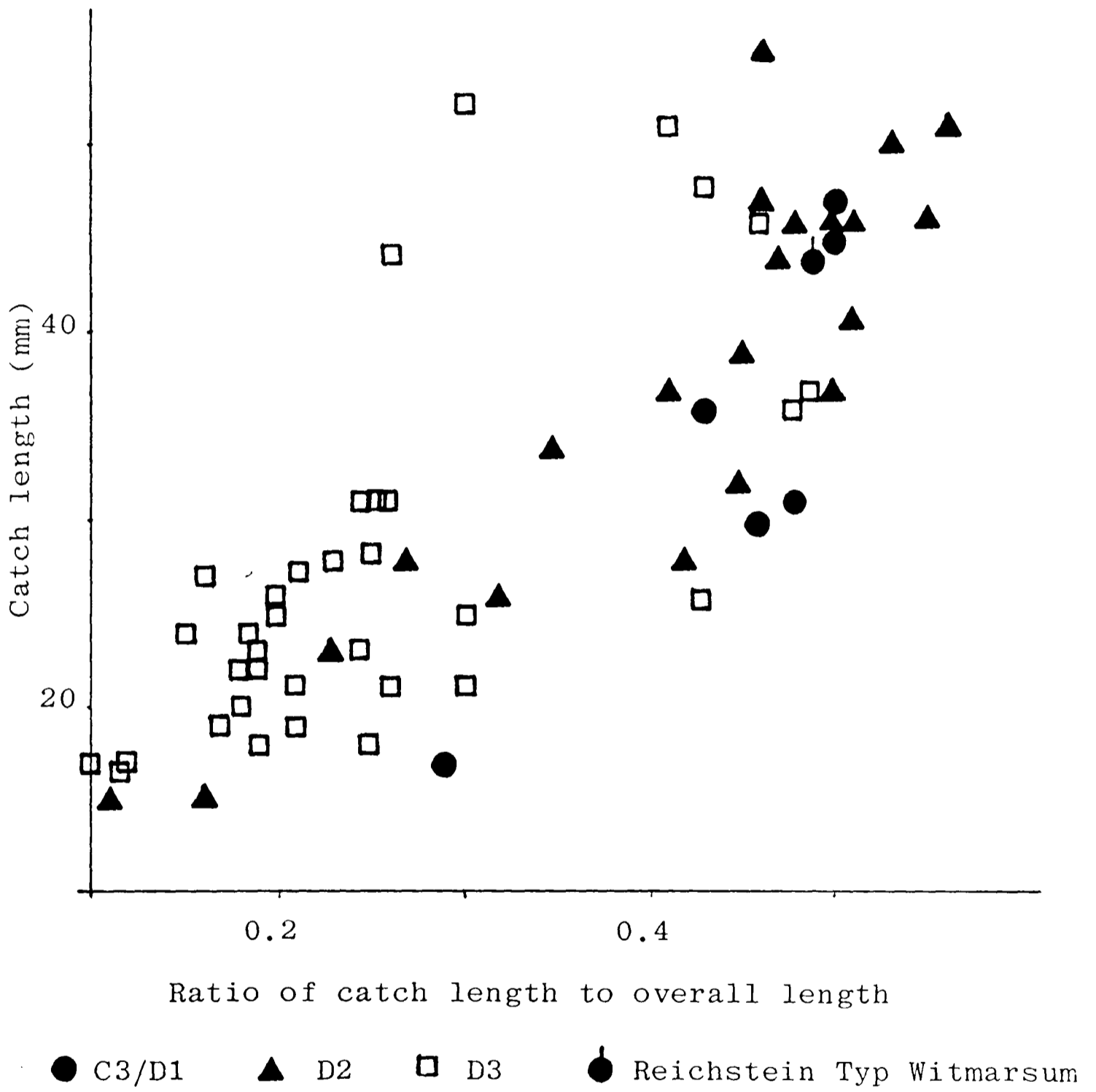
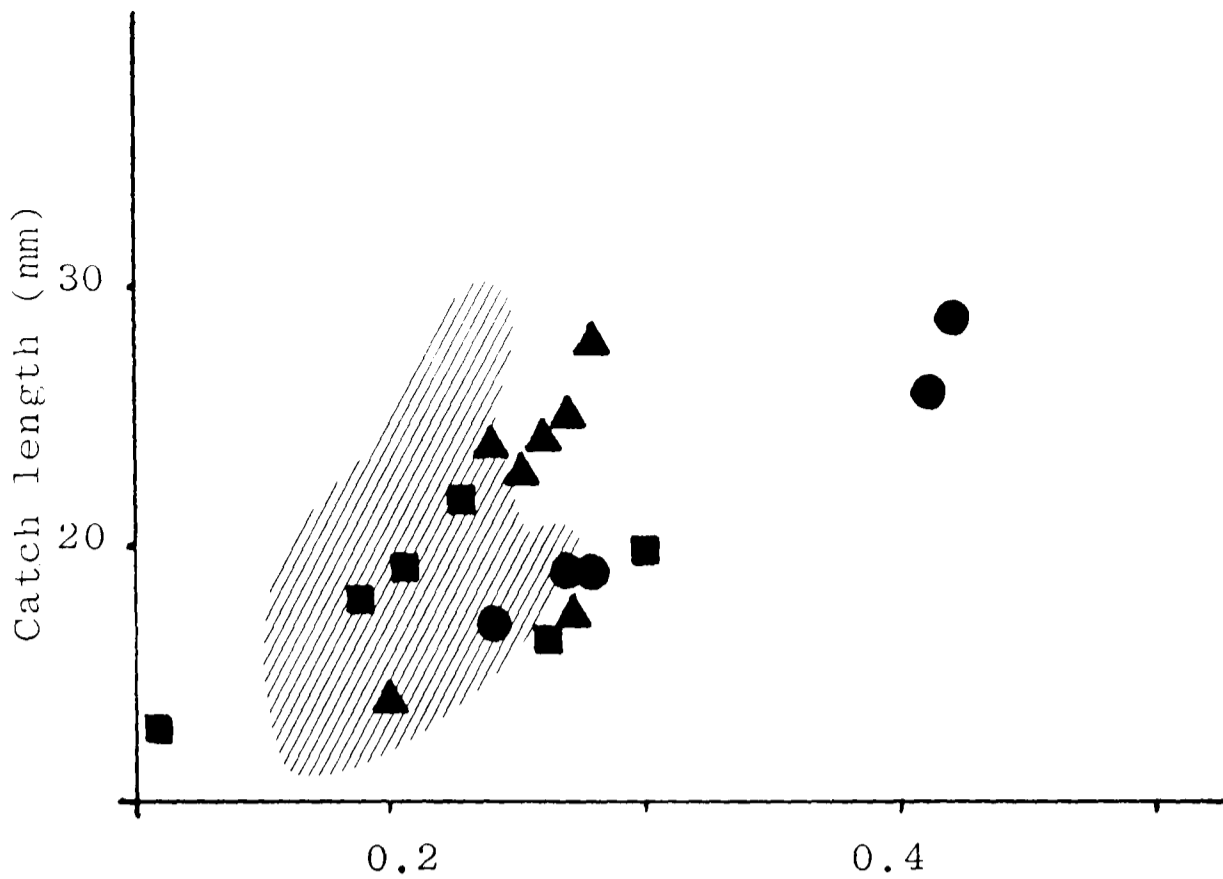
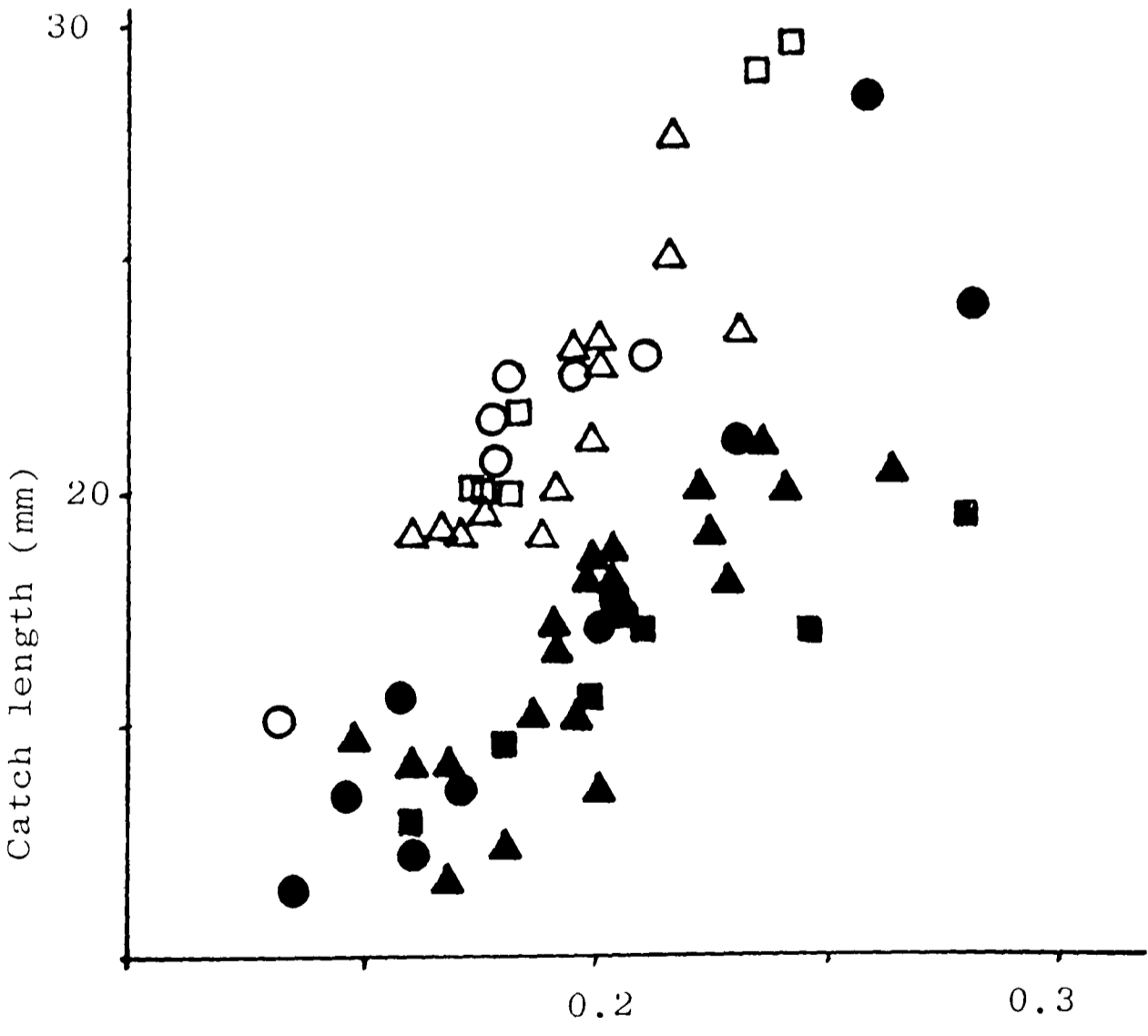


Fig 3.12 Catch dimension information, Norway and Sweden



Ratio of catch length to overall length

● A1    ▲ A2    ■ A3    ▨ Area of type B brooch information



Ratio of catch length to overall length

■ Small B1    ▲ Small B2    ● Small B3  
 □ Large B1    △ Large B2    ○ Large B3

Fig 3.13 and 3.14 Catch dimension information, English types A and B

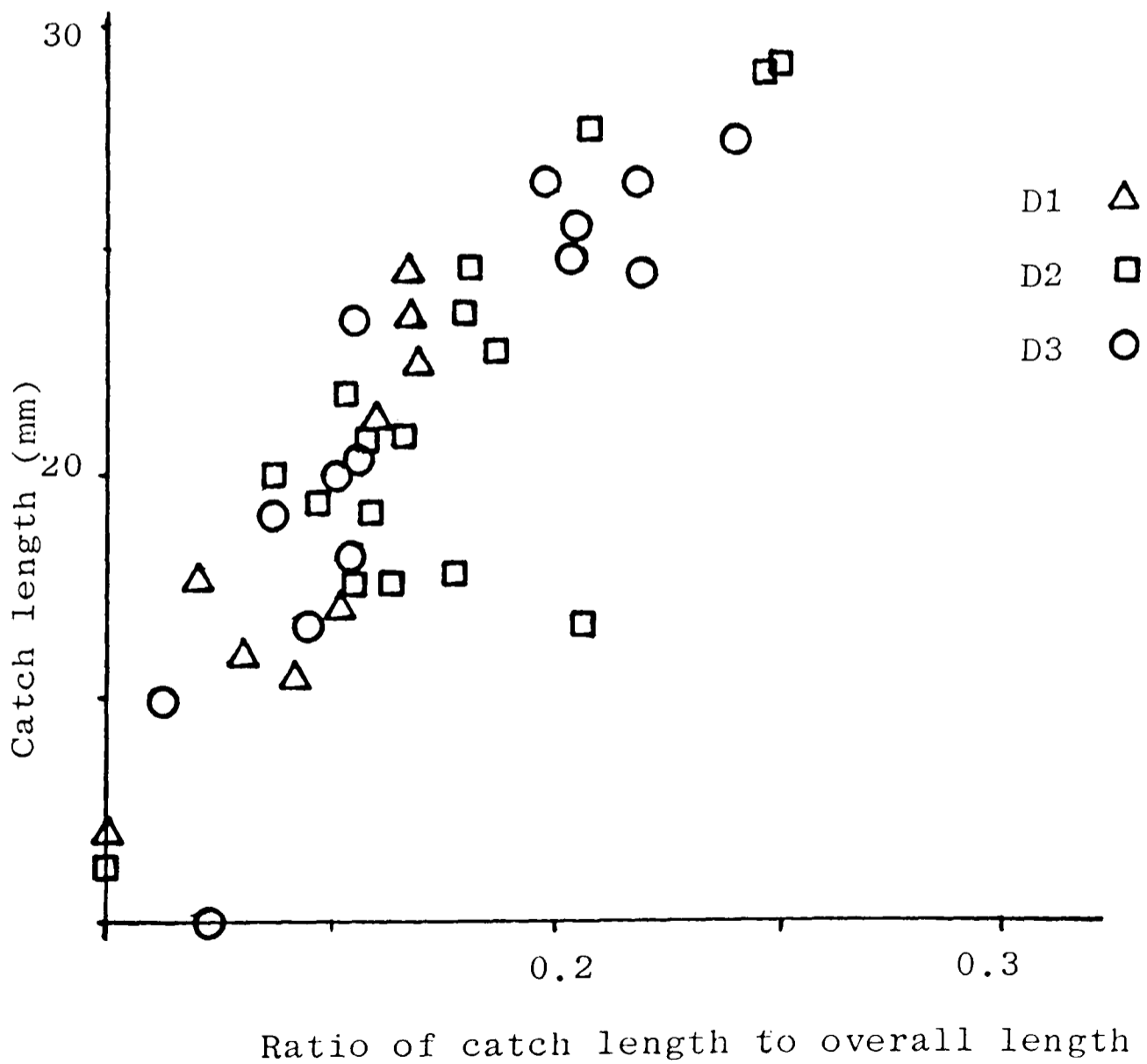
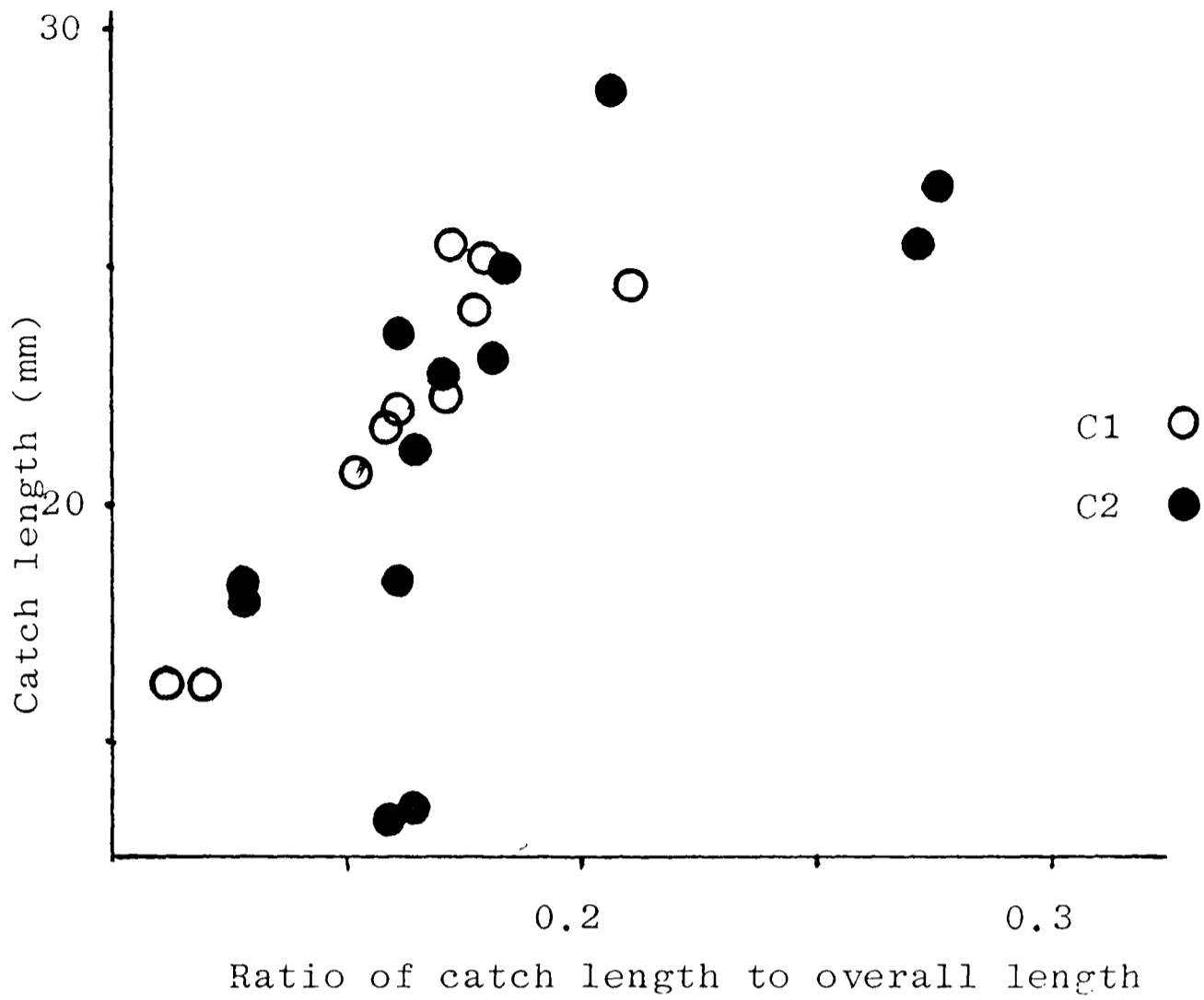


Fig 3.15 and 3.16 Catch dimension information, English types C and D

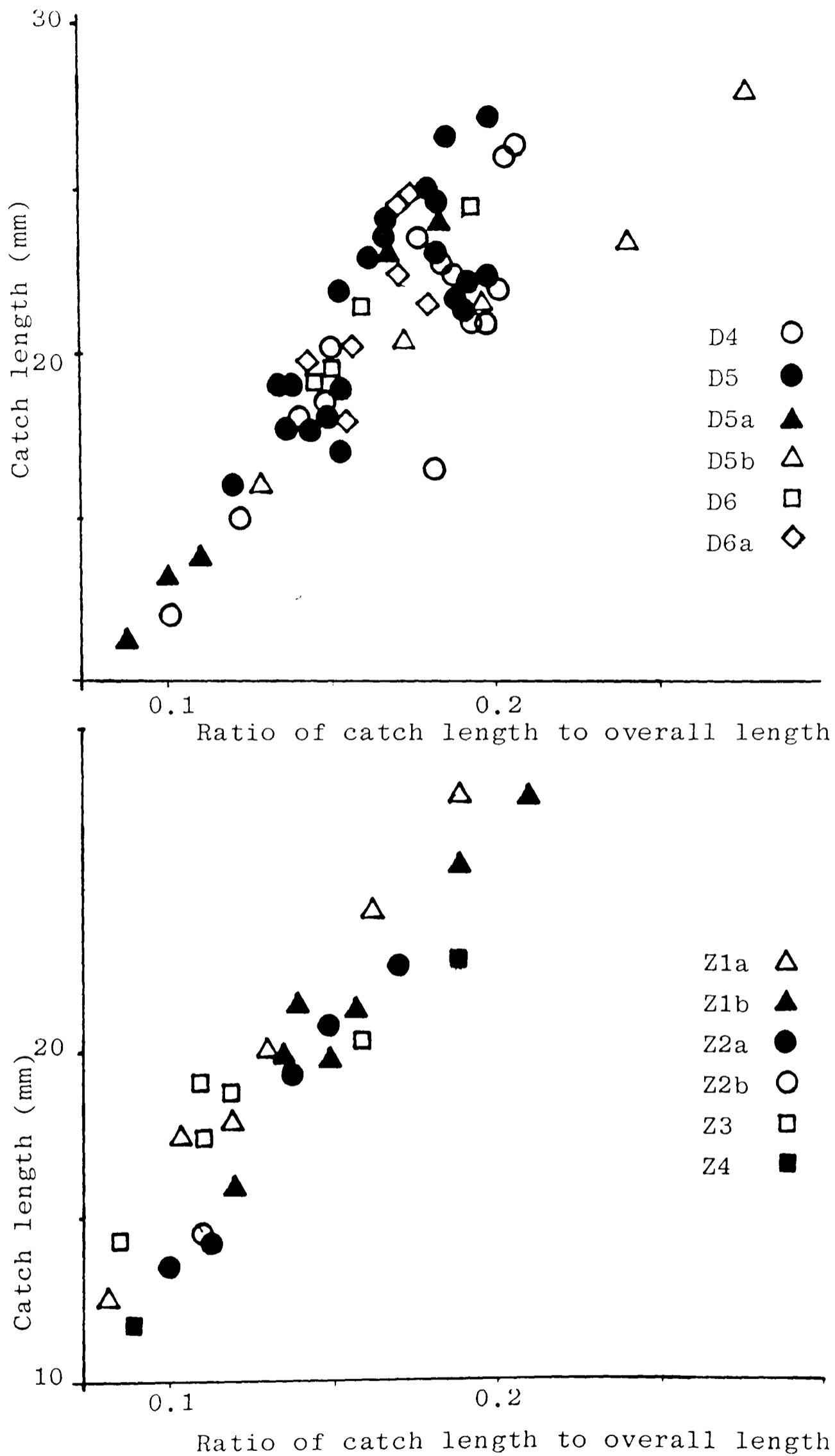


Fig 3.17 and 3.18 Catch dimension information, English types D and Z

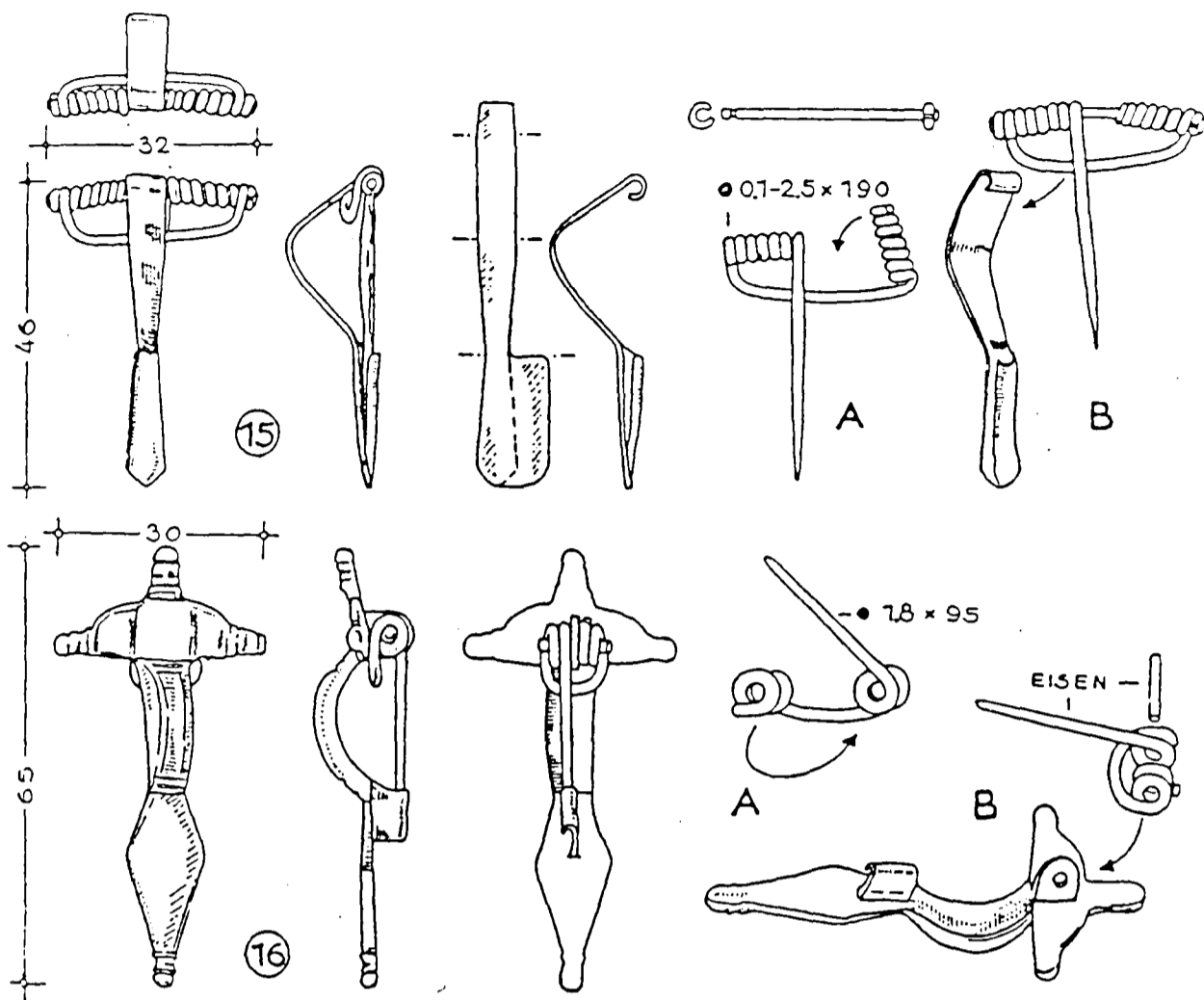


Abb. 2. Zweigliedrige Armbrustfibel aus Rebenstorf, Kr. Lüchow, Bronze (15); Bügelfibel aus Rahmstorf, Kr. Harburg, Bronze mit Eisenspirale (16). M. etwa 2 : 3.

From Drescher (1955) 345

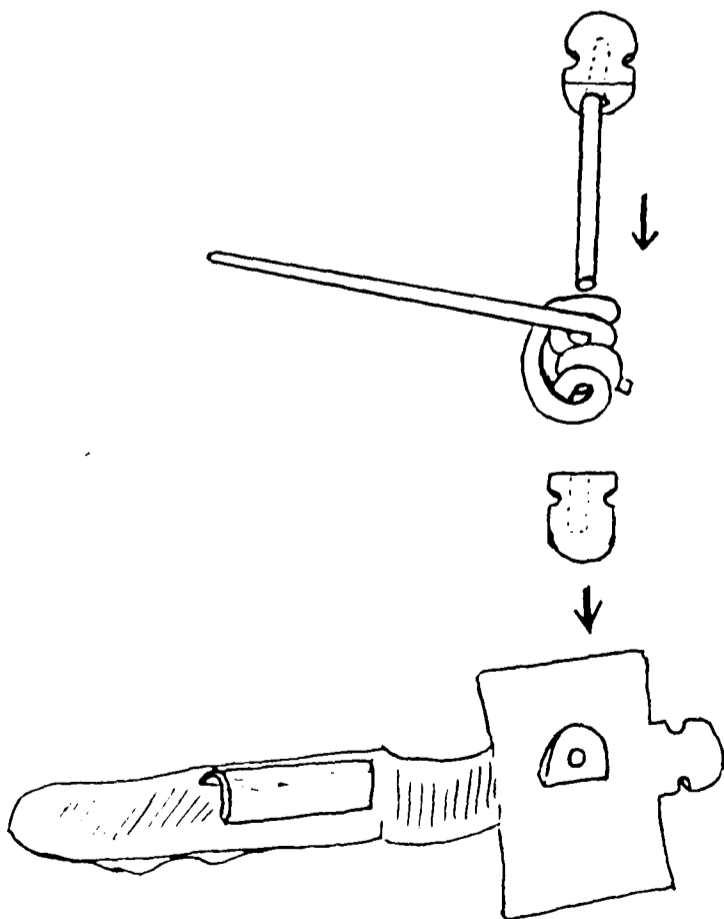


Fig 3.19 Sideknob and pin attachment, as used for Nydam brooches (top) bow brooches with attached sideknobs (middle), cruciform brooches with separately cast sideknobs (left)

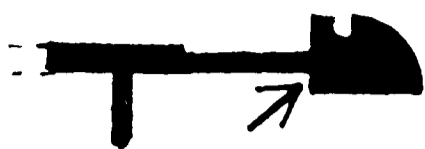


Fig 3.20 Cross-section of headplate of brooch in which the sideknob is not aligned with the back of the casting

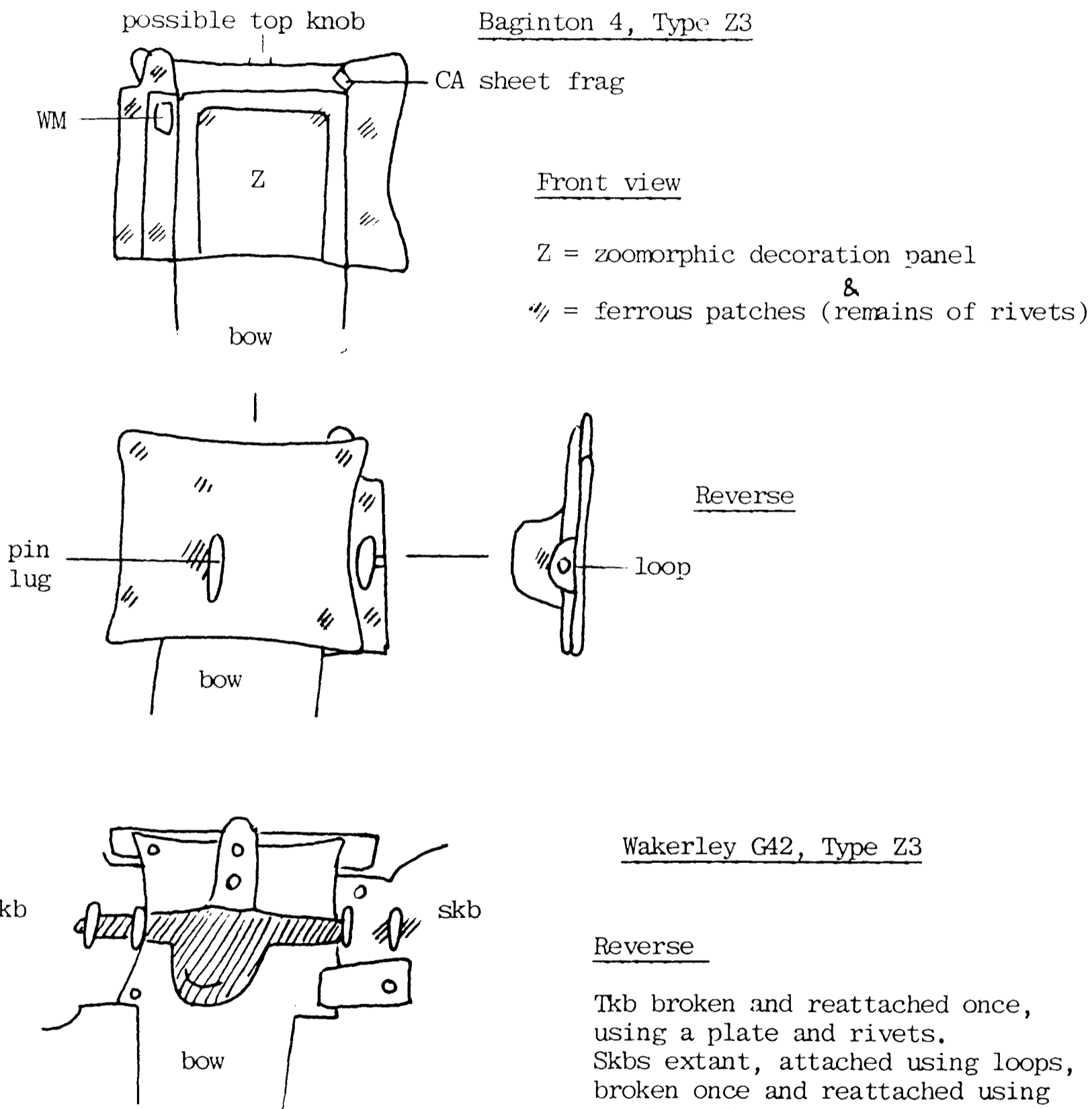
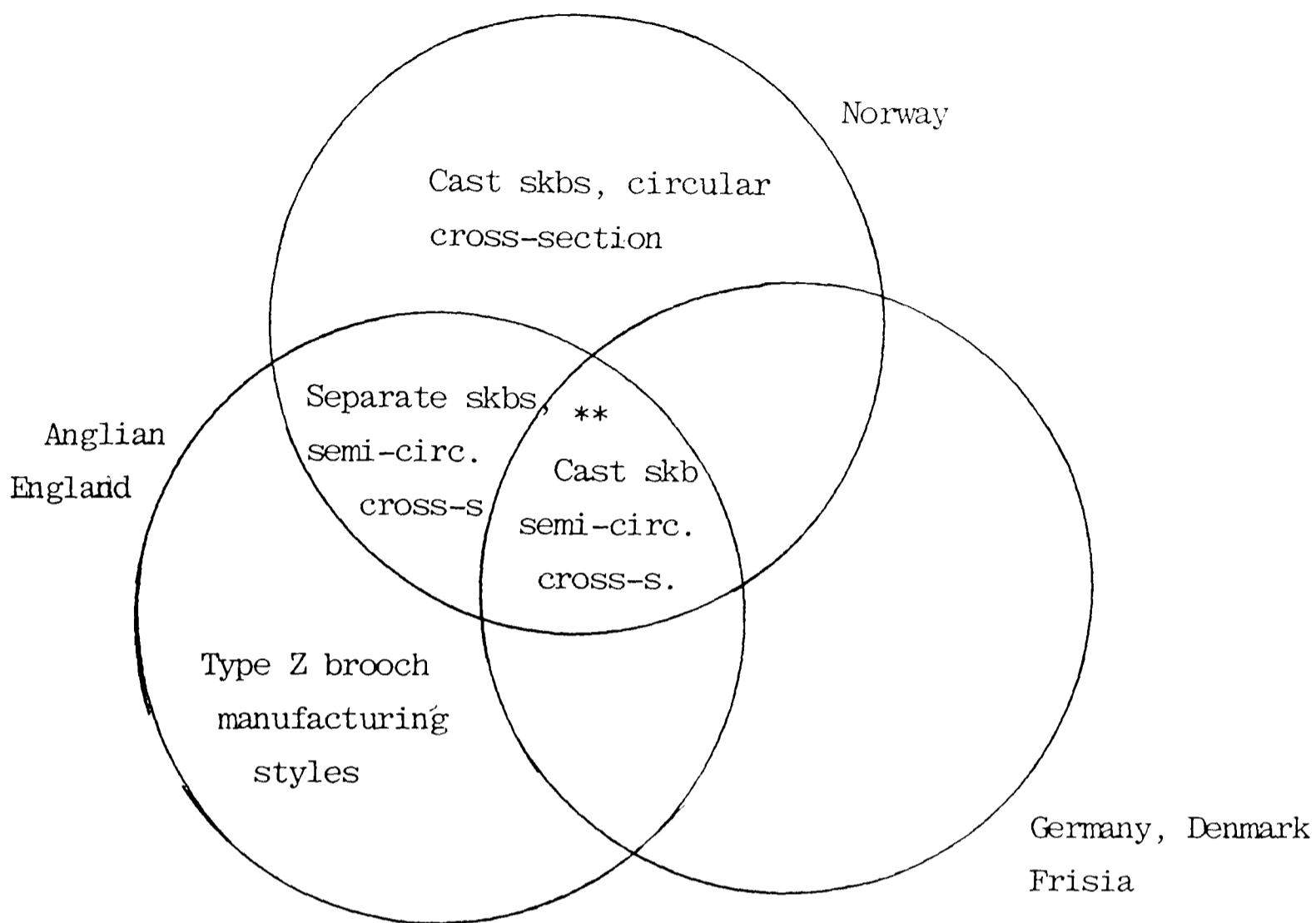


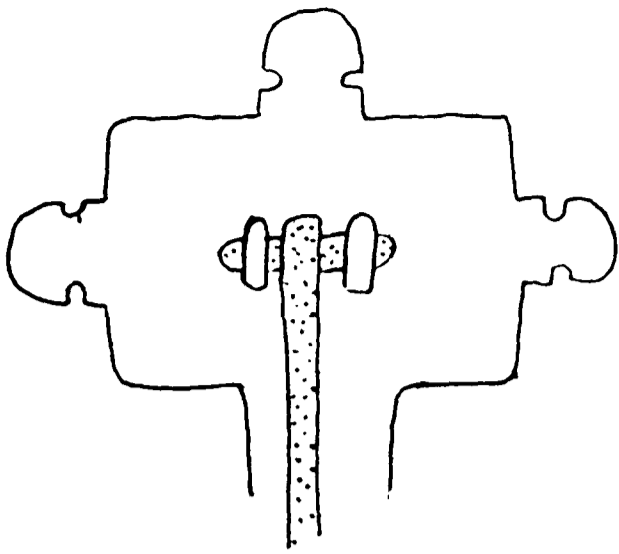
Fig 3.21 Method of attaching side knobs and applied decoration on type Z brooches

Tkb broken and reattached once, using a plate and rivets.  
Skbs extant, attached using loops, broken once and reattached using another plate and rivets.  
Rivet on other side used to attach WM to skb collar and skb to hpl.

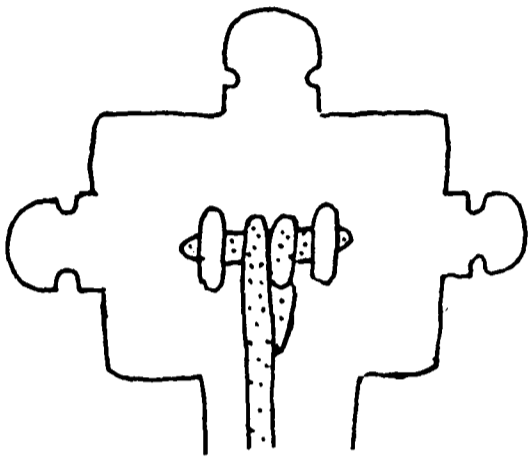


\*\* Brooches with separate sideknobs with circular cross-sections may have manufactured in each of the three regions, but the typology of brooch forms with this style of manufacture does not allow firm dating to the 'late' period.

Fig 3.22 Methods of sideknob attachment in late cruciform brooch styles



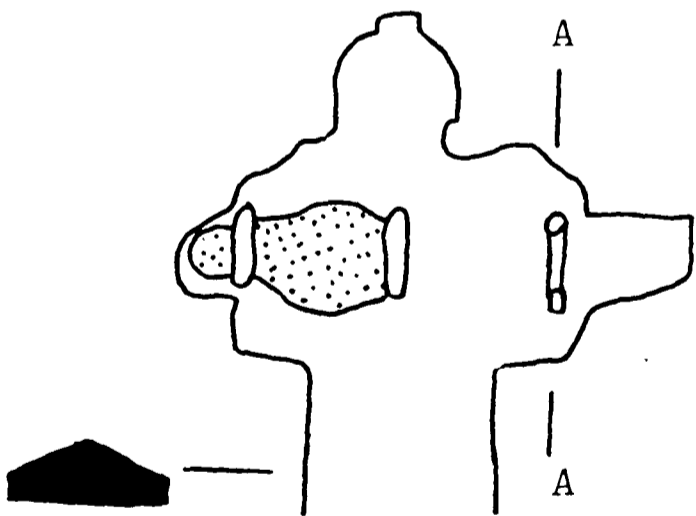
a)



b)



Fig 3.23 Two pin lugs a) used as simple pivot, b) extra turn, producing spring



Reverse of Spong Hill  $\Delta$ 1553  
?type B brooch, Hills and Penn  
Vol V, forthcoming.

Fig 3.24 Loops at reverse of headplate, used to secure pin axis

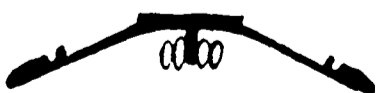


Fig 3.25 Slope of head-plate wings a) side knobs attached  
b) side knobs cast separately

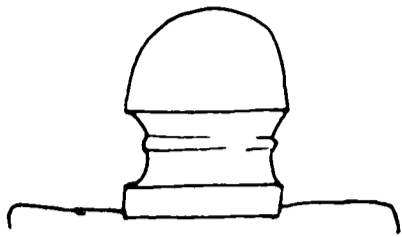


Fig 3.26 Ridge around topknob

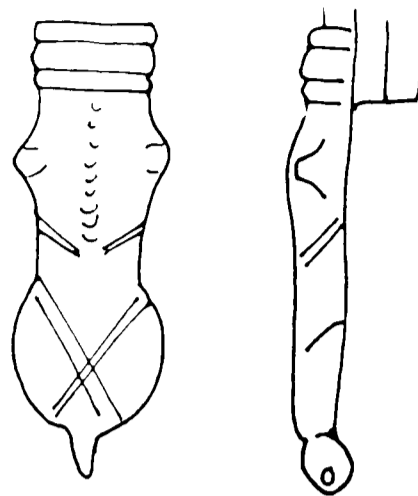
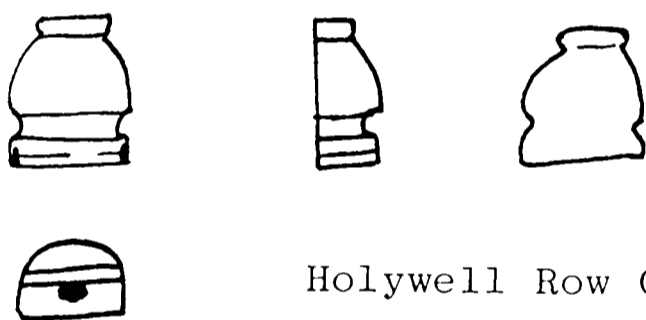


Fig 3.27 Loop at foot

Berg/Apton G6

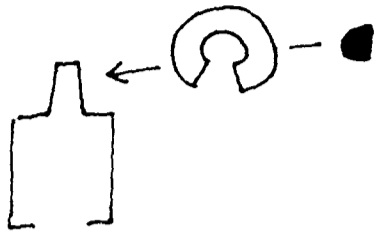


Holywell Row G48(4) ( large type B2)

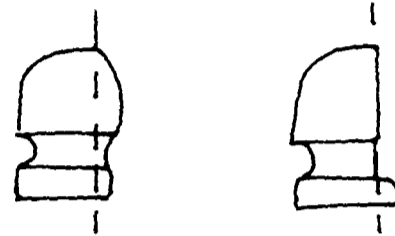
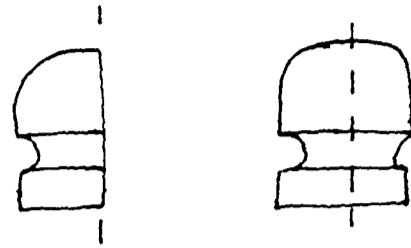


Little Wilbraham G73(2) (large type B1)

Fig 3.28 Sideknob attached by use of slots cut into base



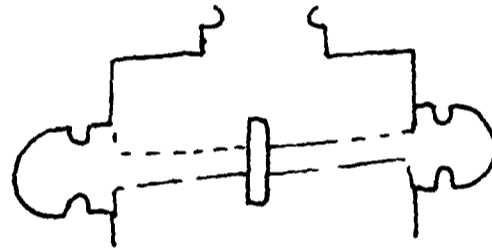
C-shaped topknob



Trimmed reverse of knob

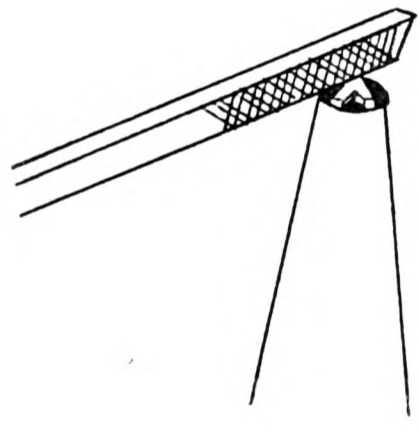
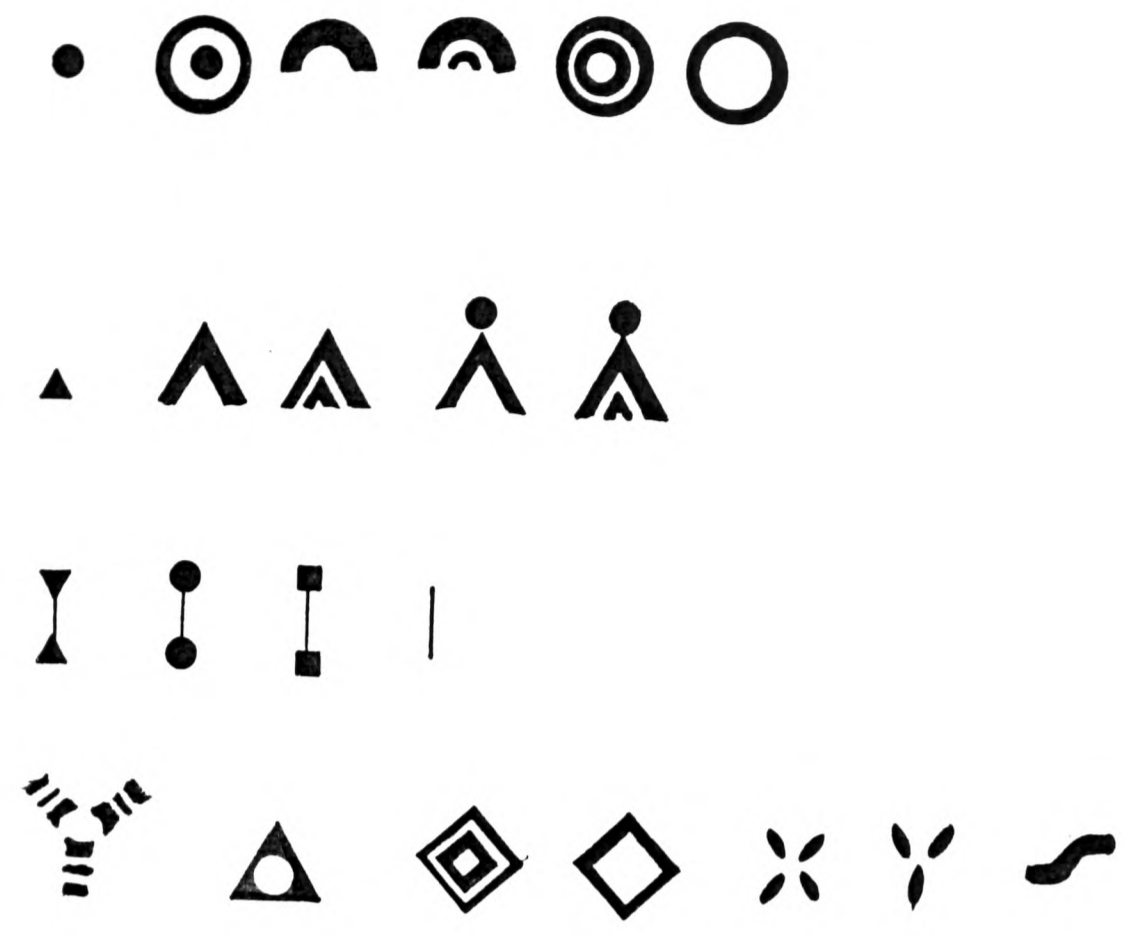


Two holes in pin lug



Non-functional ridge running from sideknobs to pin lug

Fig 3.29 Some unusual methods of construction found on Norwegian and Swedish brooches (see table 3.8a, appendix 3.8a)



From Untracht (1975) 94

Fig 3.30 Repertoire of punch marks on English cruciform brooches (shown at around x10 enlargement), finishing a punch with a file, punch in use.

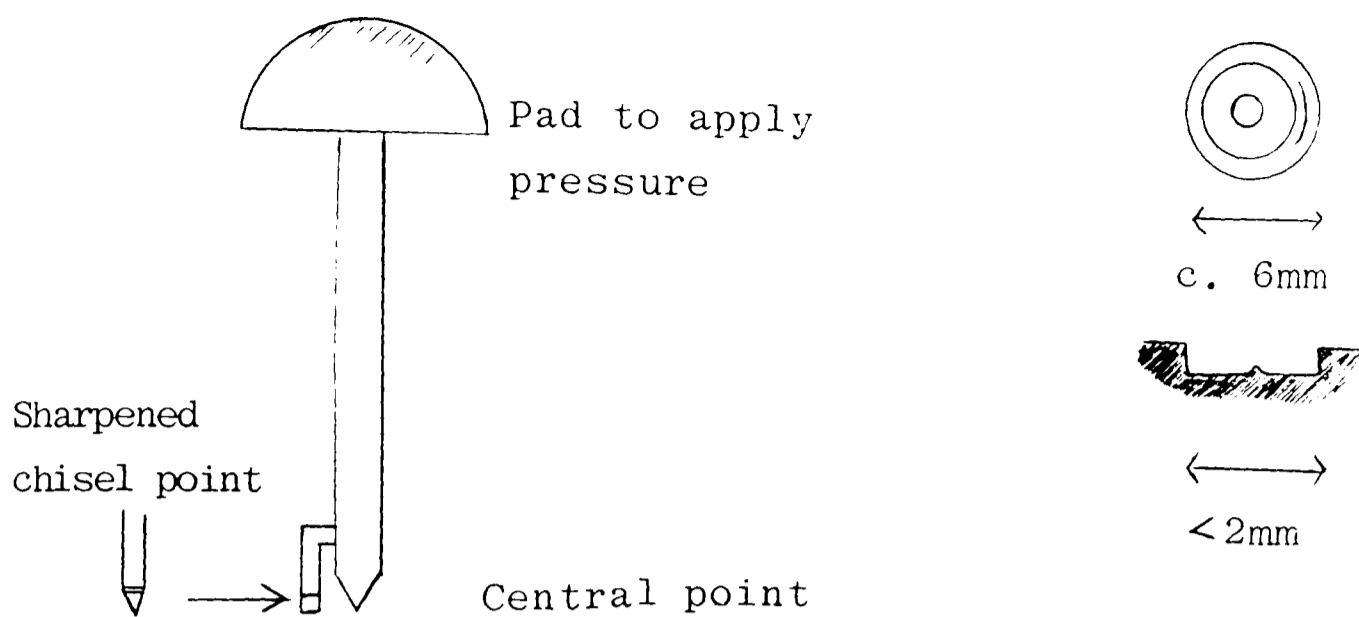


Fig 3.31 Possible method of turning large ring and dot design on cruciform brooches, with an example from Lakenheath 14

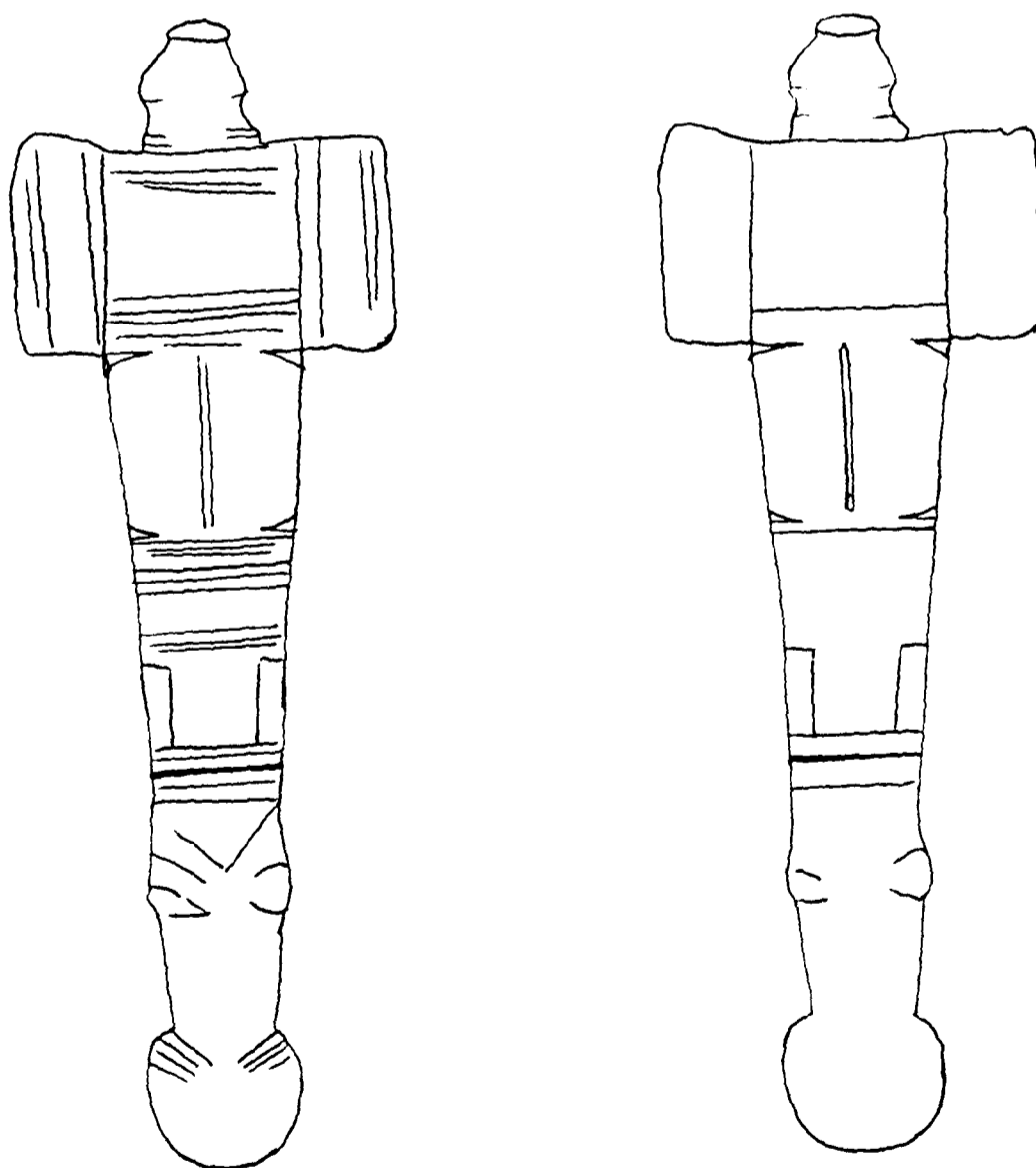


Fig 3.32 Incised lines on Holywell Row G48(4), with full decoration (left) and without incised lines (right).

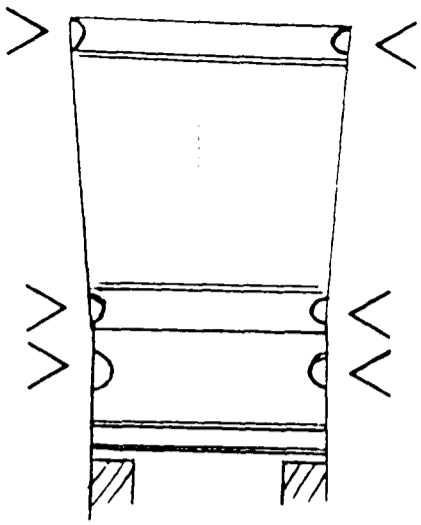


Fig 3.33 Normal position of notches on cruciform brooches, at the bow and on the catchplate

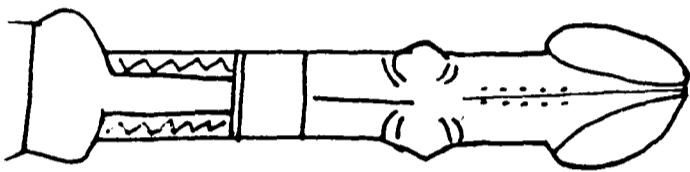


Fig 3.34 Position of zig-zag scratches on catchplate

Foot of brooch from Borgstedt, Schleswig-Holstein KS 4024p

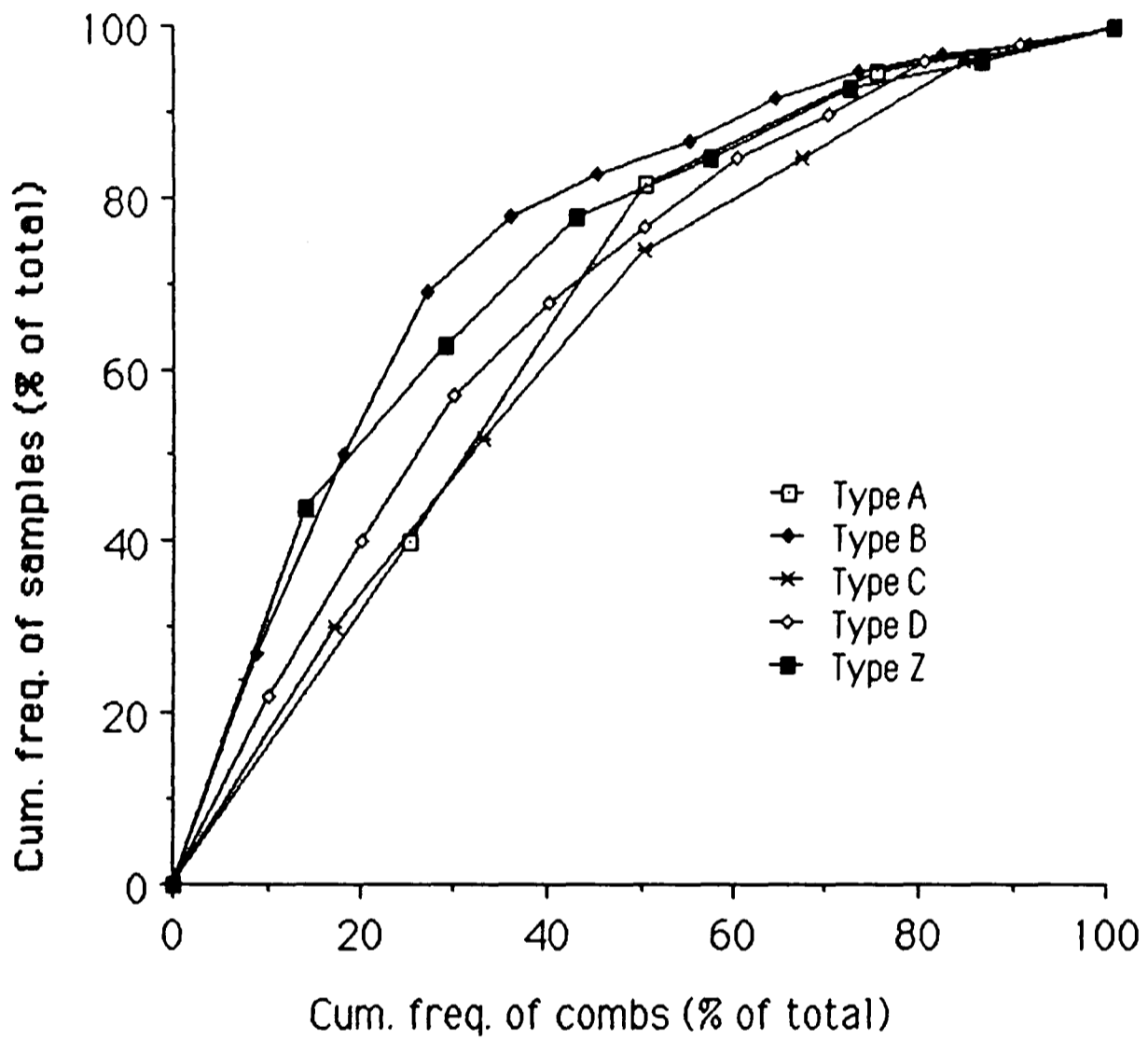


Fig 3.35 Rate of growth of information throughout sampling.

Sample sizes: Type A n = 22  
 Type B n = 66  
 Type C n = 29  
 Type D n = 104  
 Type Z n = 27

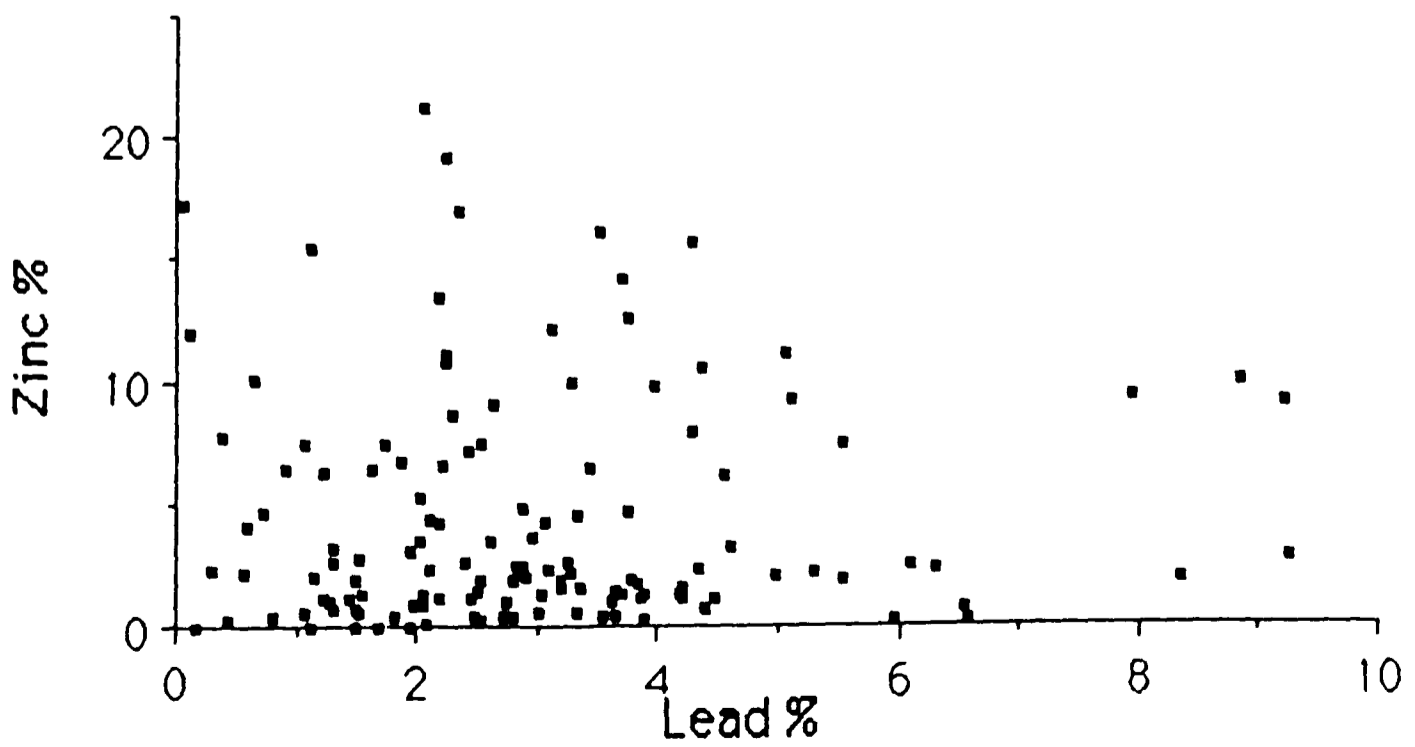
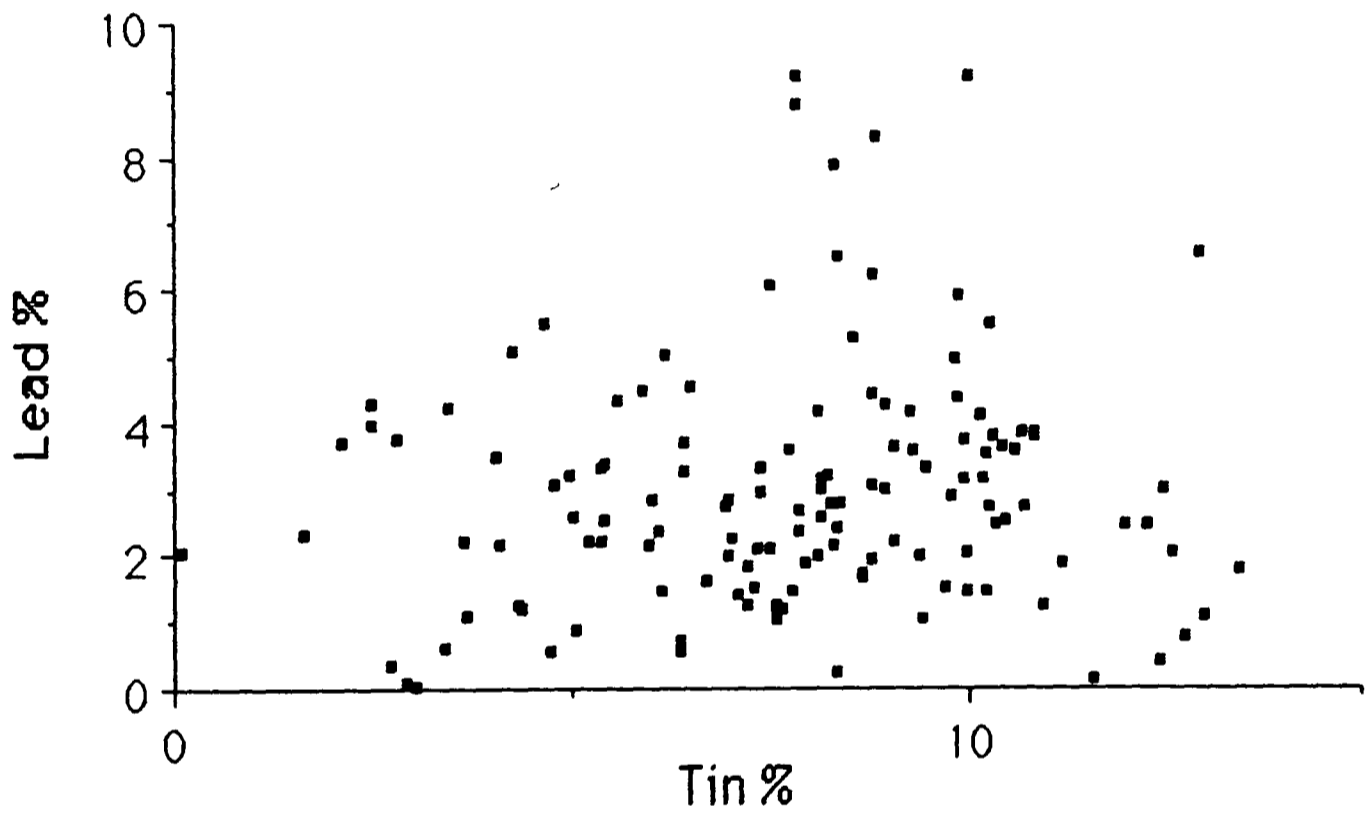
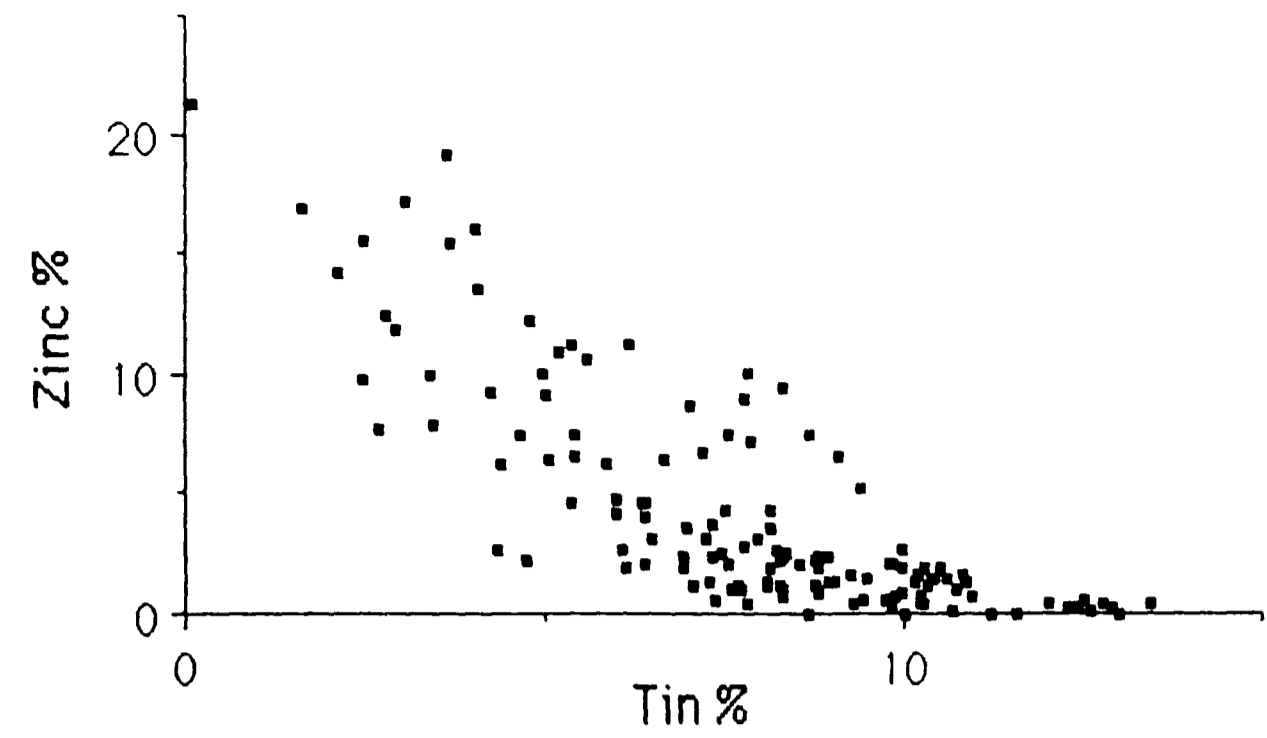


Fig 4.1 Overall alloying contents: English cruciform brooches

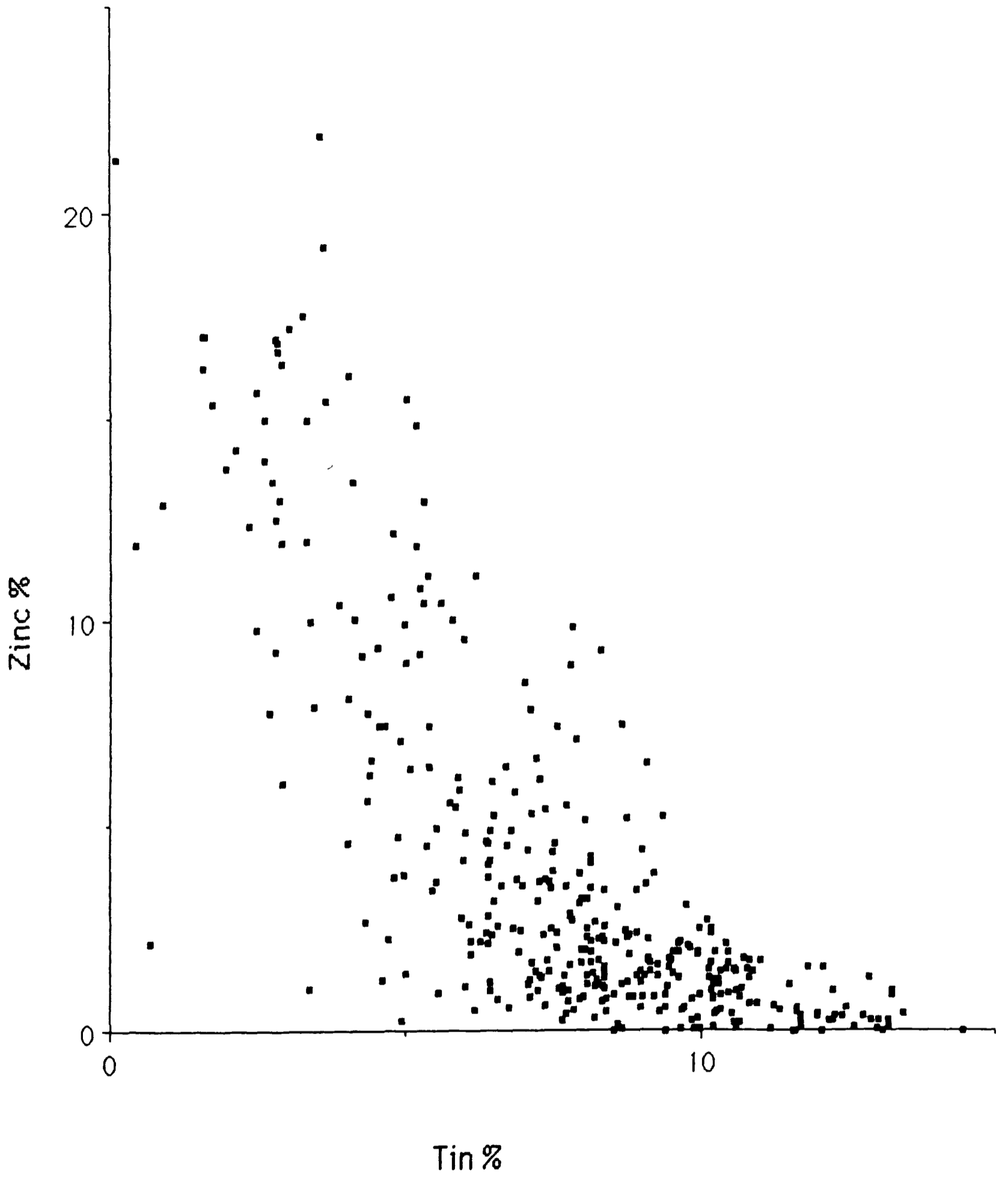


Fig 4.2 Zinc vs tin percentages: English cruciform brooches

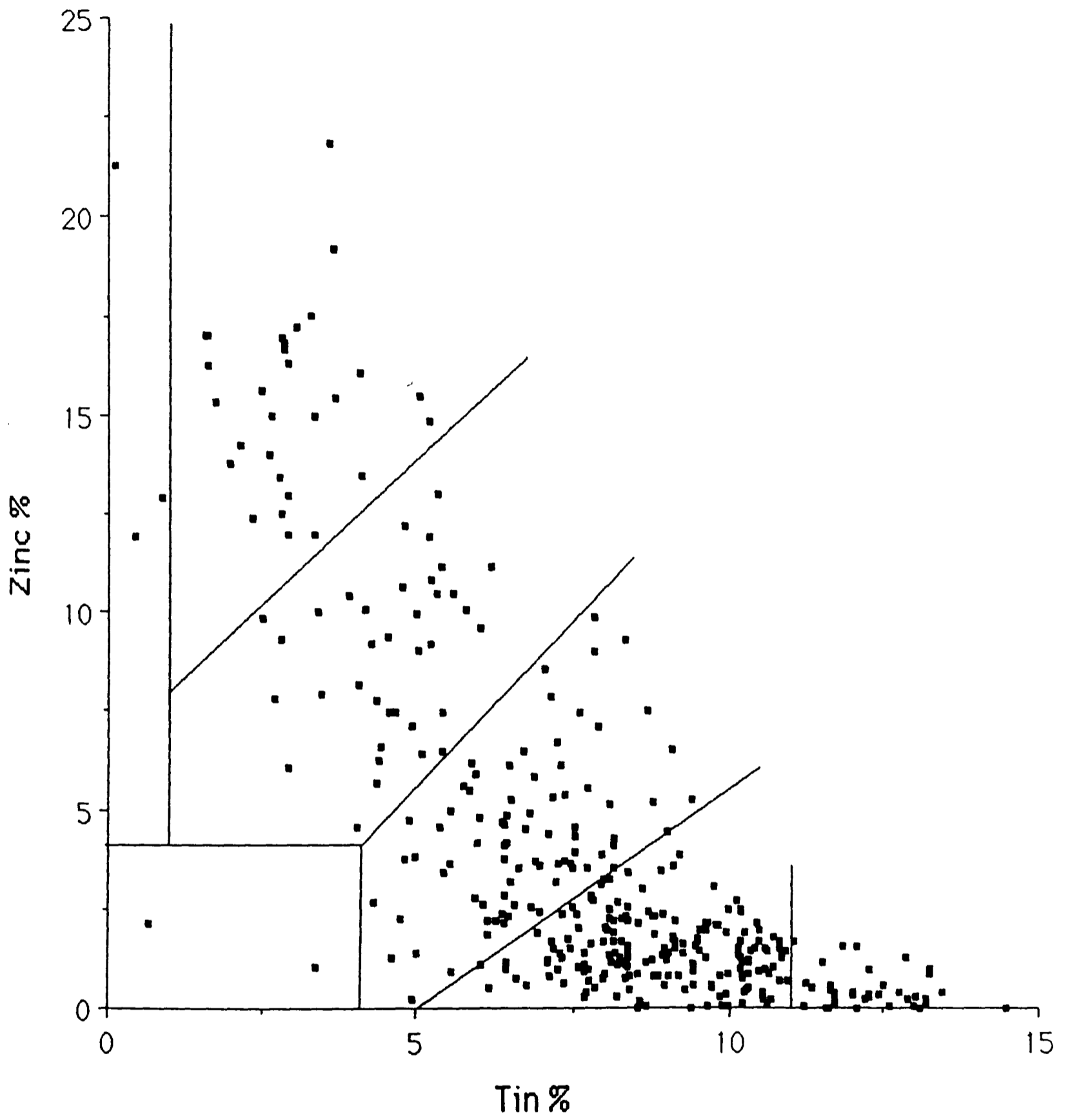


Fig 4.3a Sub-division of zinc vs tin plot: English cruciform brooch alloy typology

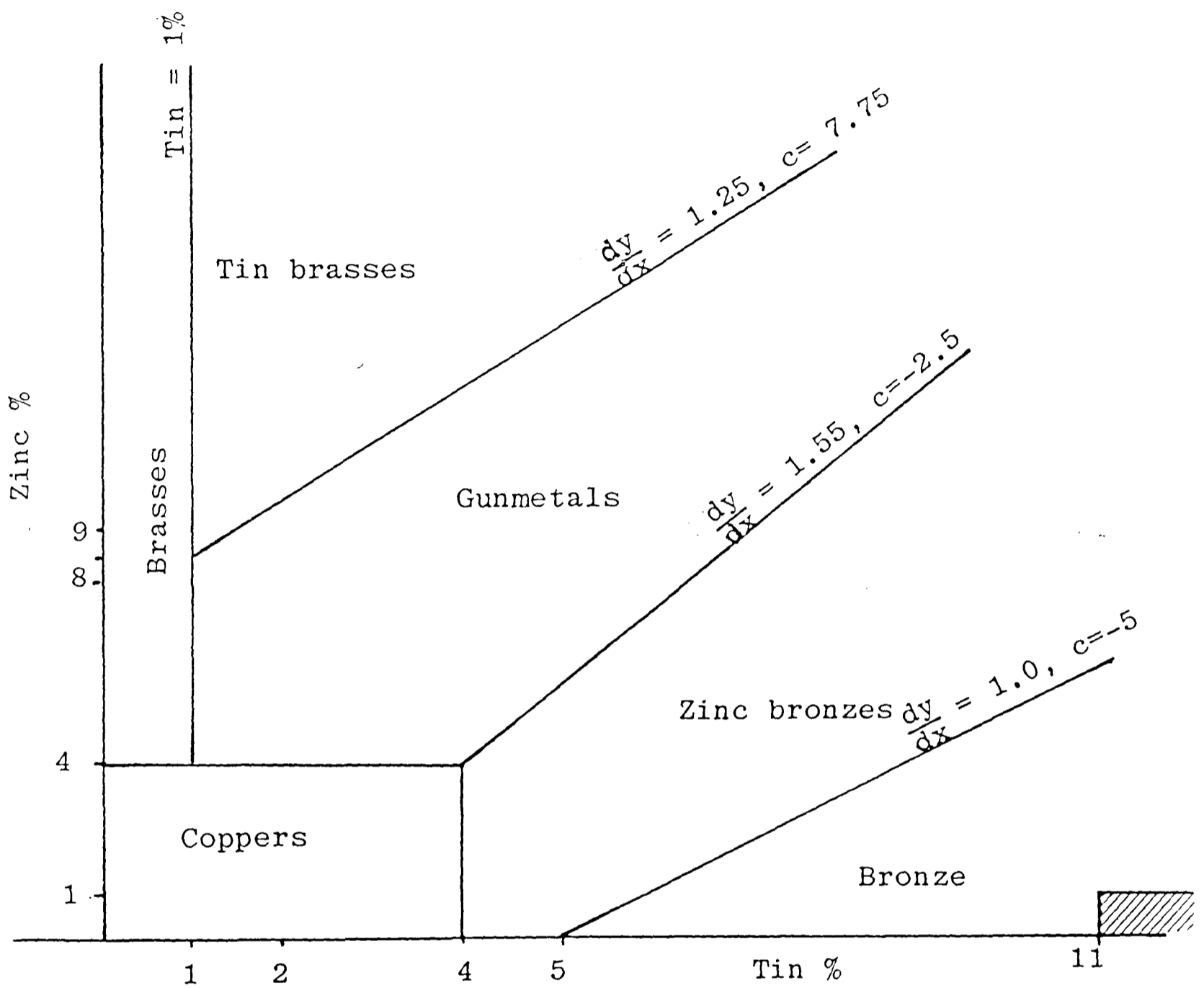



Fig 4.3b Alloy typology

 High tin, low zinc bronzes

The standard manner of expressing the position of a straight line is  $y = (\frac{dy}{dx})x + c$ . In this formula, the gradient of the line is  $\frac{dy}{dx}$ , i.e. the difference between two  $y$  values divided by the difference in their corresponding  $x$  values.  $c$  is the point of intersection of the line with the  $y$  axis.

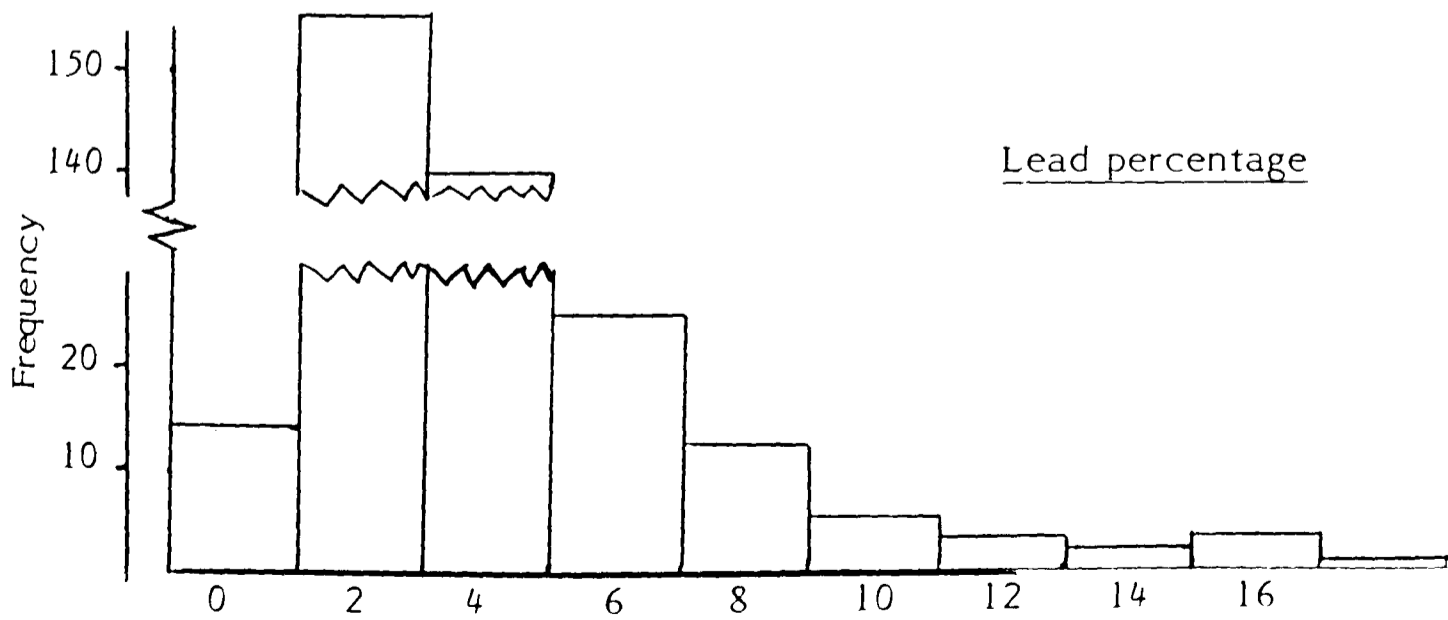
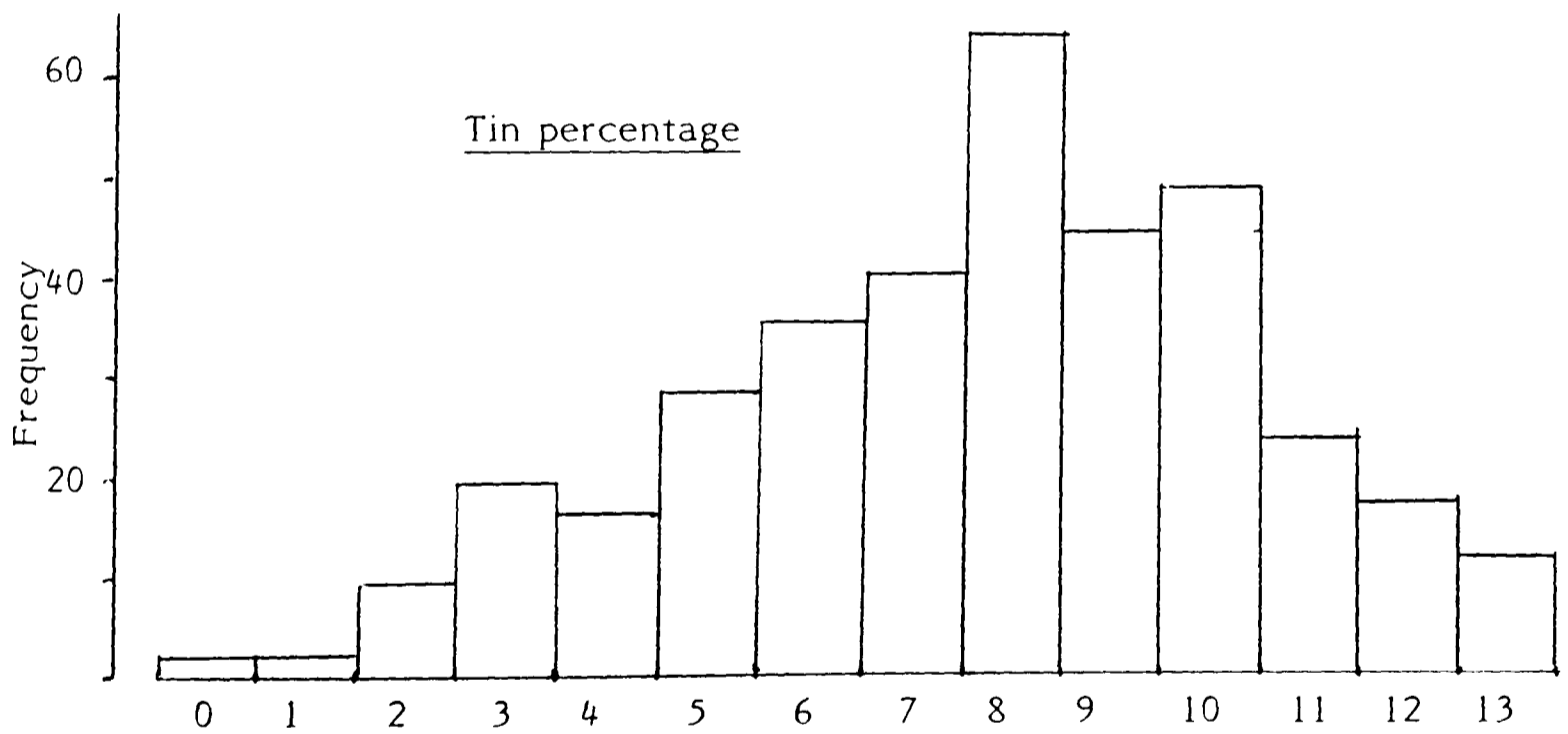
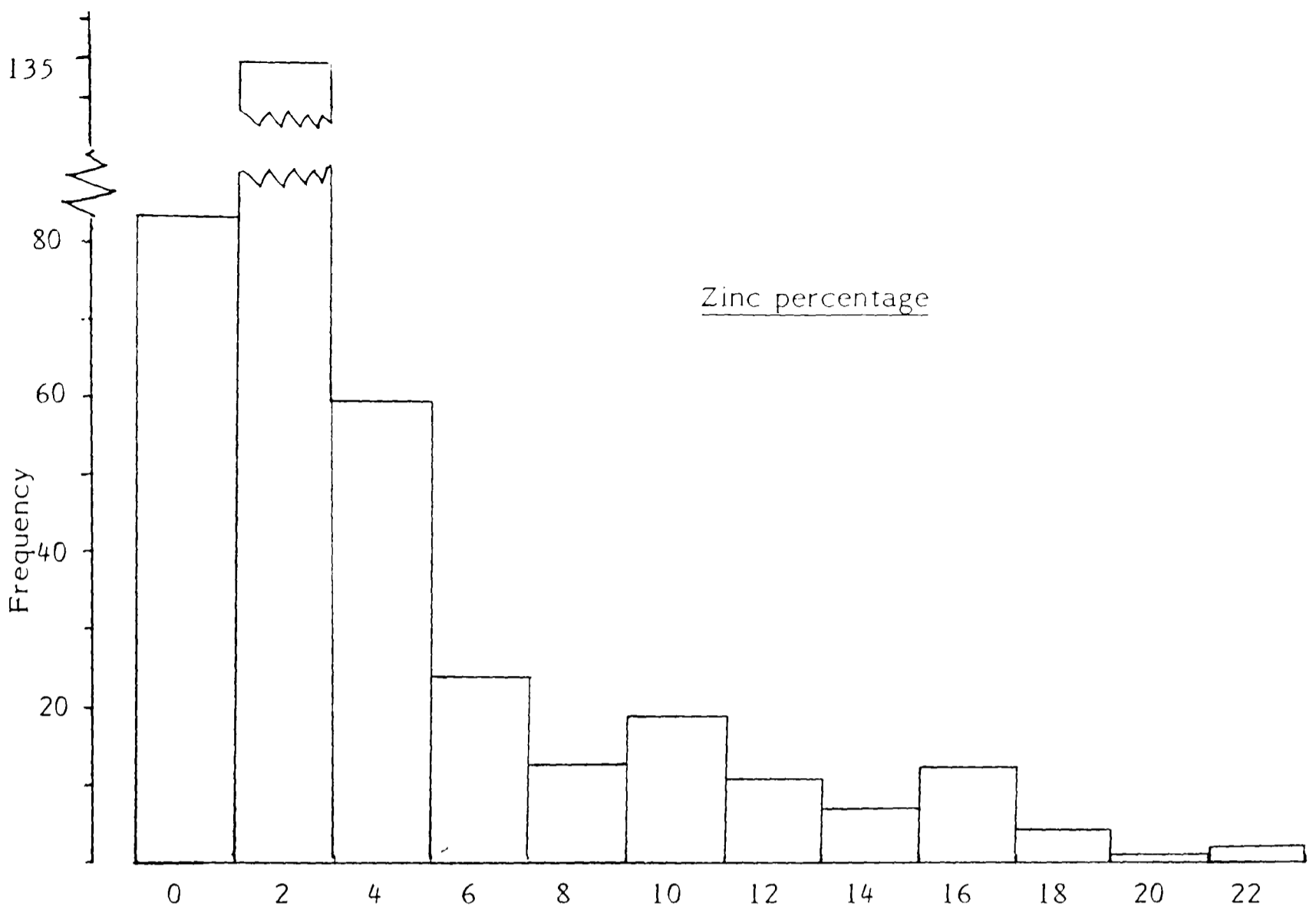


Fig 4.4 Concentrations of alloying elements in English cruciform brooches, frequencies plotted at mid-points of intervals

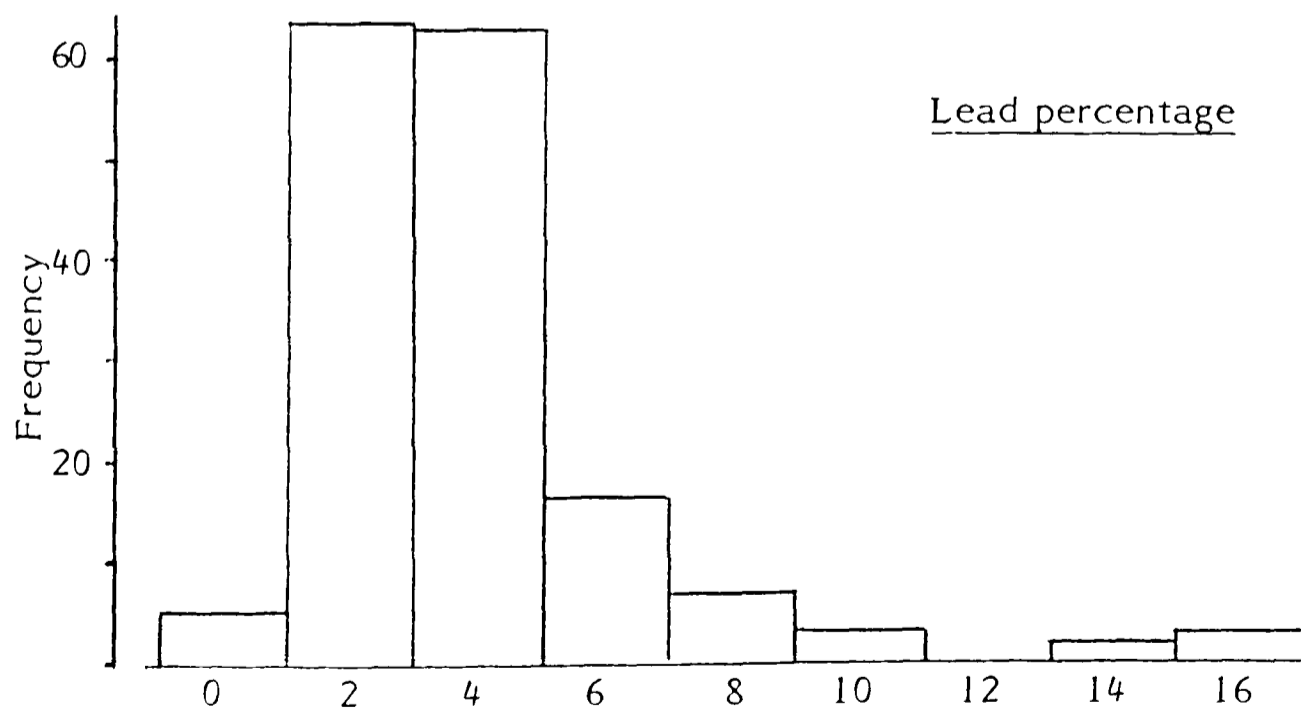
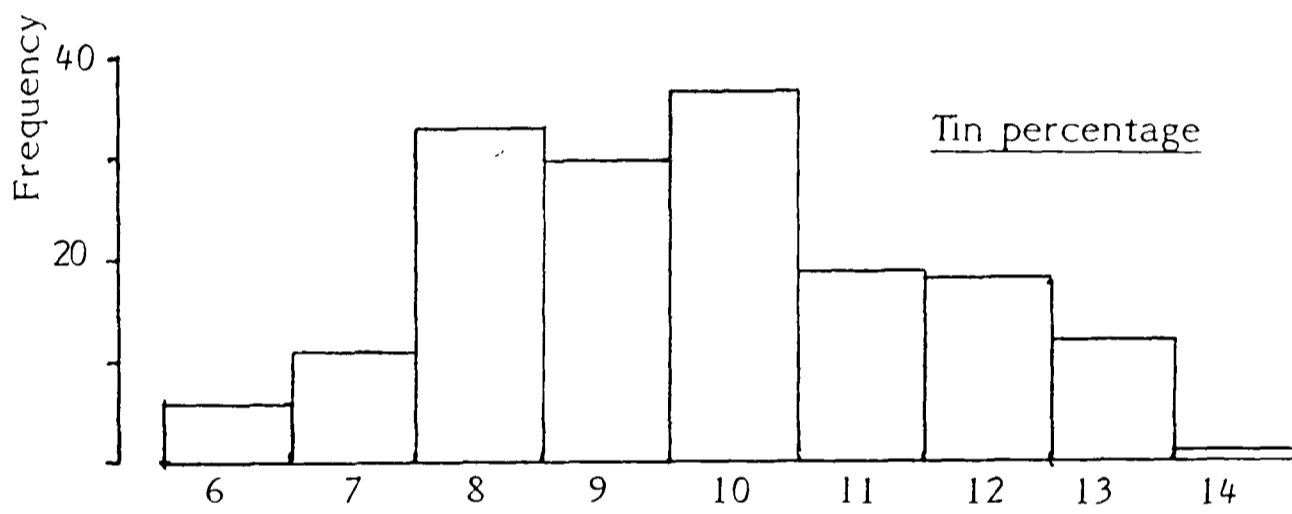
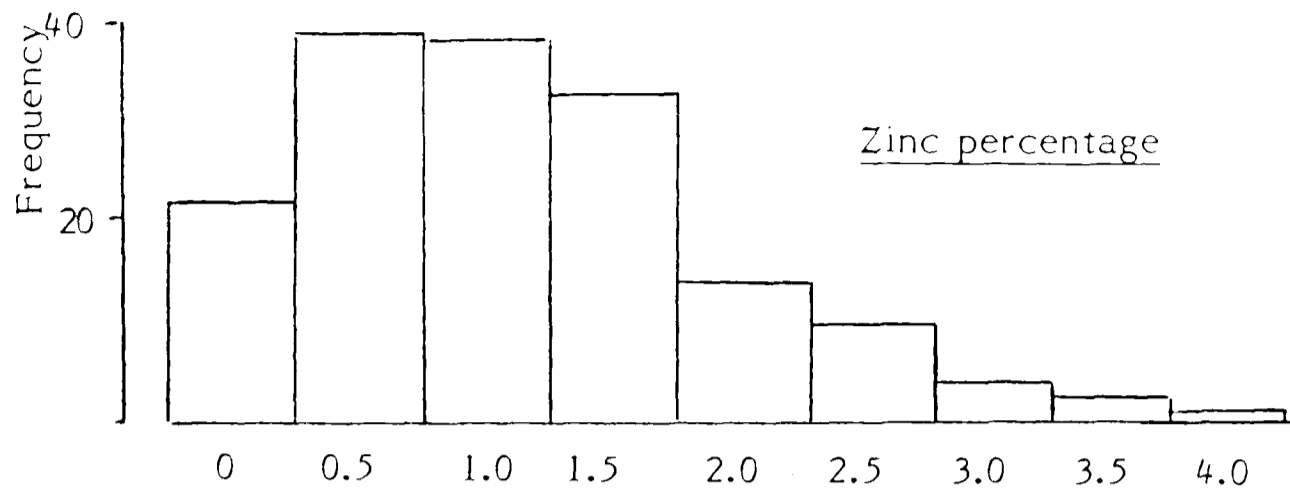


Fig 4.5 Alloying element content of bronze cruciform brooches (162 examples)  
Frequencies plotted at midpoints of intervals

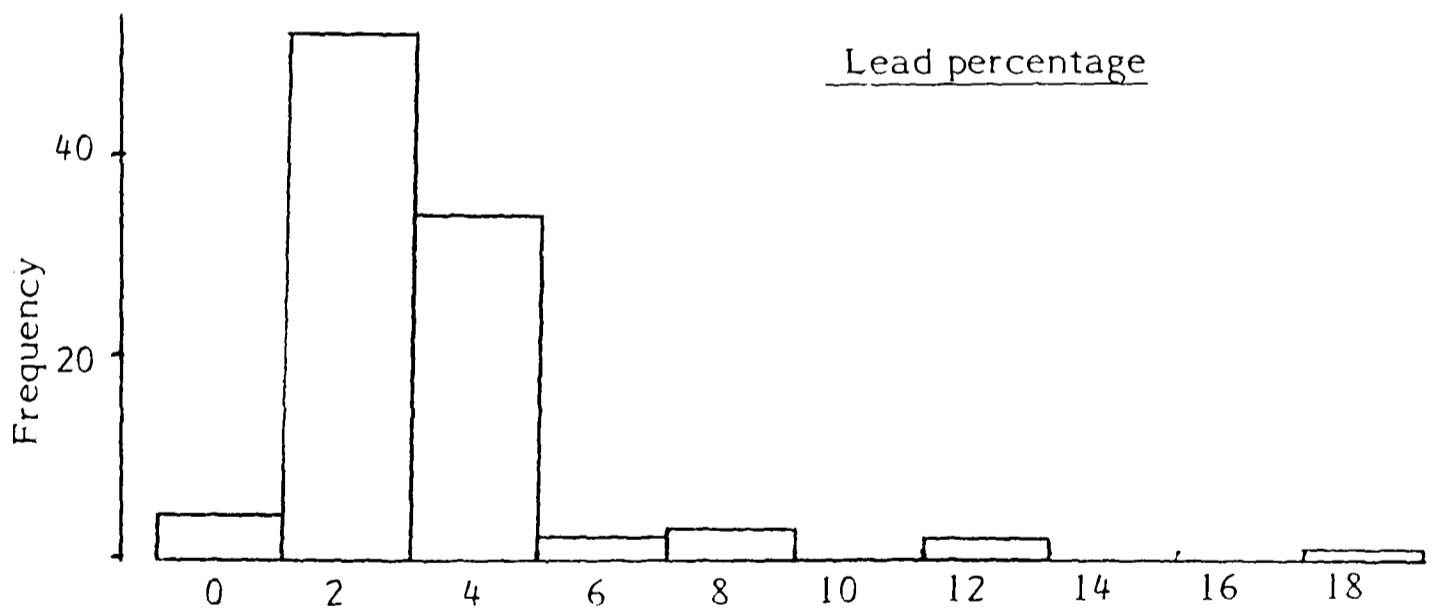
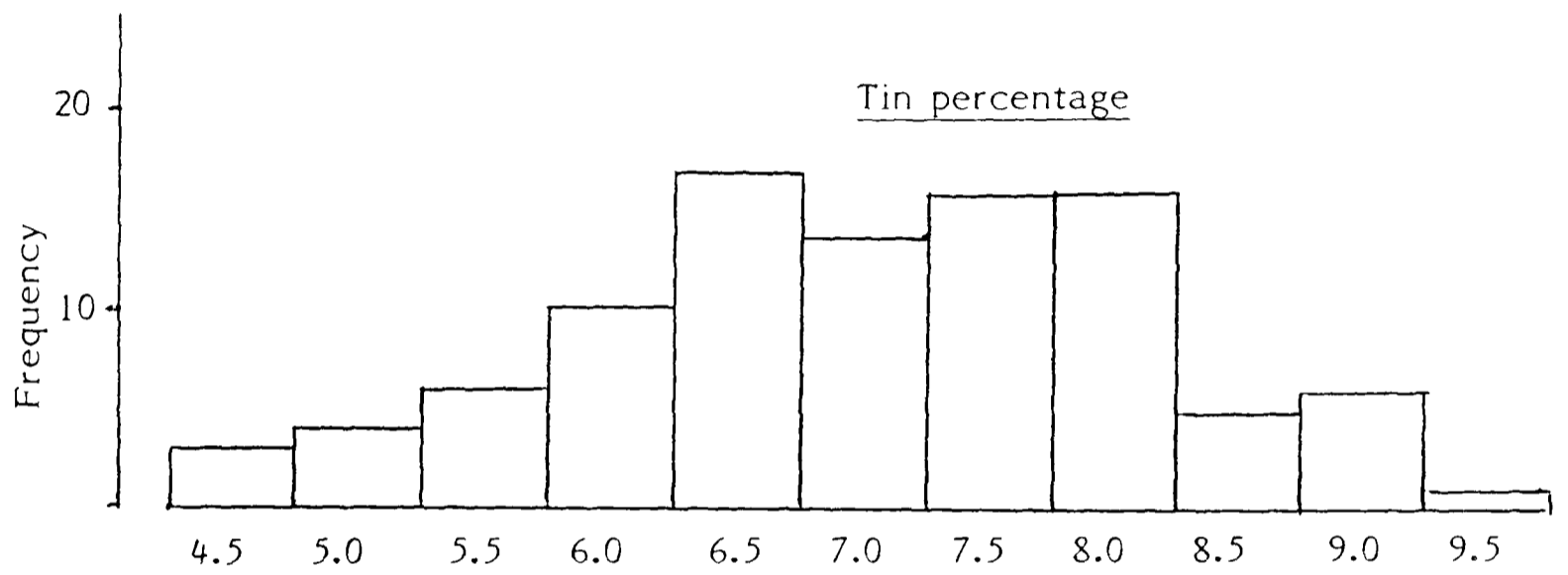
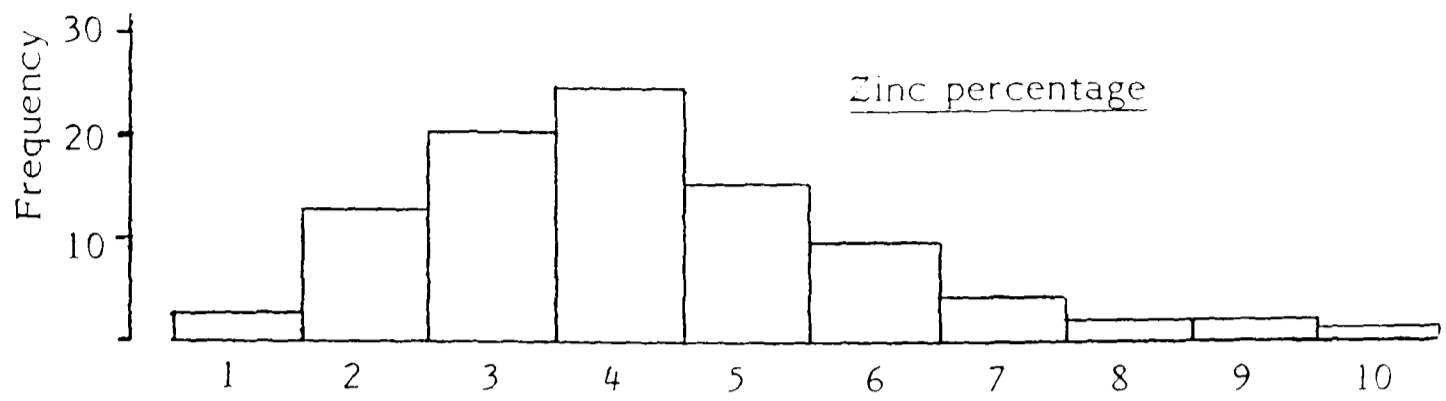


Fig 4.6 Alloying contents of zinc bronze cruciform brooches, frequencies plotted at midpoints of intervals

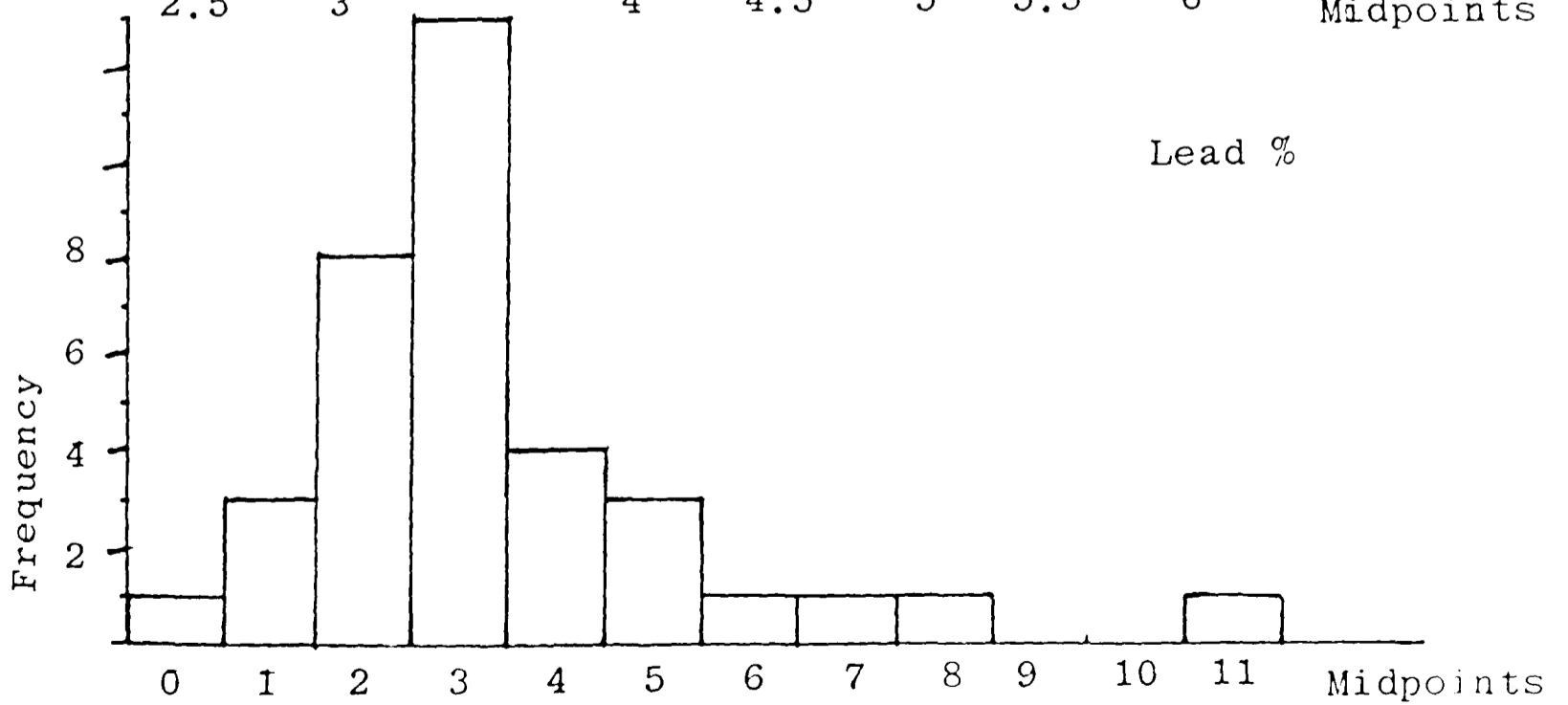
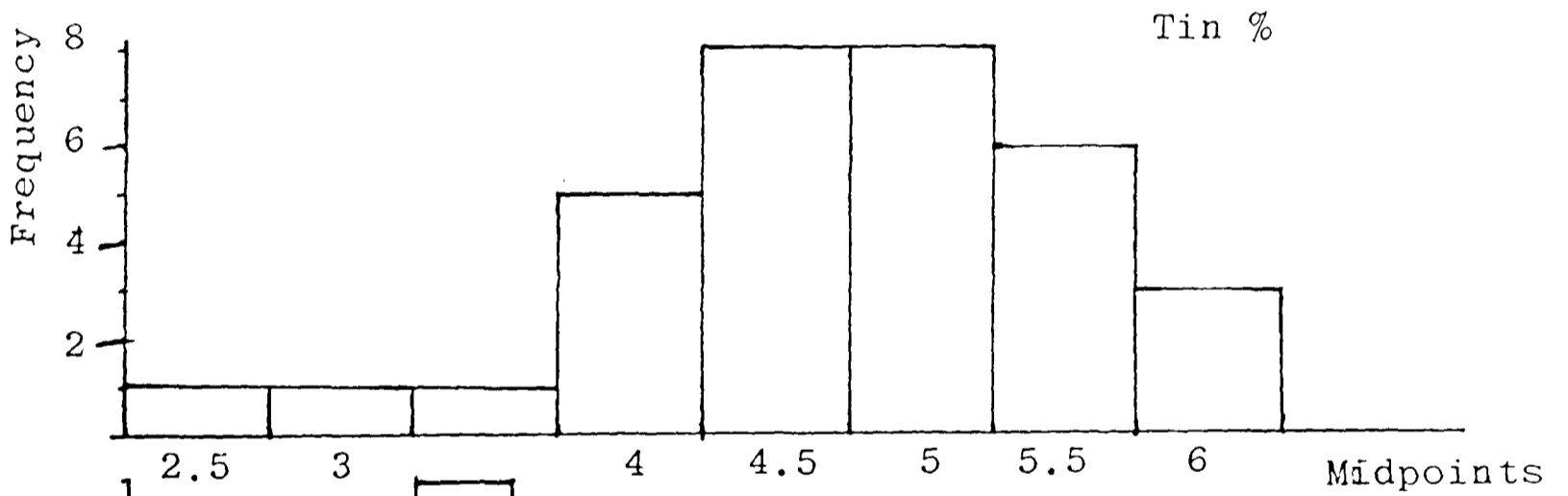
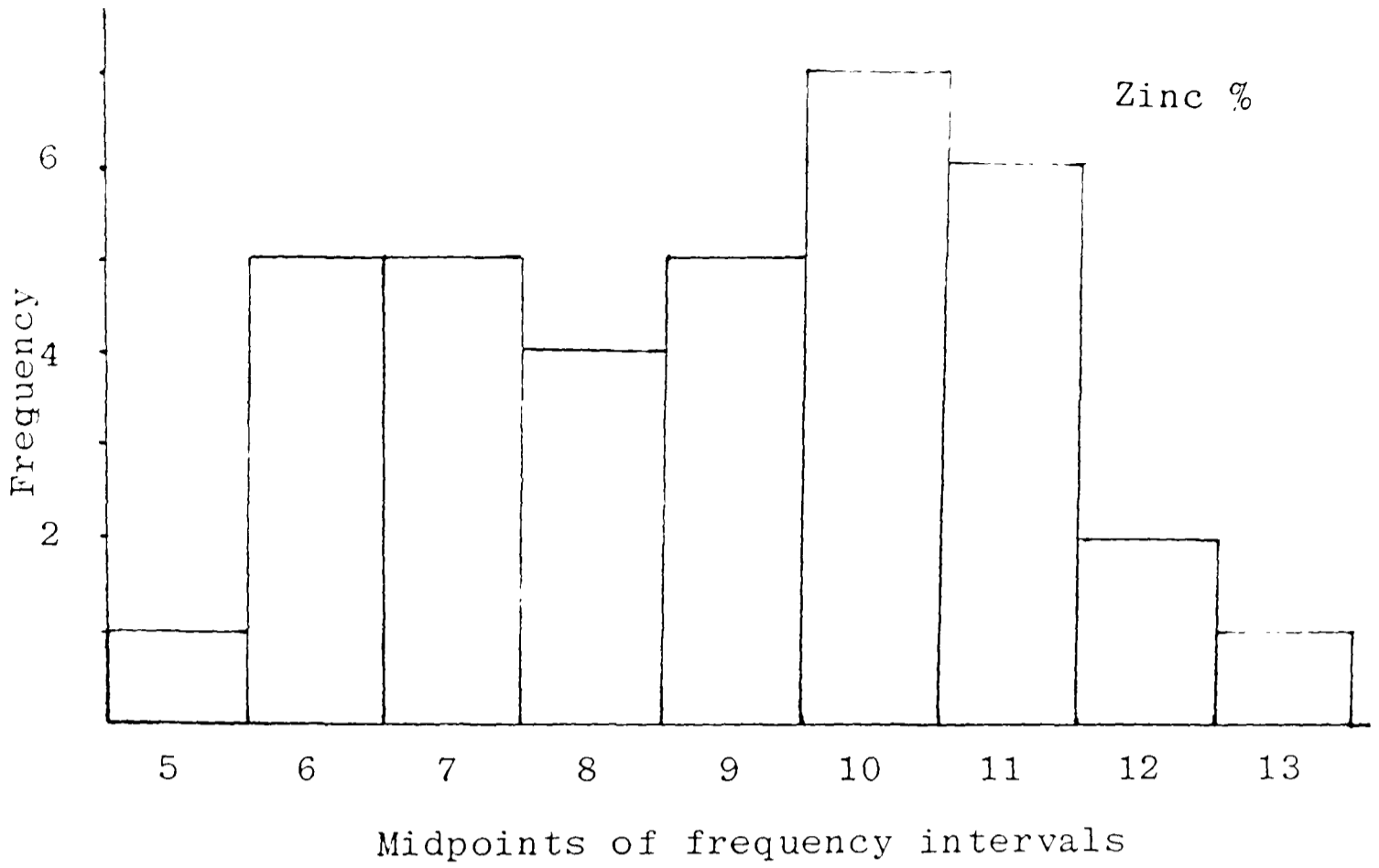


Fig 4.7 Composition of gunmetals n = 36

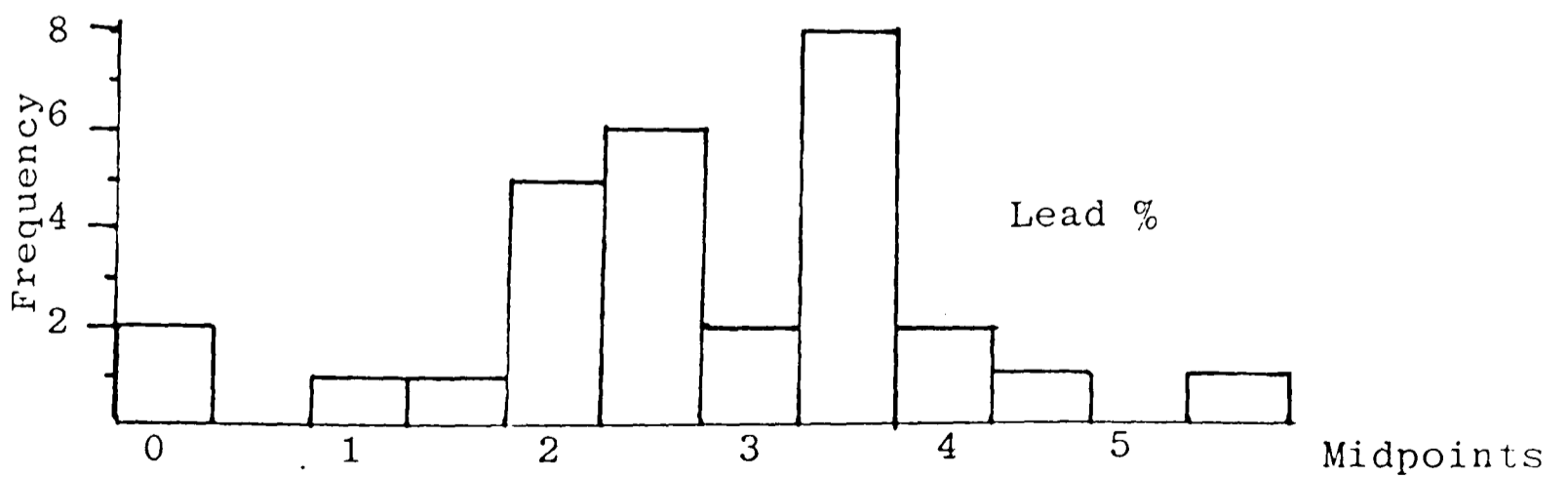
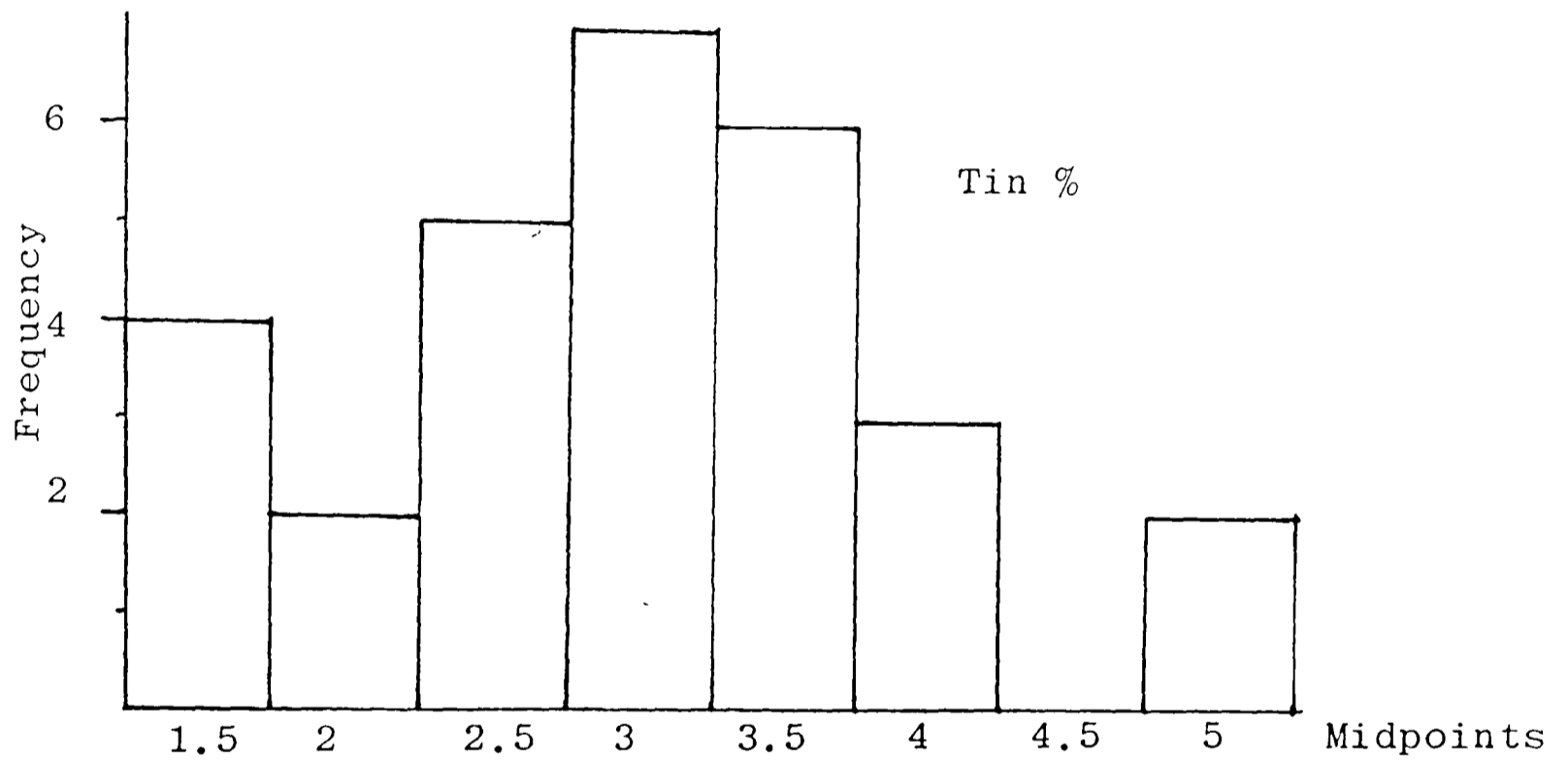
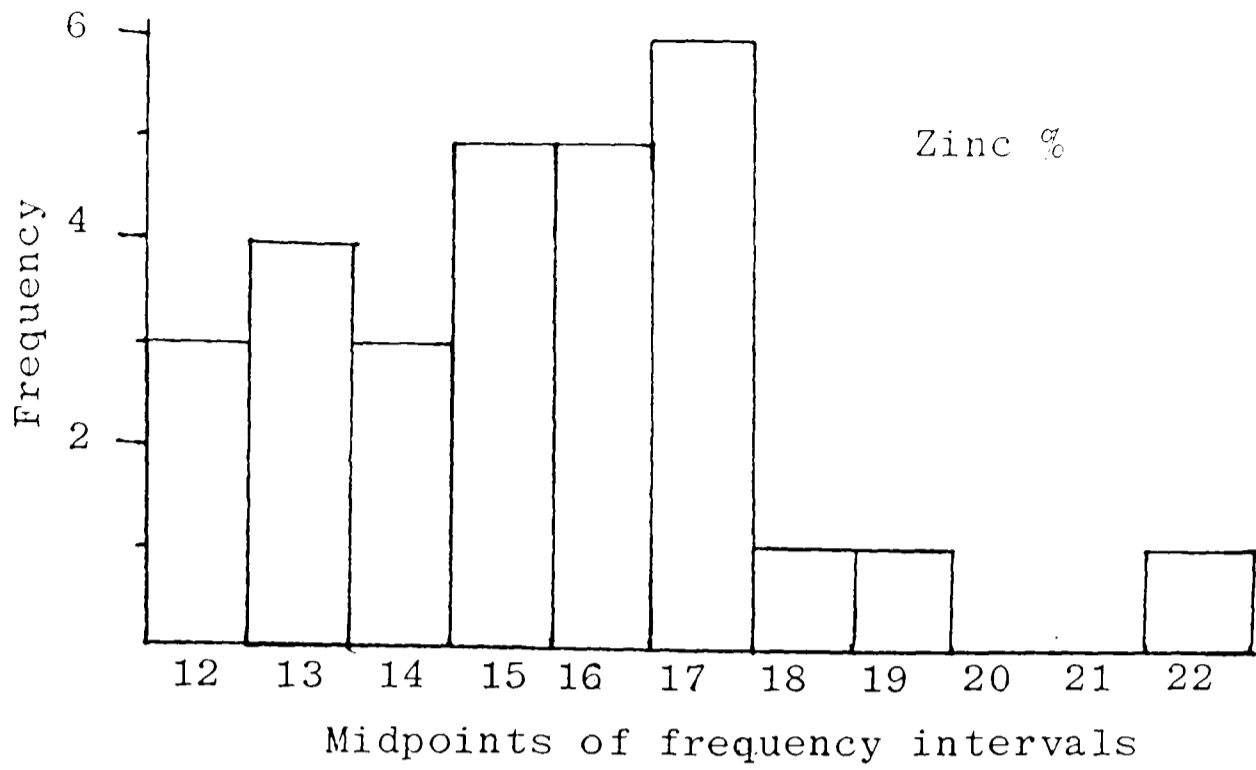


Fig 4.8 Compositions of tin brasses n= 29

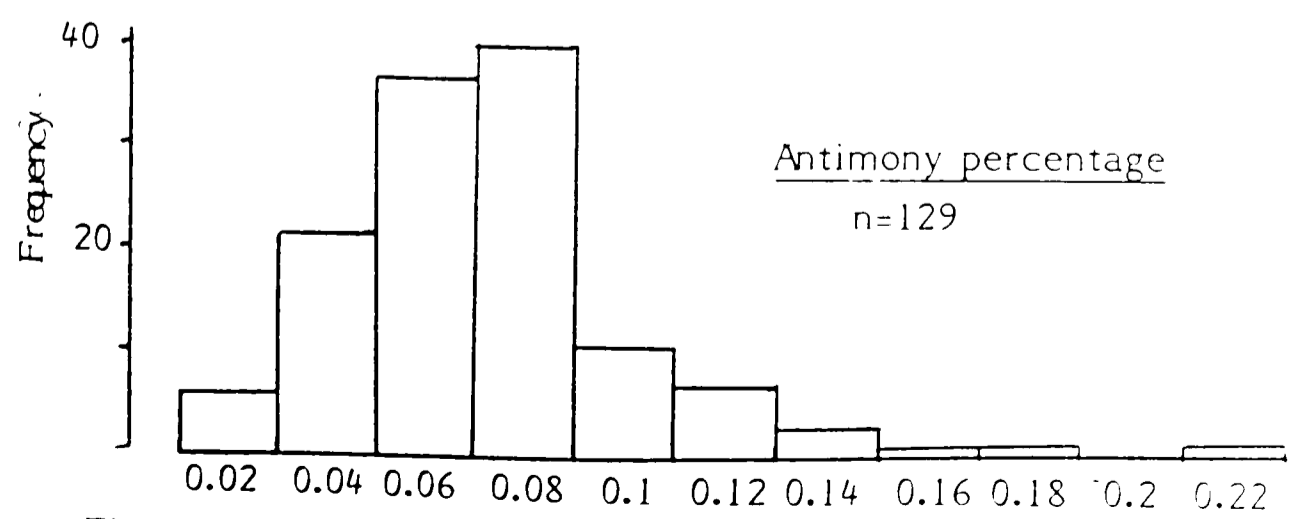
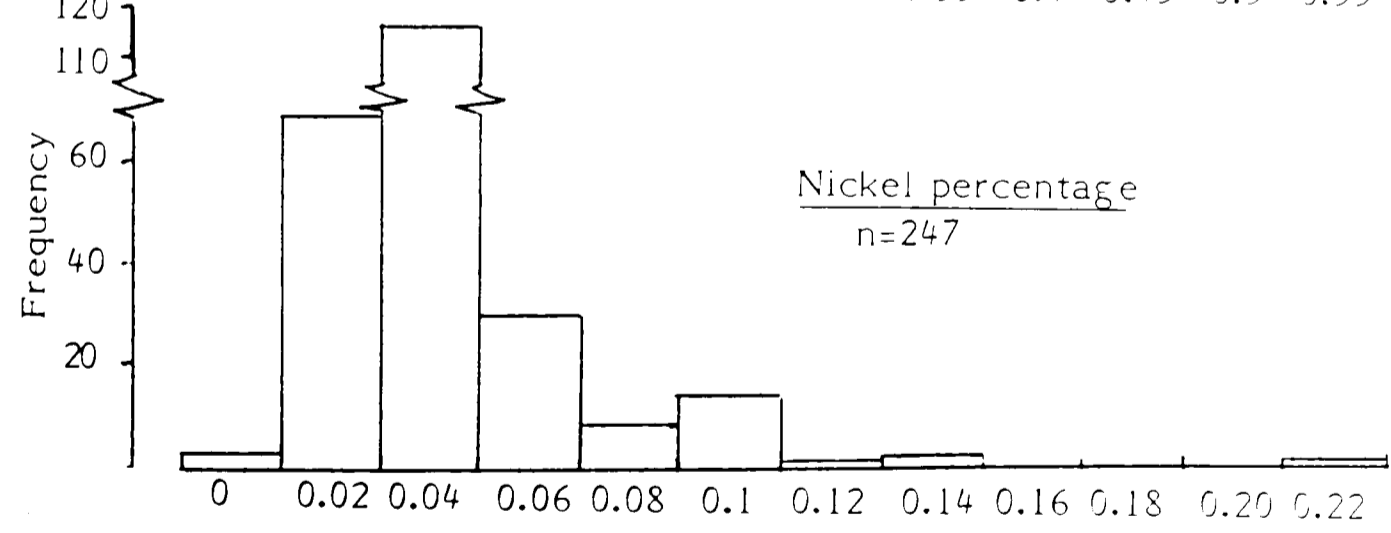
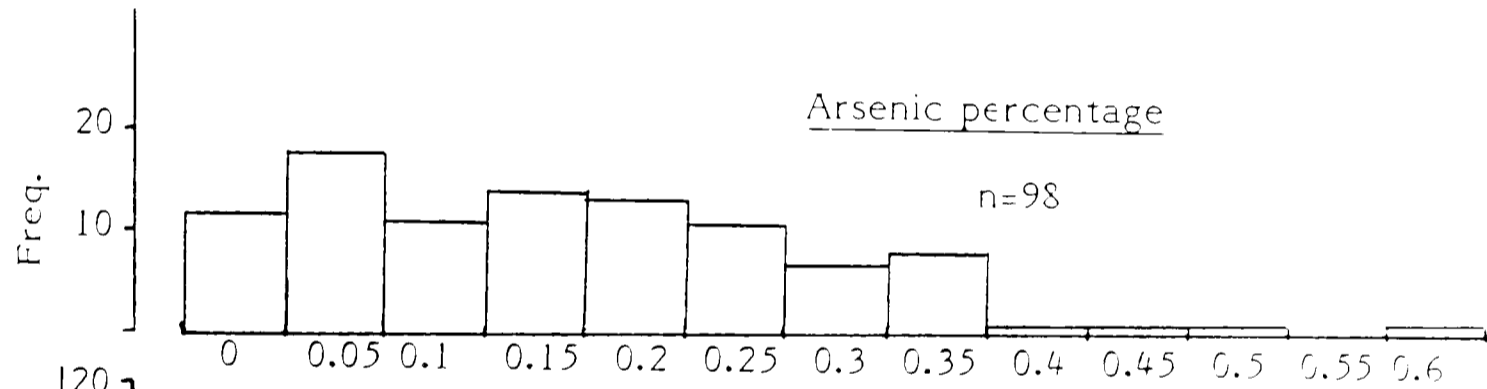
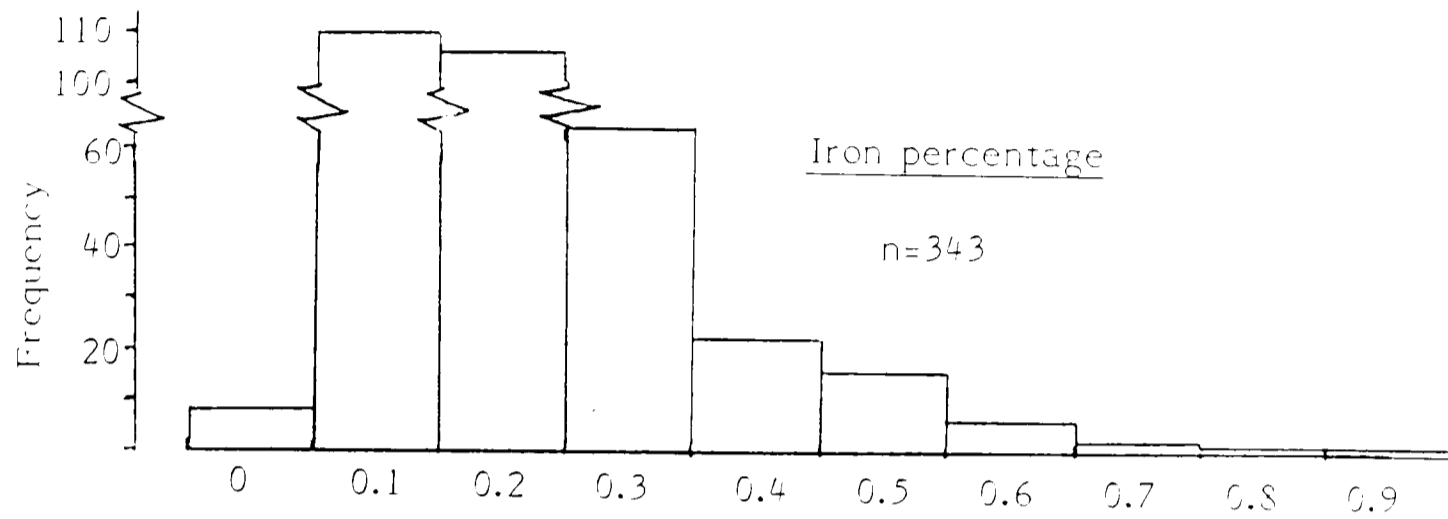
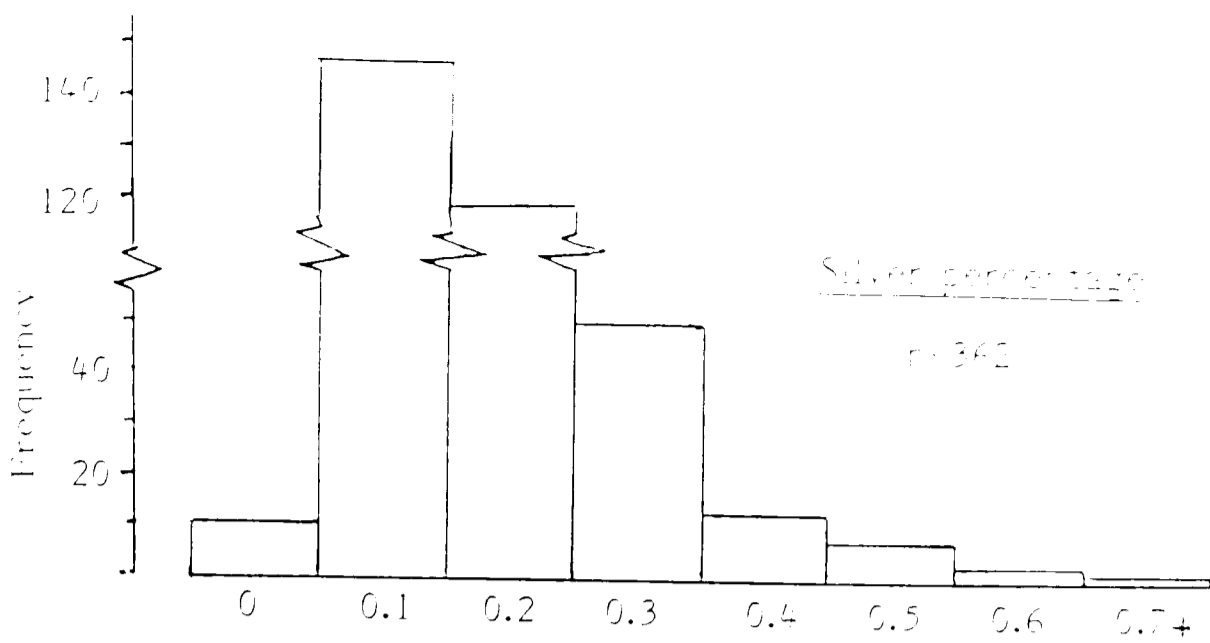


Fig 4.9 Trace element concentrations of English cruciform brooches  
Frequencies plotted at midpoints of intervals

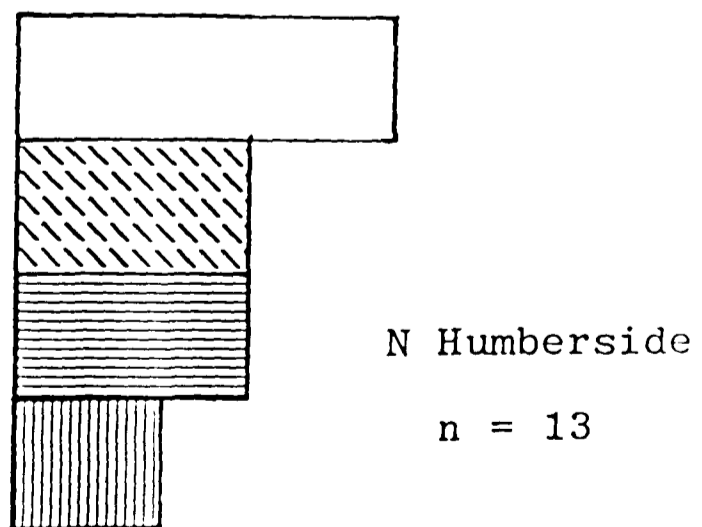
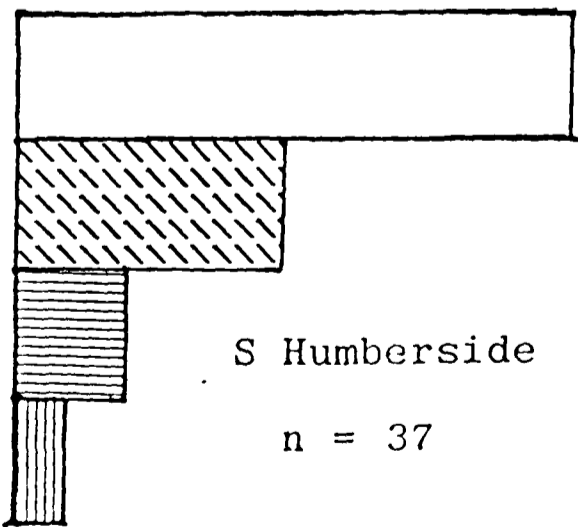
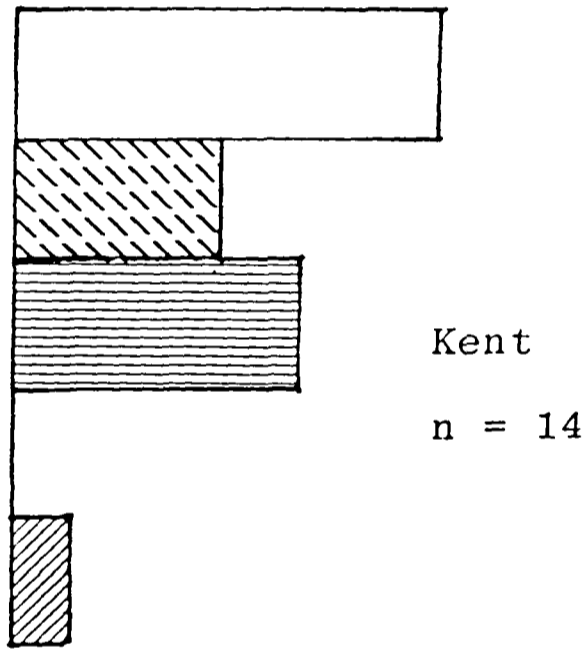
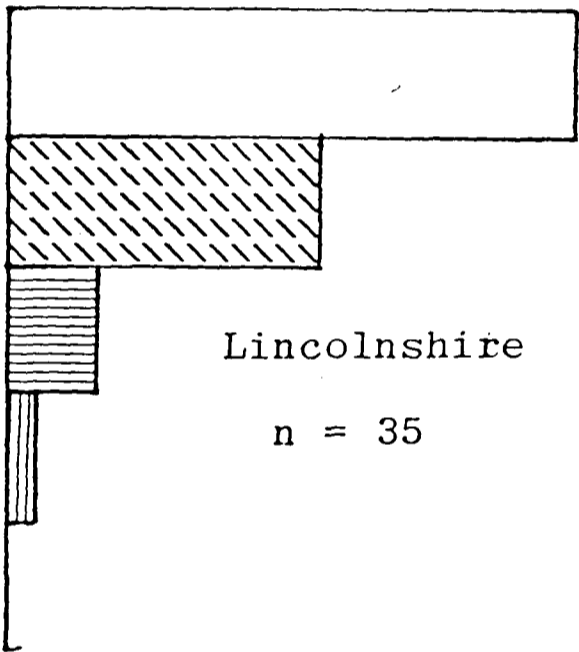
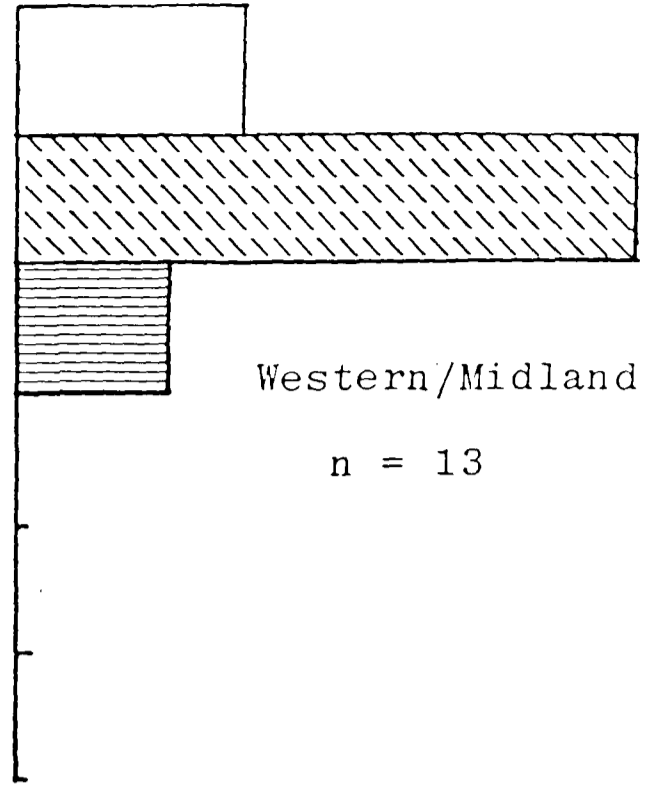
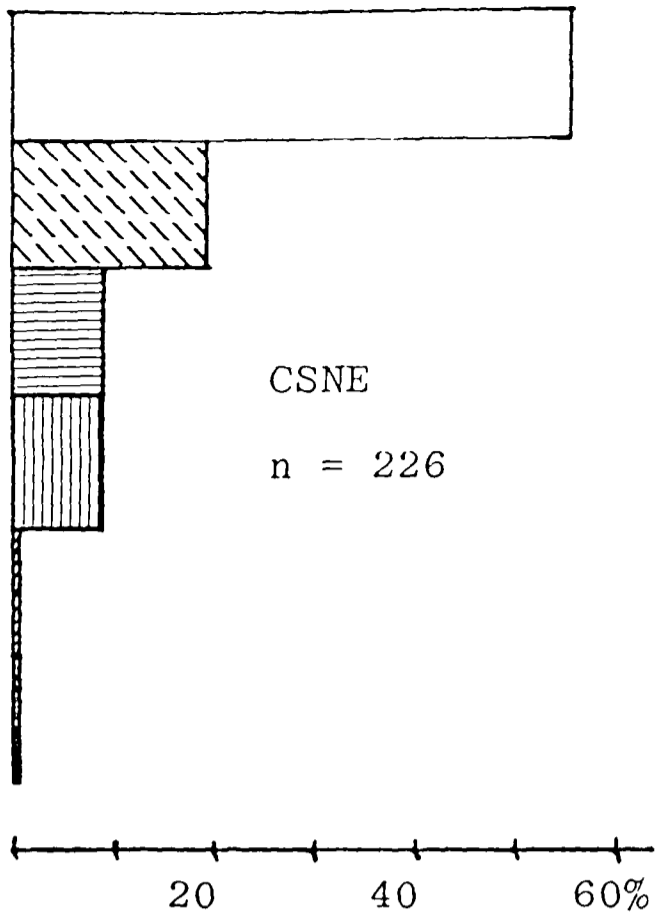


Fig 4.10 Proportion of alloy types used in 6 regions  
 □ Bronze    ▨ Zinc bronze    ▤ Gunmetal    ▧ Tin brass    ▩ Brass    ▪ Coppe

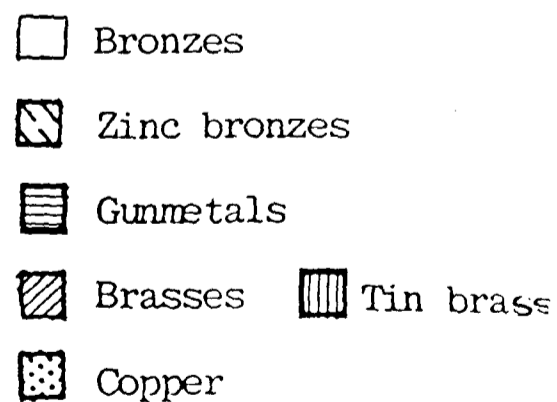
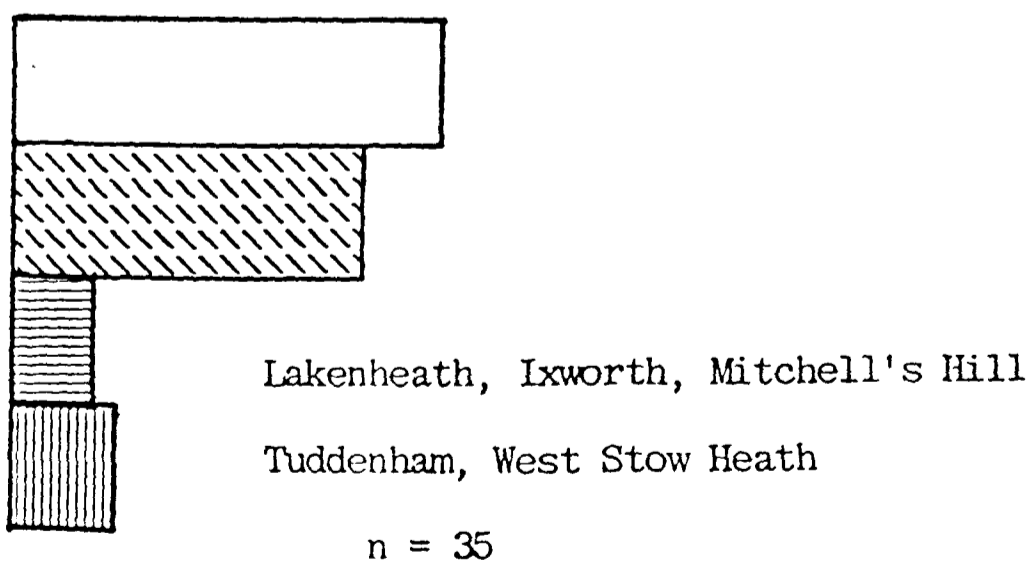
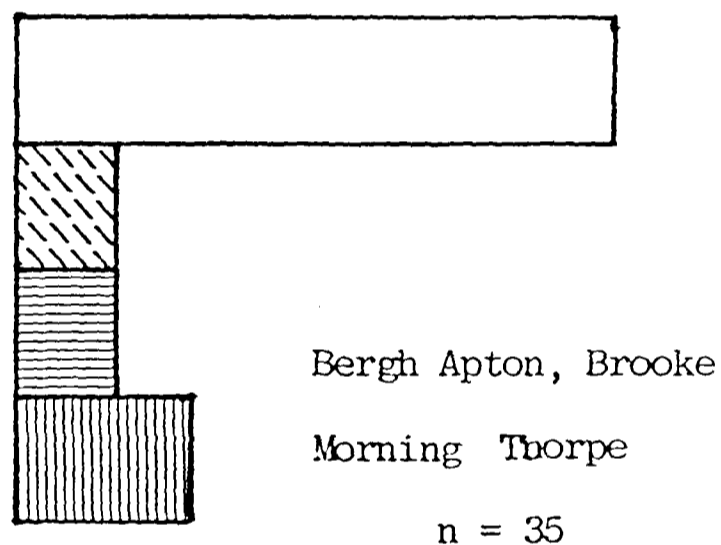
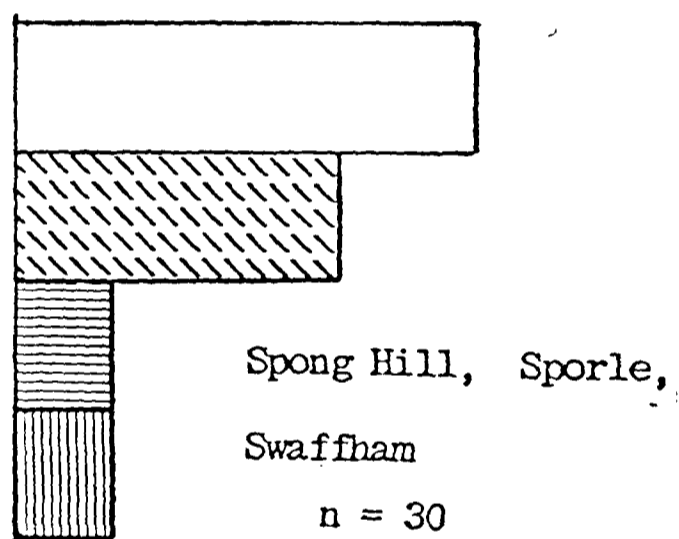
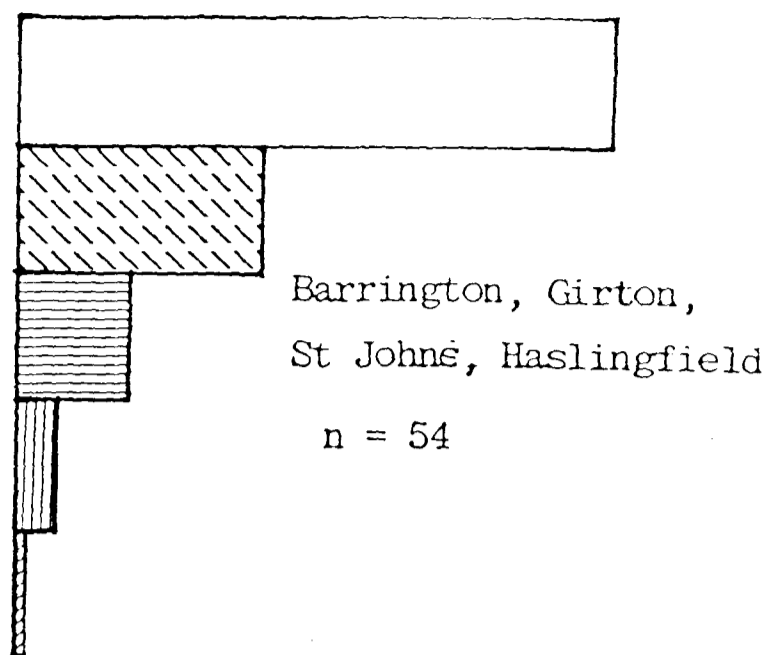
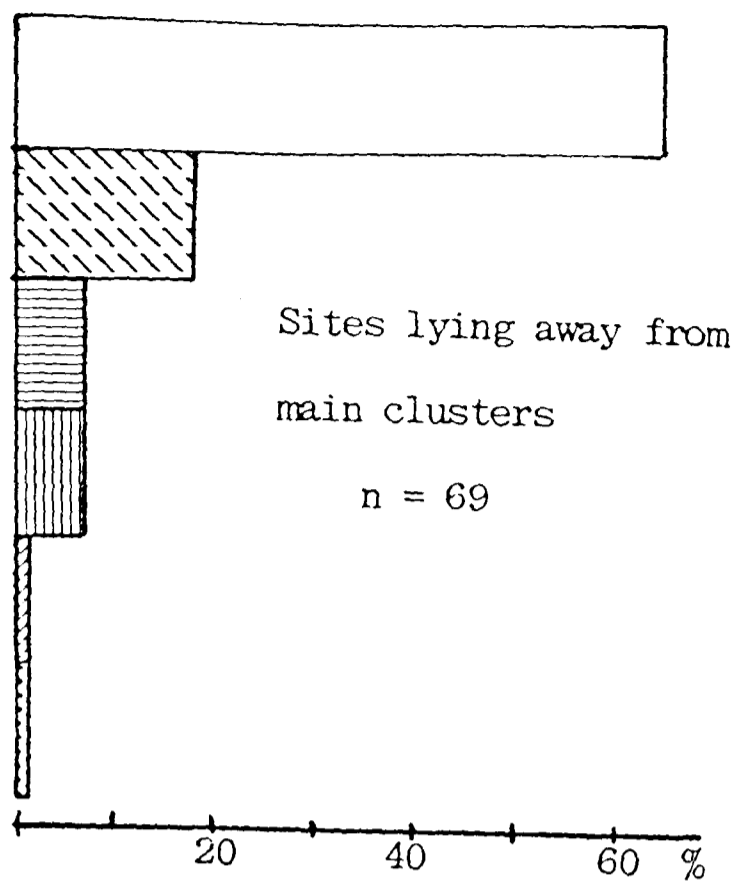


Fig 4.11 Proportions of alloy types used in 5 geographical sub-divisions of the CSNE group of sites

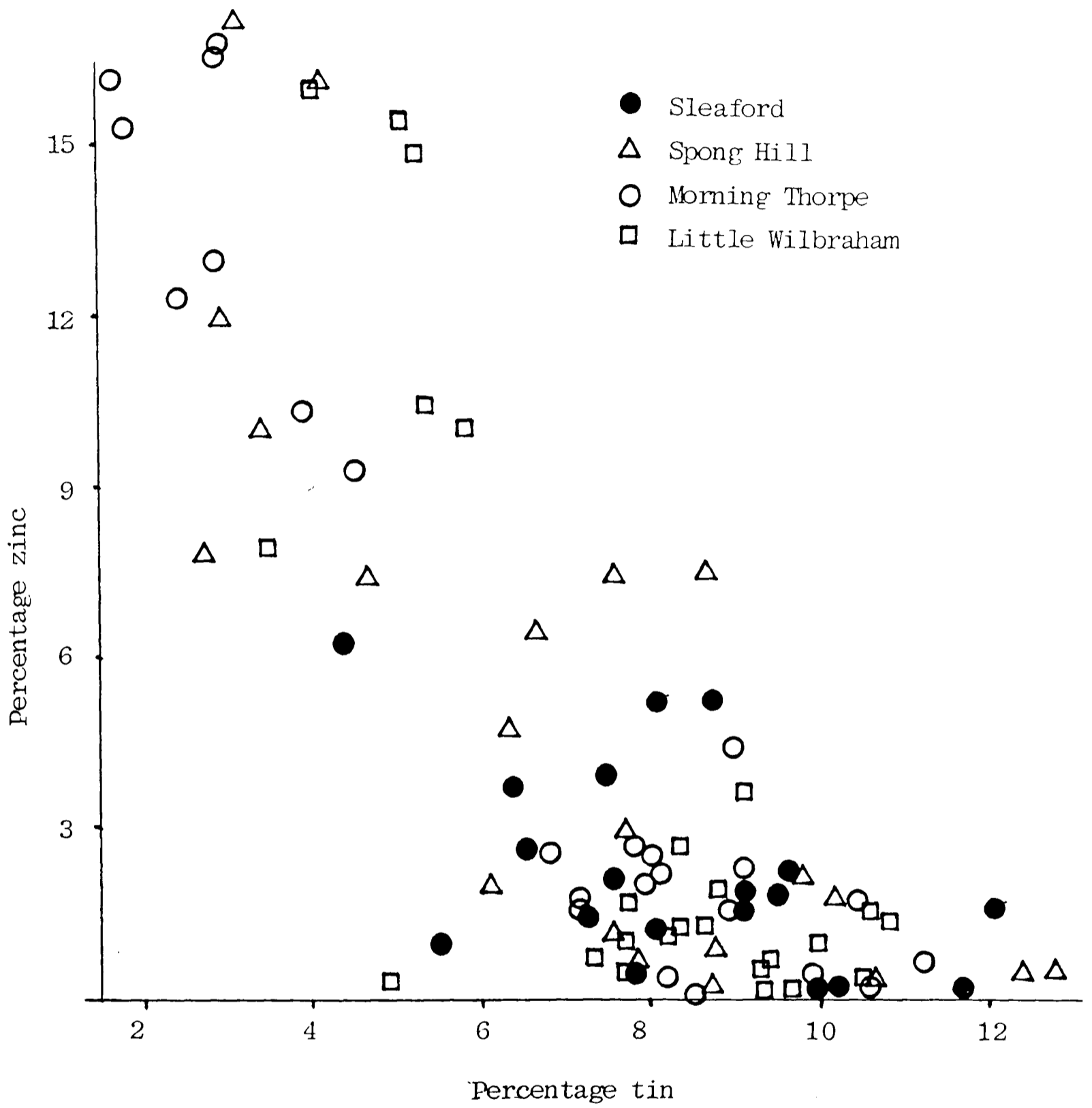


Fig 4.12 Zinc vs tin plot for 4 sites within more than 20 samples

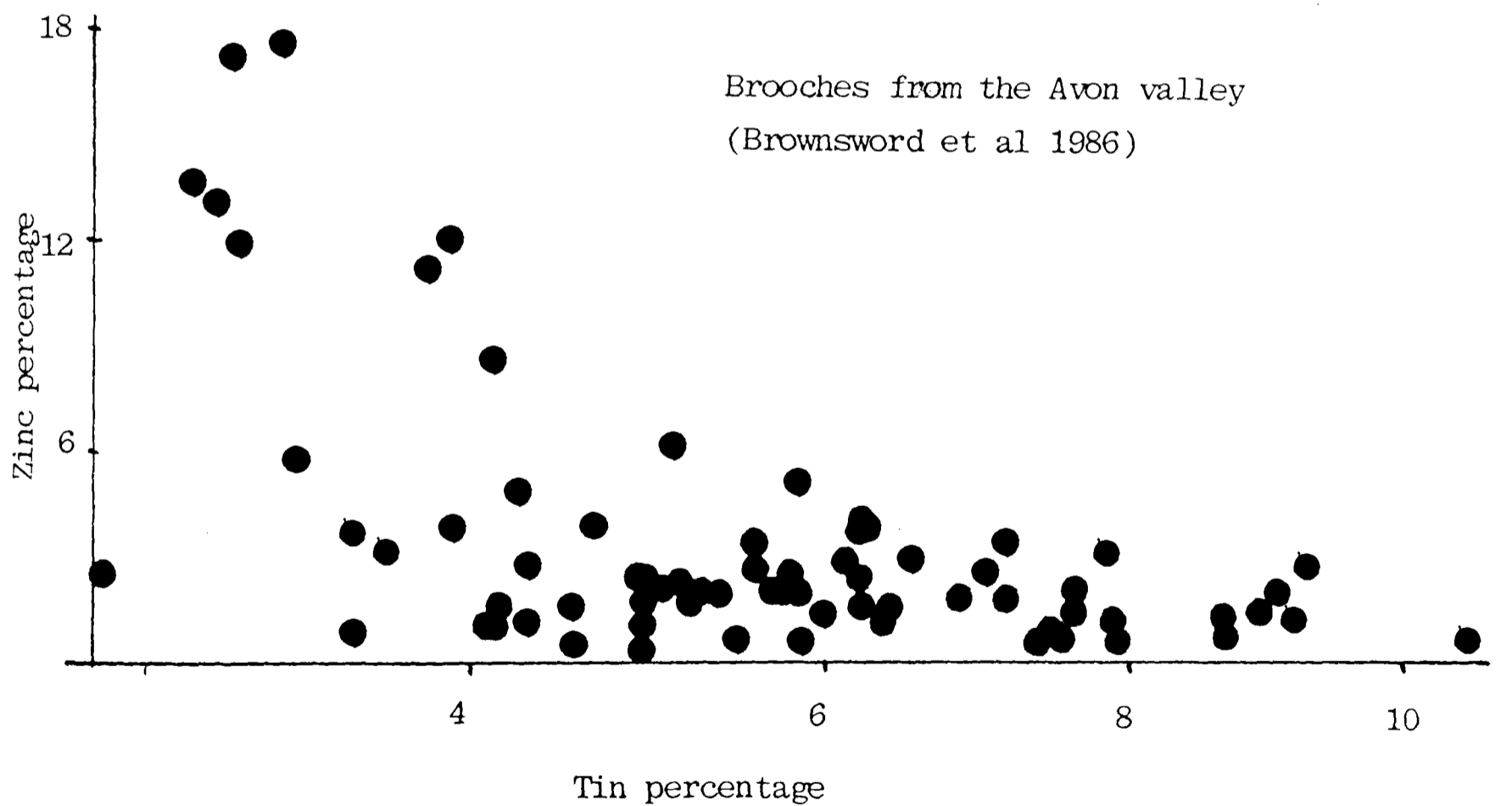
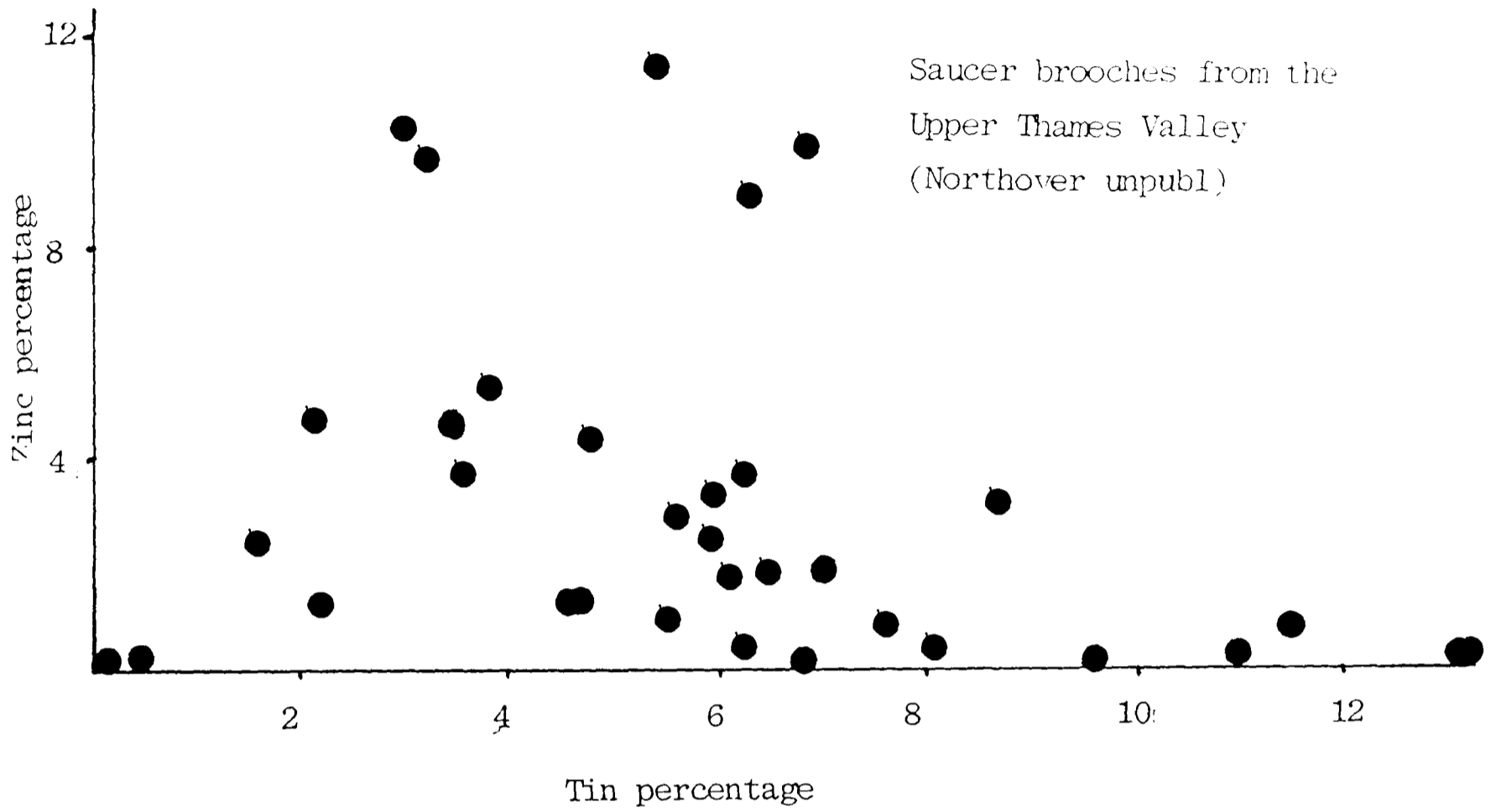


Fig 4.13 Zinc vs tin plots for comparative data - English material, cast brooches  
(NB different scales on plots)

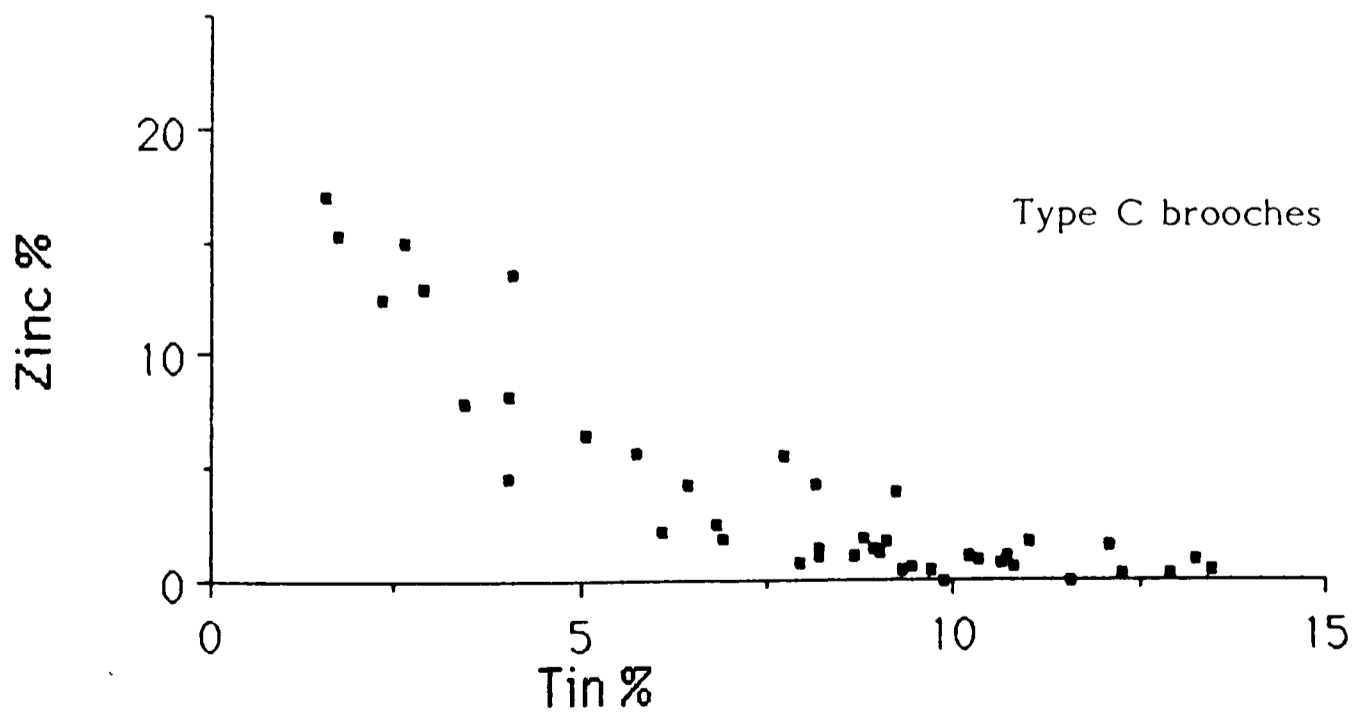
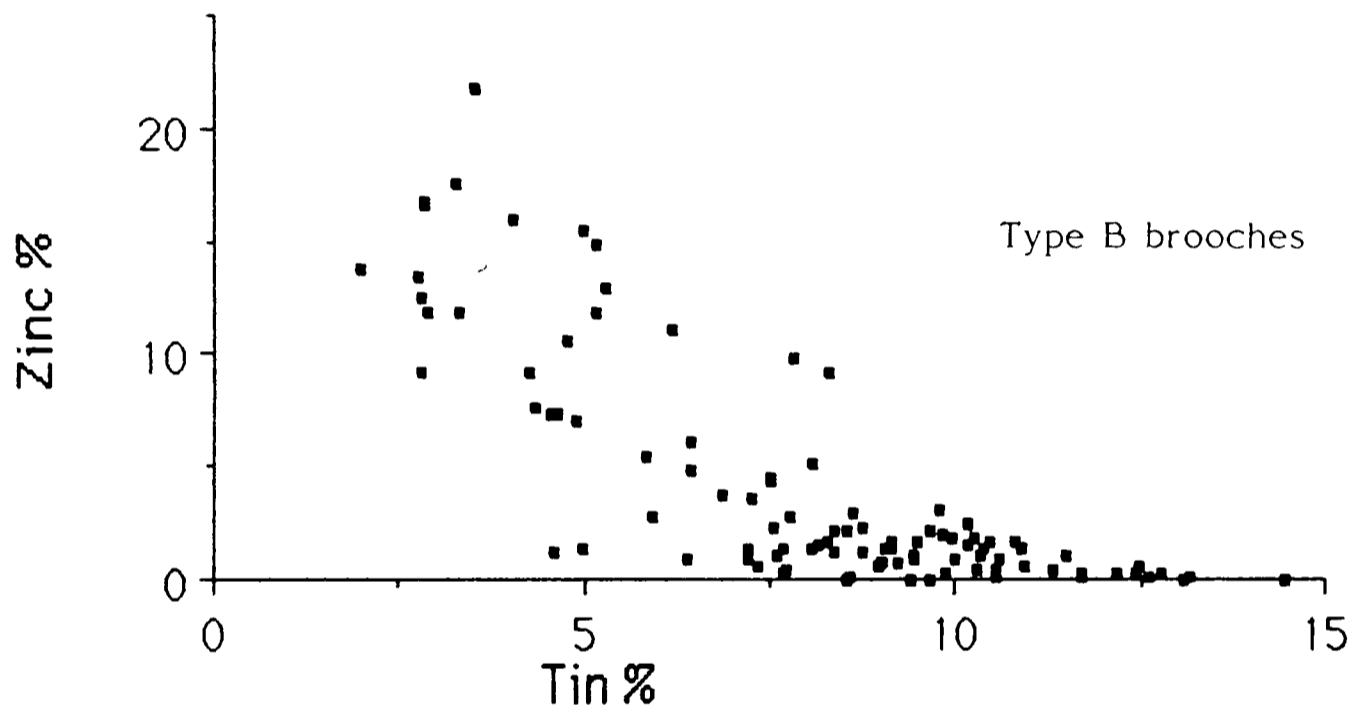
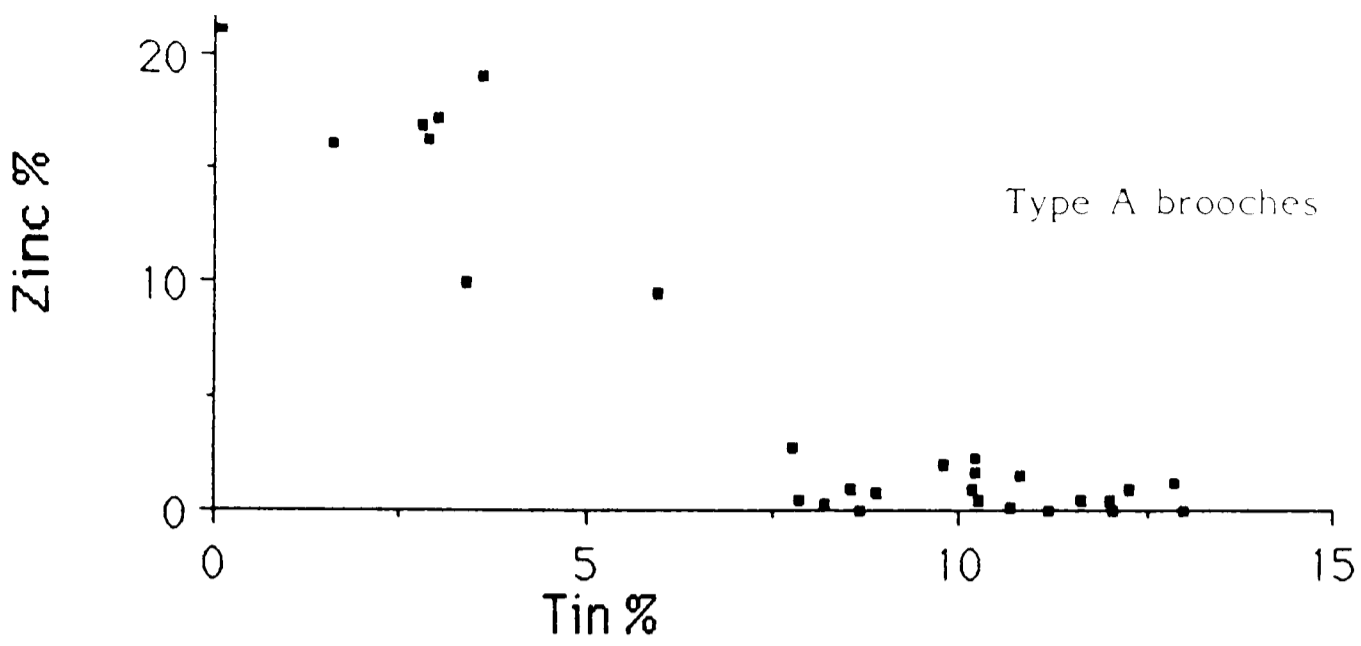


Fig 4.14a Alloy types detected in samples from brooches of types A, B and C

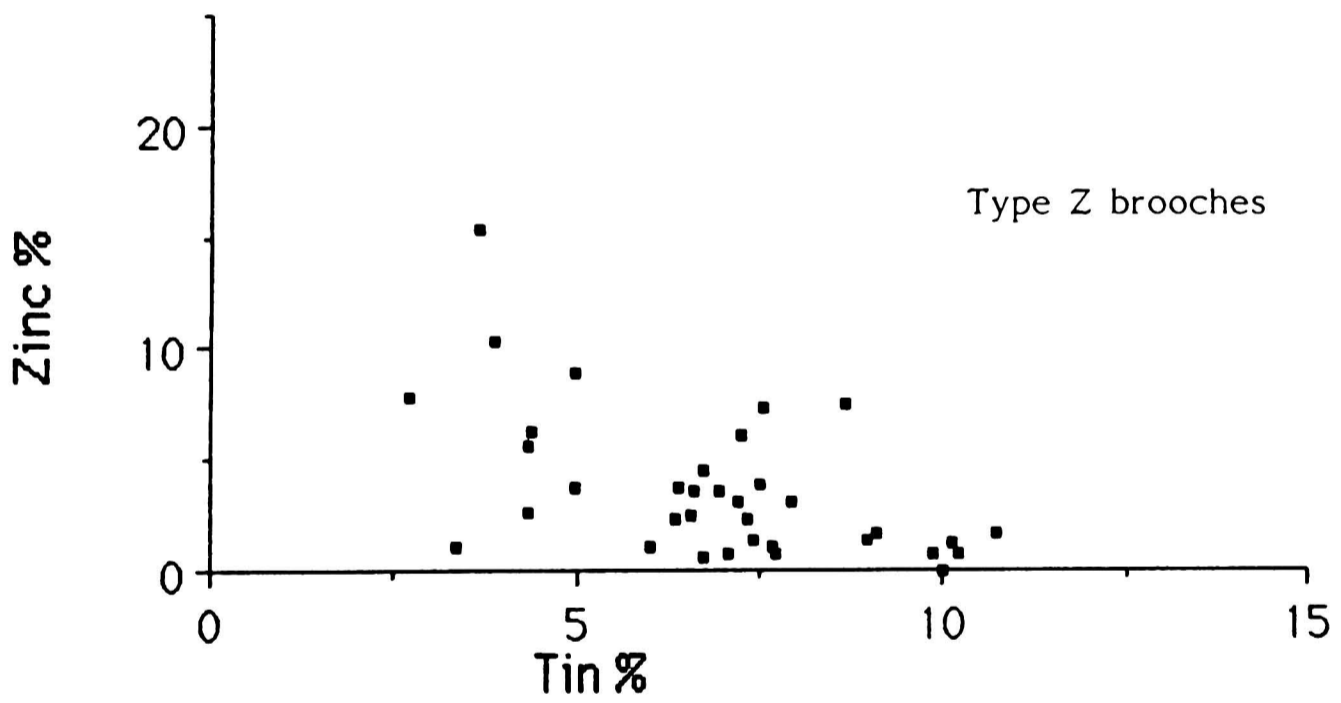
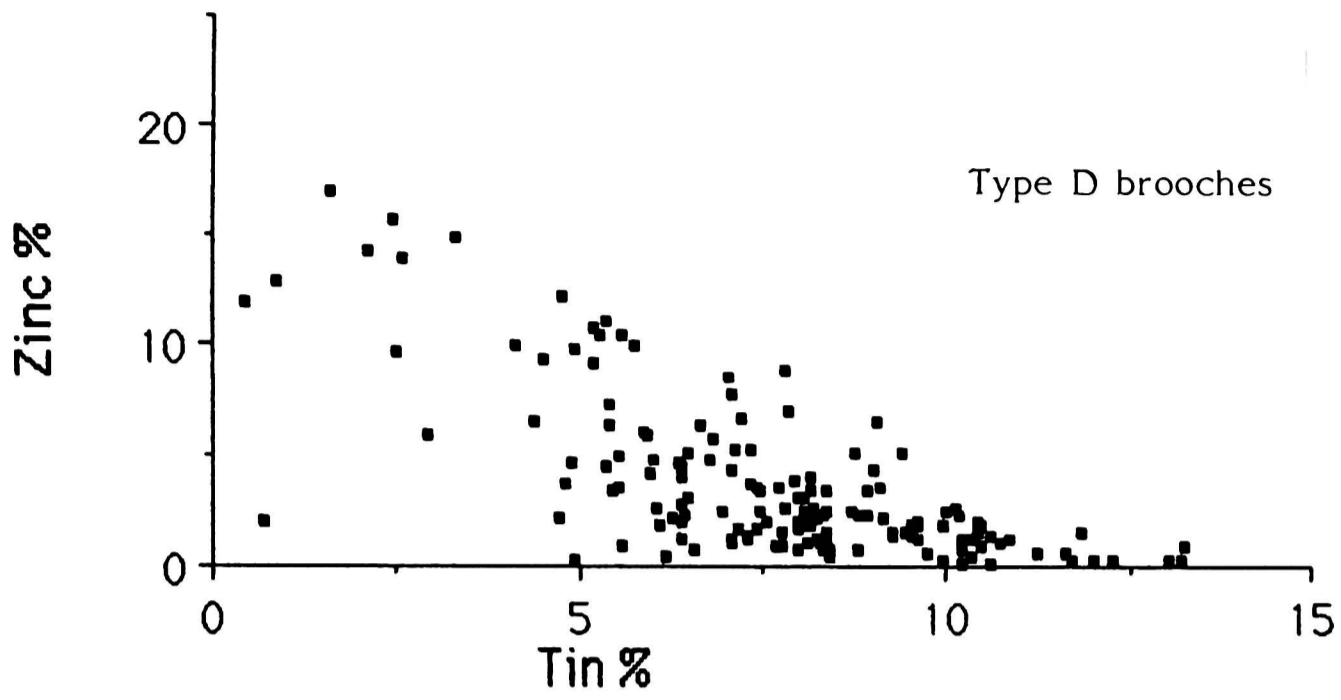


Fig 4.14a(cont) Alloy types detected in samples from brooches of types D and Z

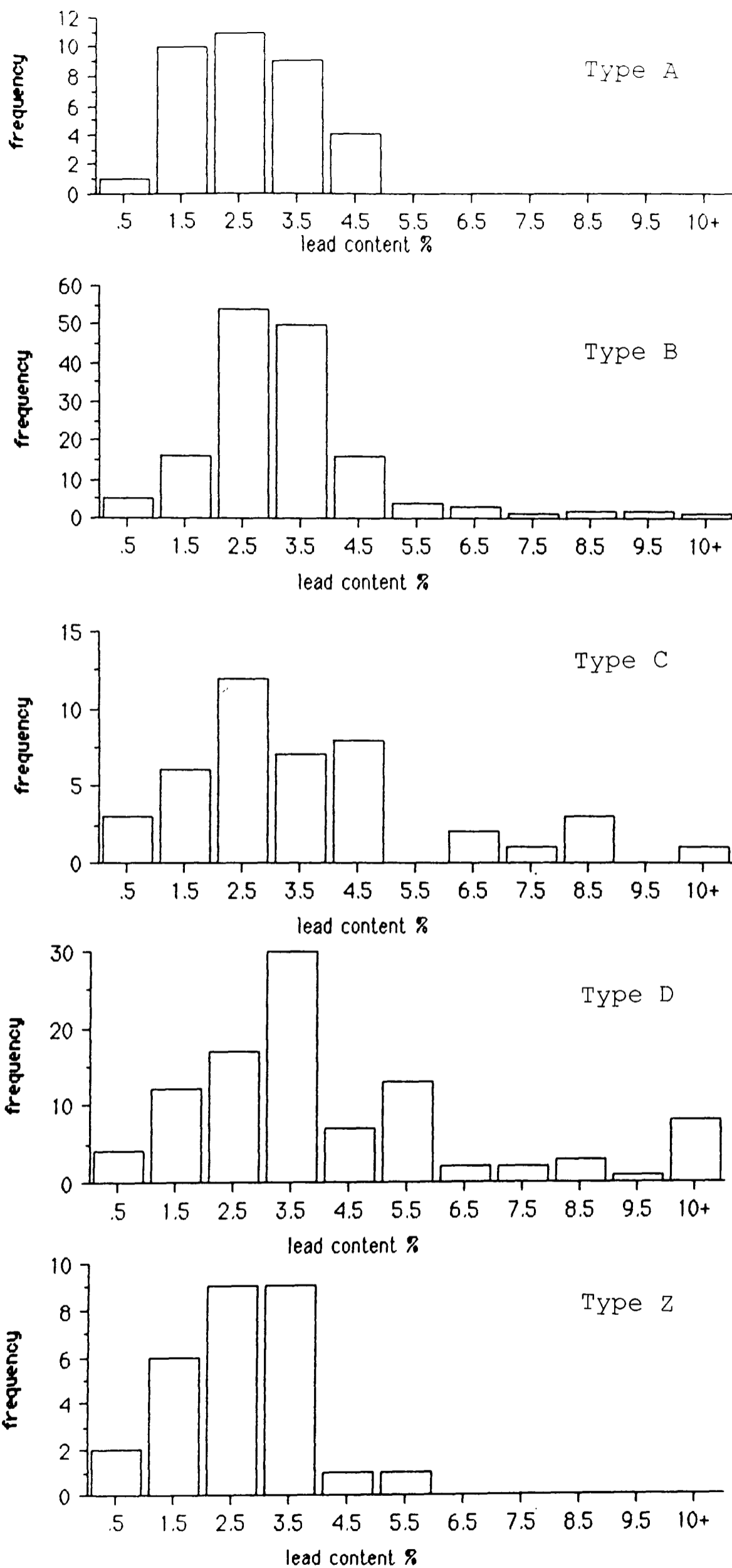
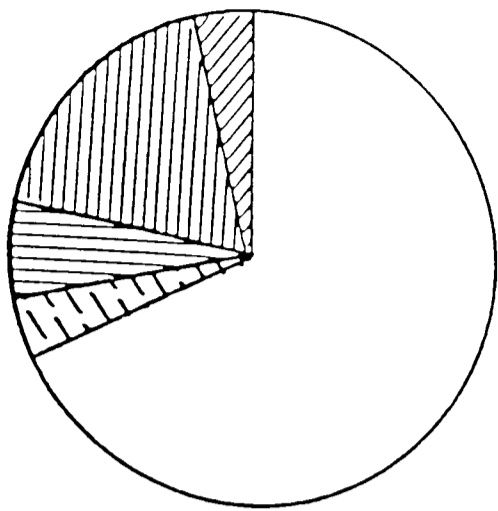
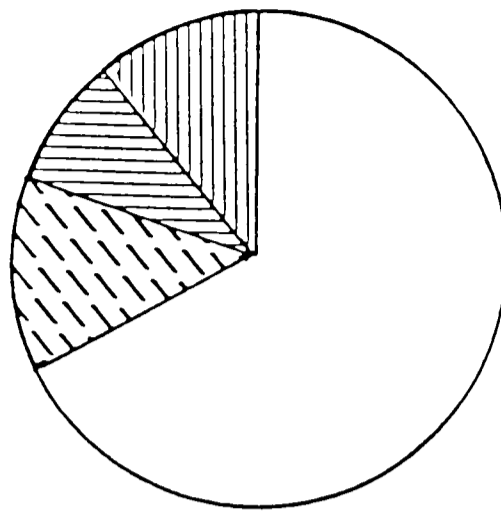


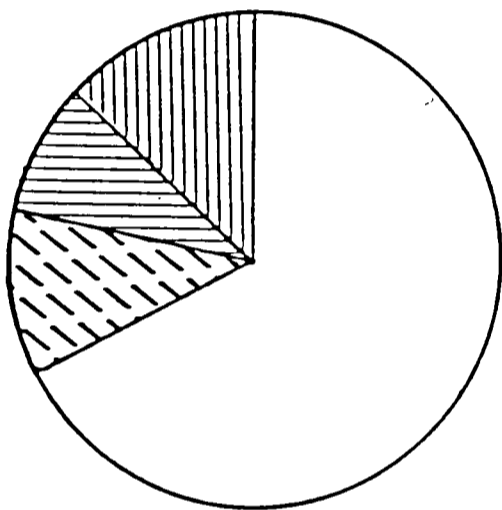
Fig 4.14b Lead contents. Values plotted at centre of grouping



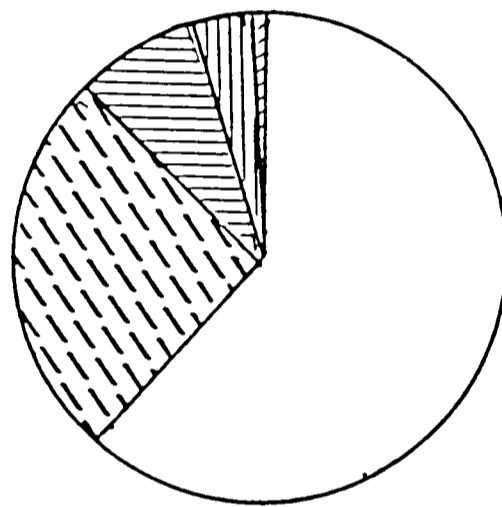
Type A



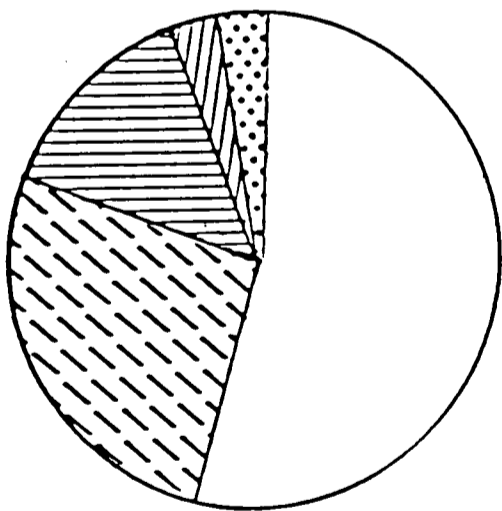
Type B



Type C



Type D



Type Z

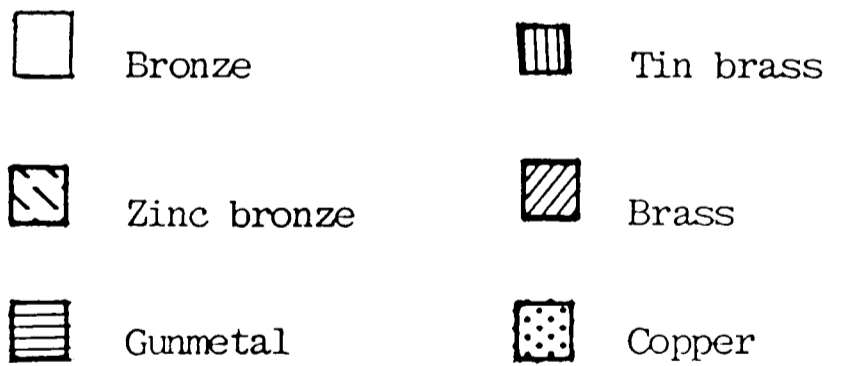


Fig 4.14c Proportion of alloy types in each typological grouping

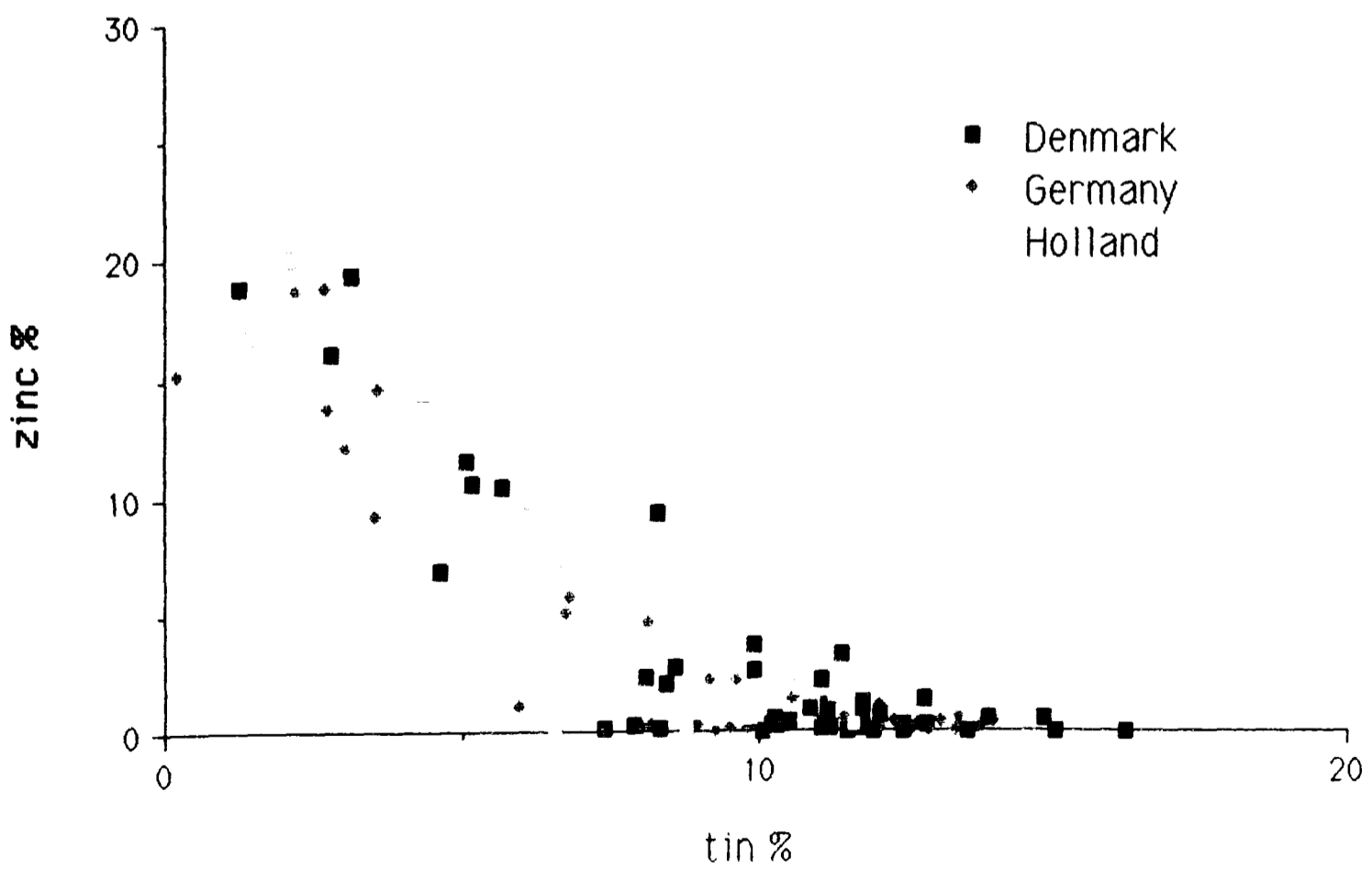
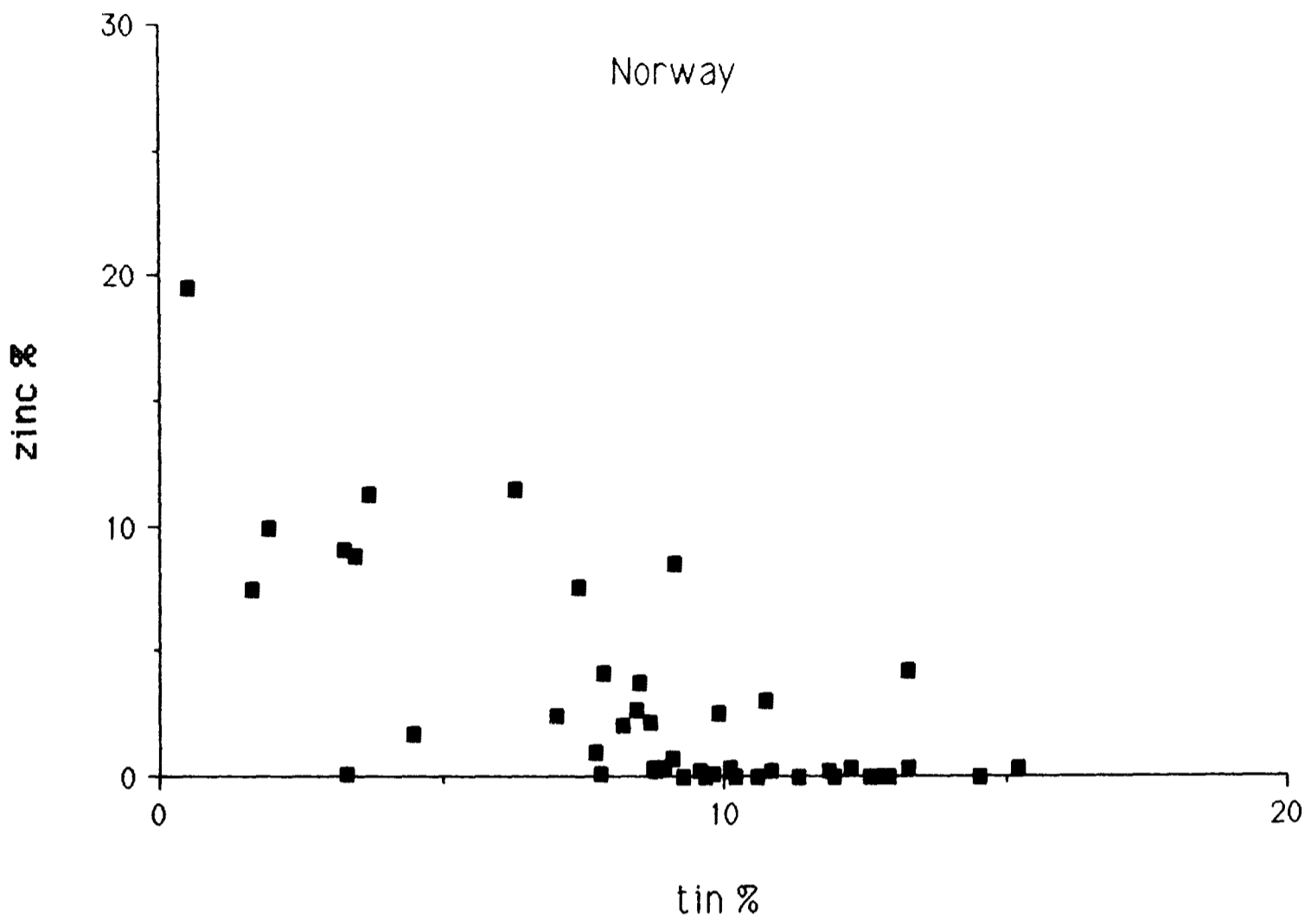


Fig 4.16 Alloy types used in continental and Scandinavian brooches

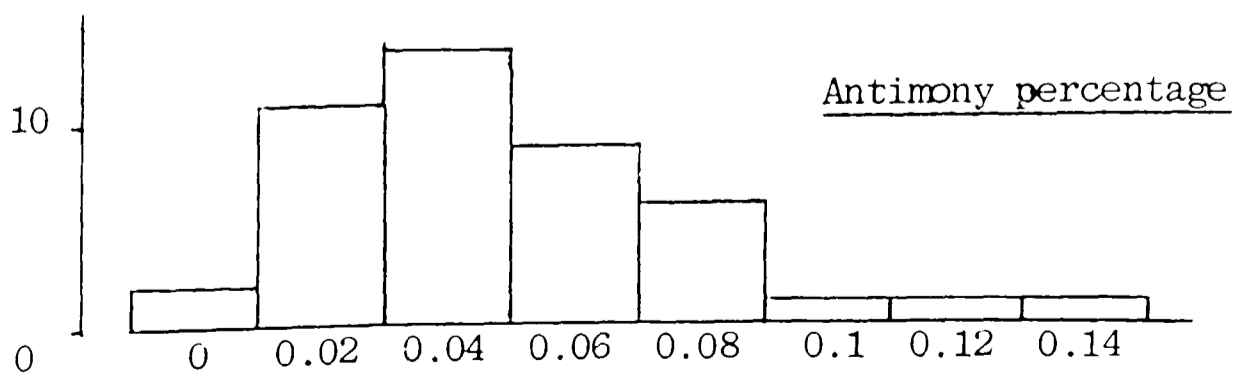
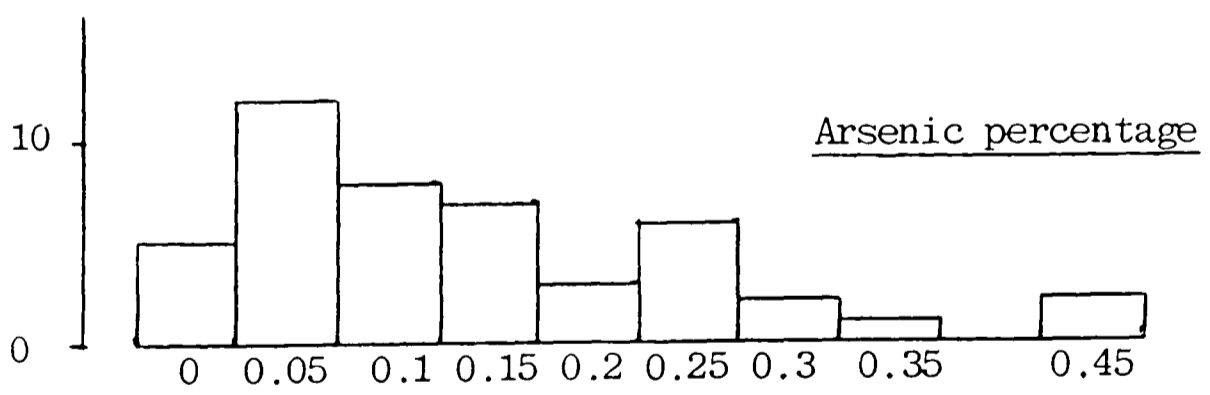
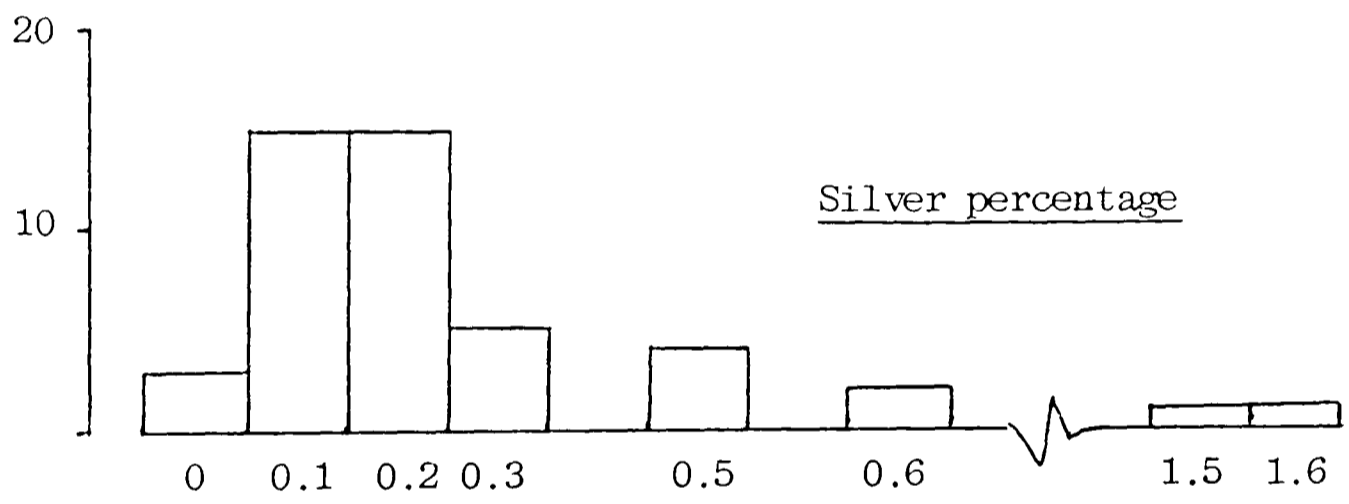
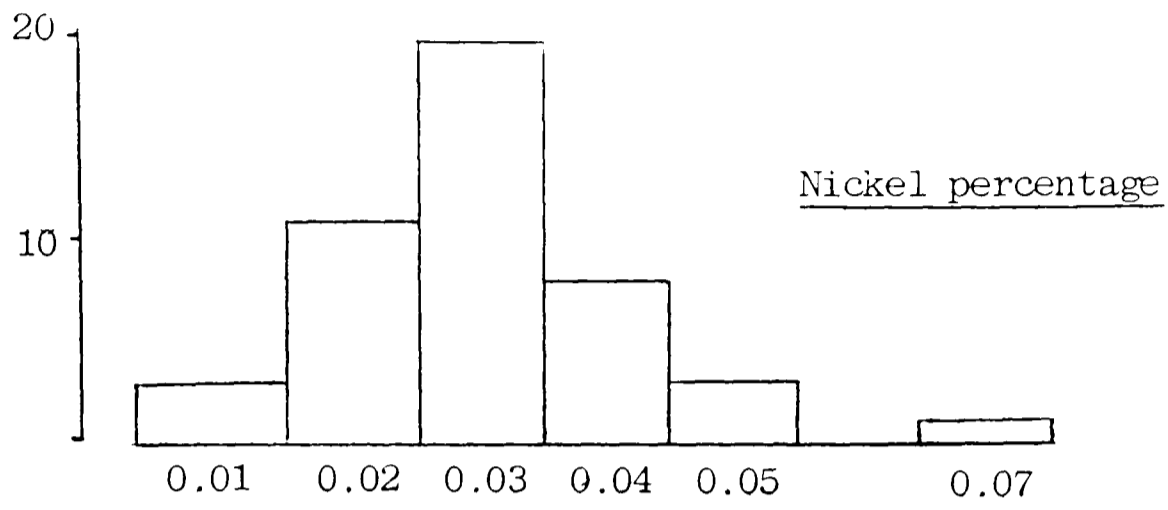
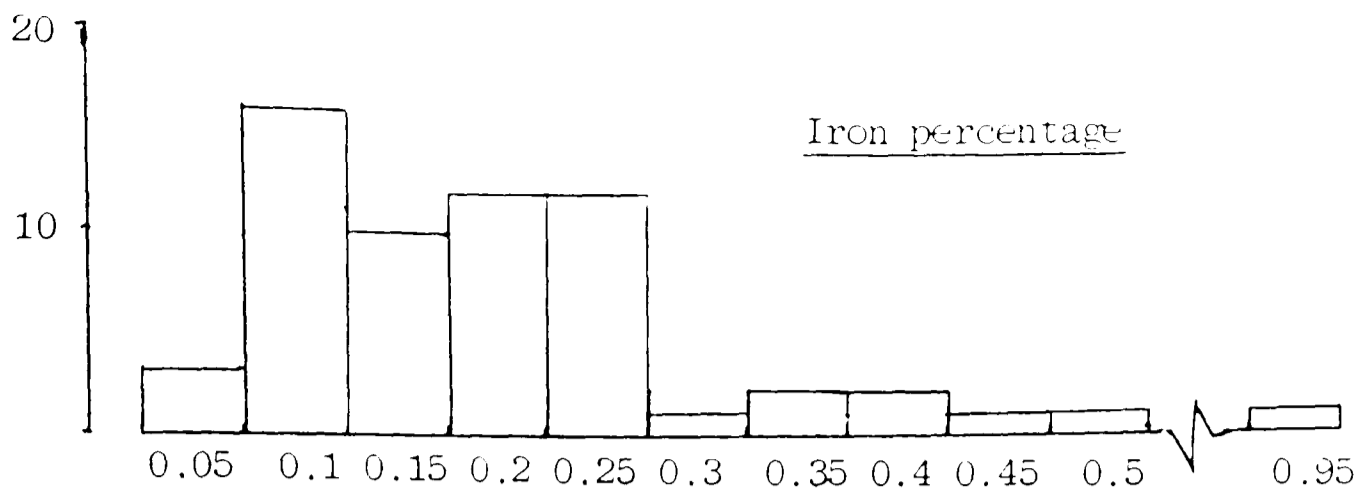


Fig 4.17 Trace elements in Norwegian cruciform brooches

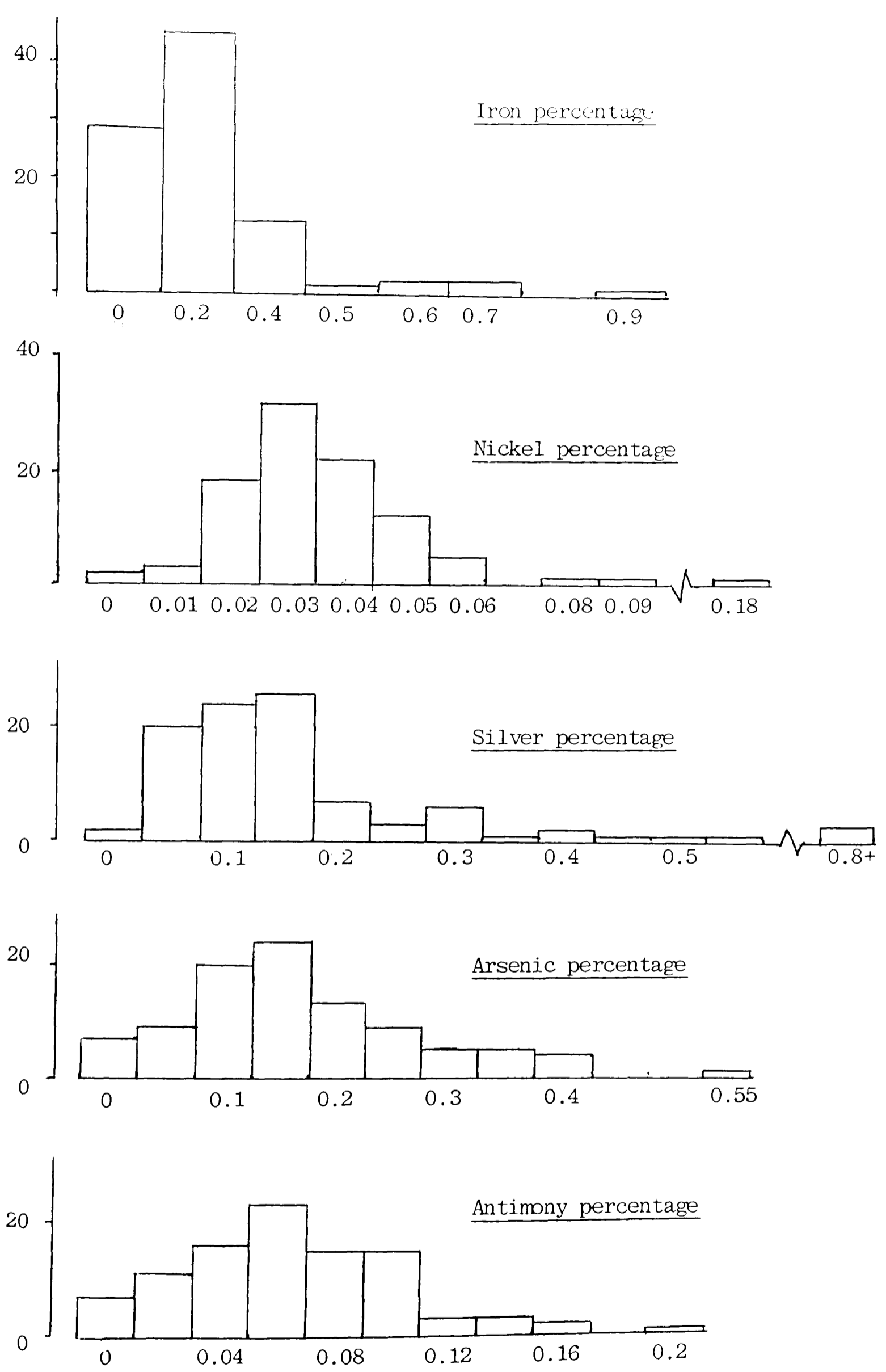
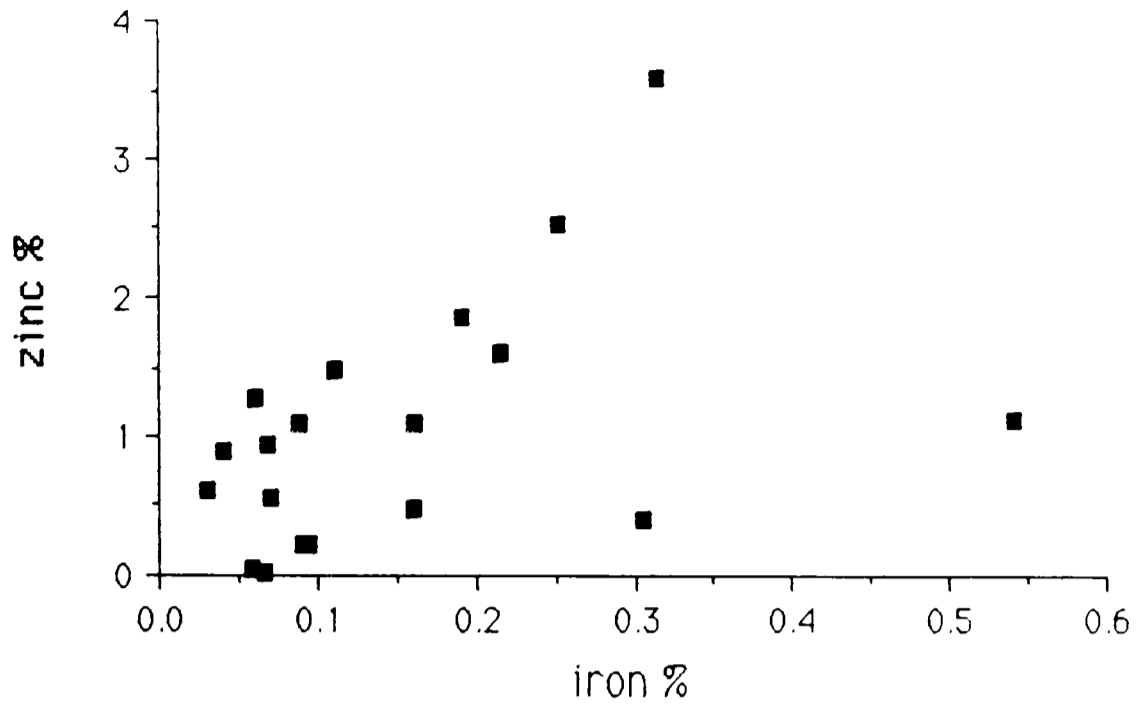
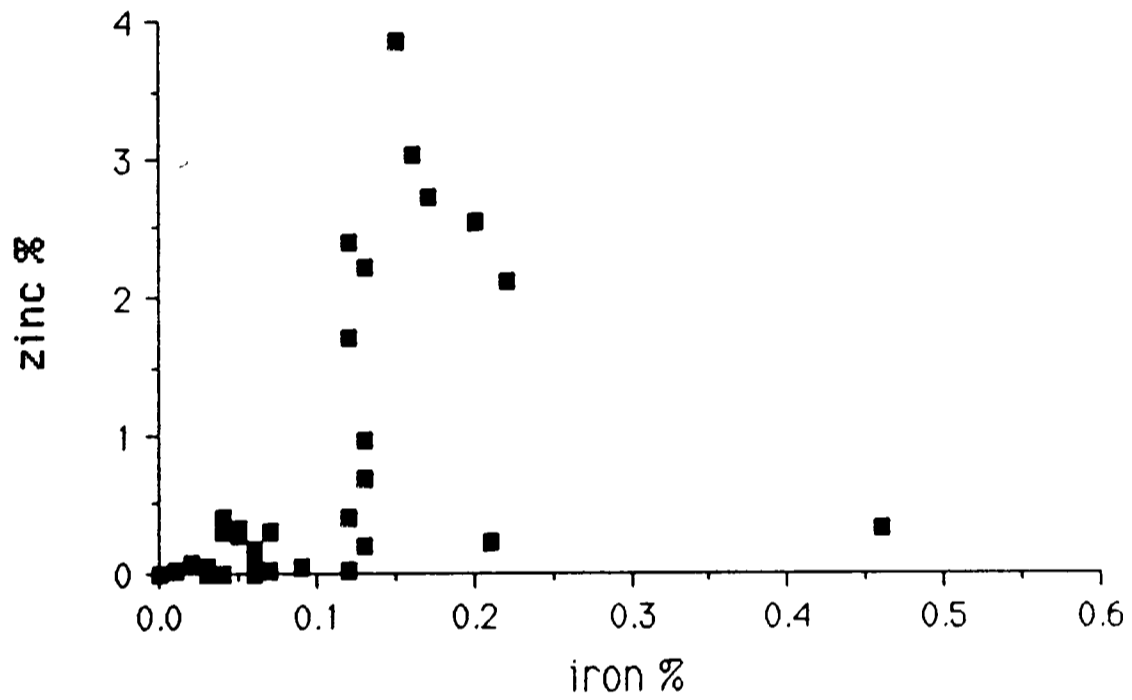


Fig 4.18 Trace elements in continental and Danish brooches

Little Wilbraham - low-zinc copper alloys only



Norwegian data - low-zinc copper alloys only



Norwegian brooches - all values

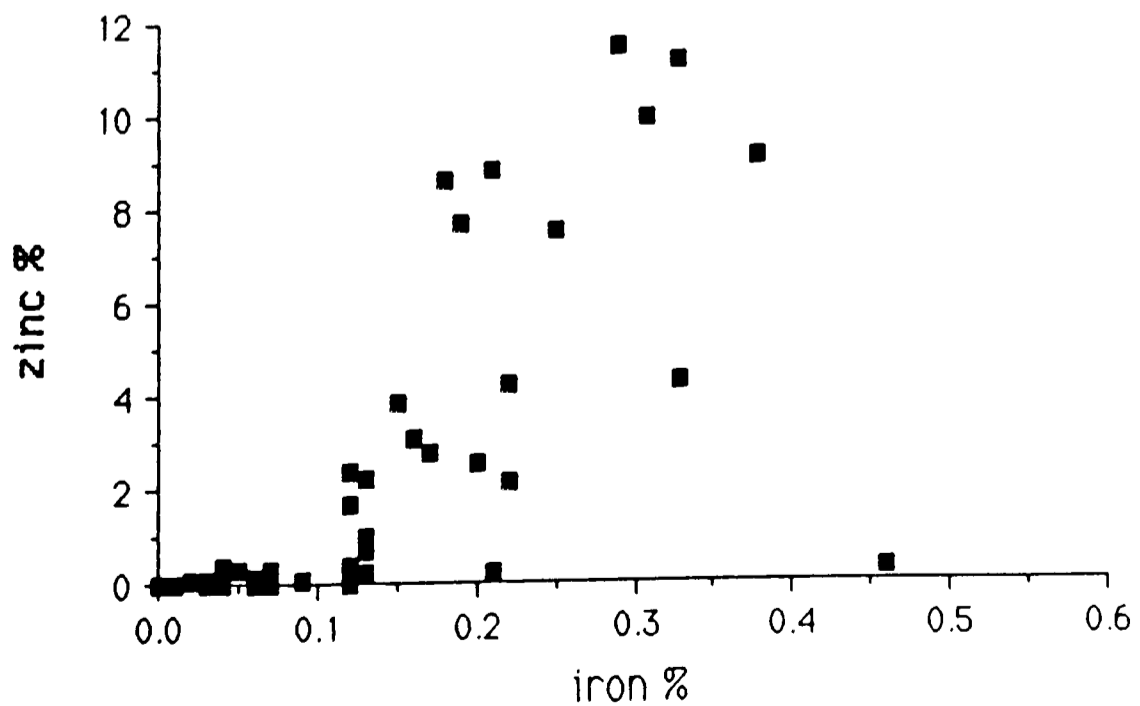
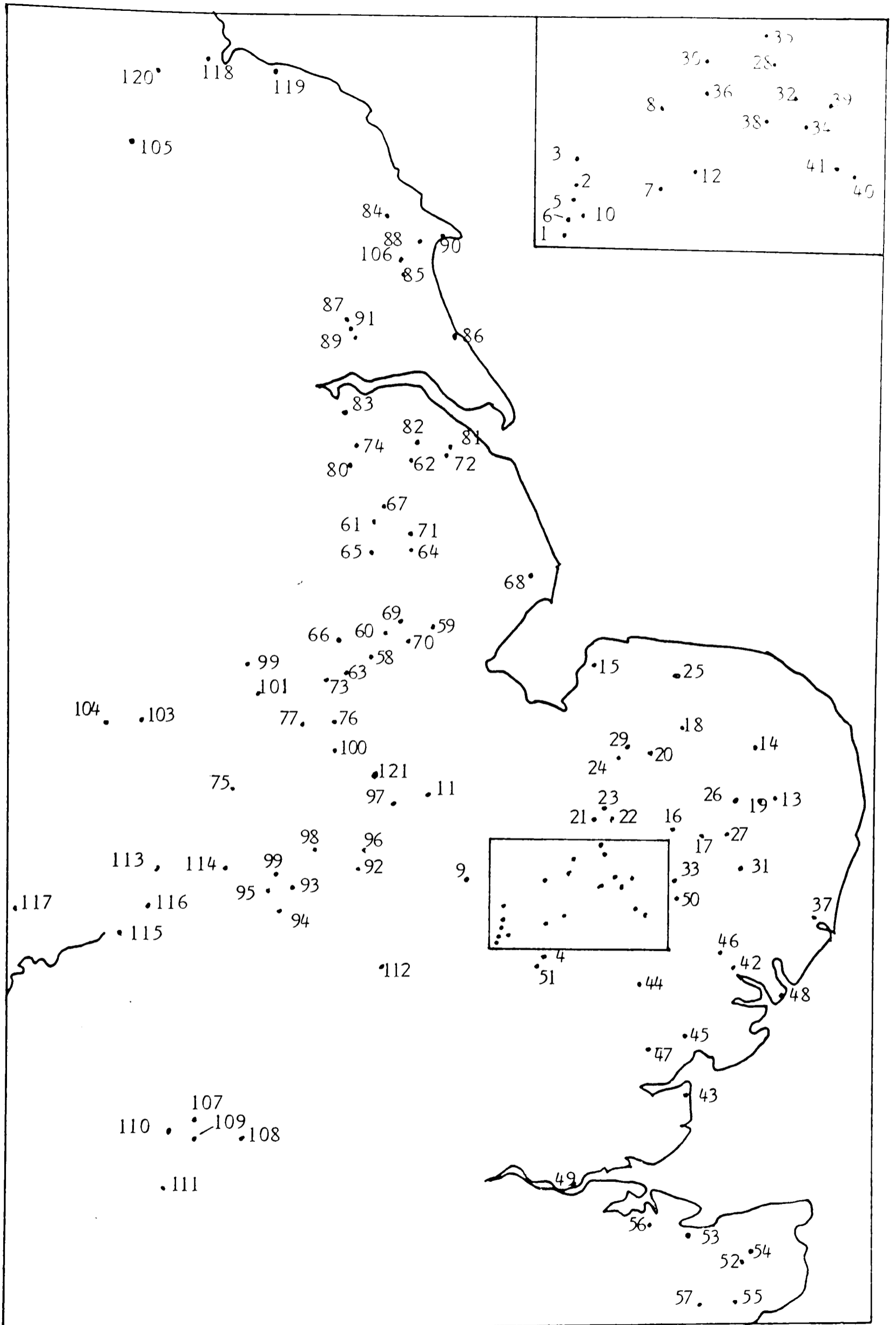


Fig 4.19 Zinc vs iron content - Little Wilbraham, bronzes

Fig 4.20a Zinc vs iron content - Norwegian bronzes

Fig 4.20b Zinc vs iron content - Norwegian brooches, all values

## Maps



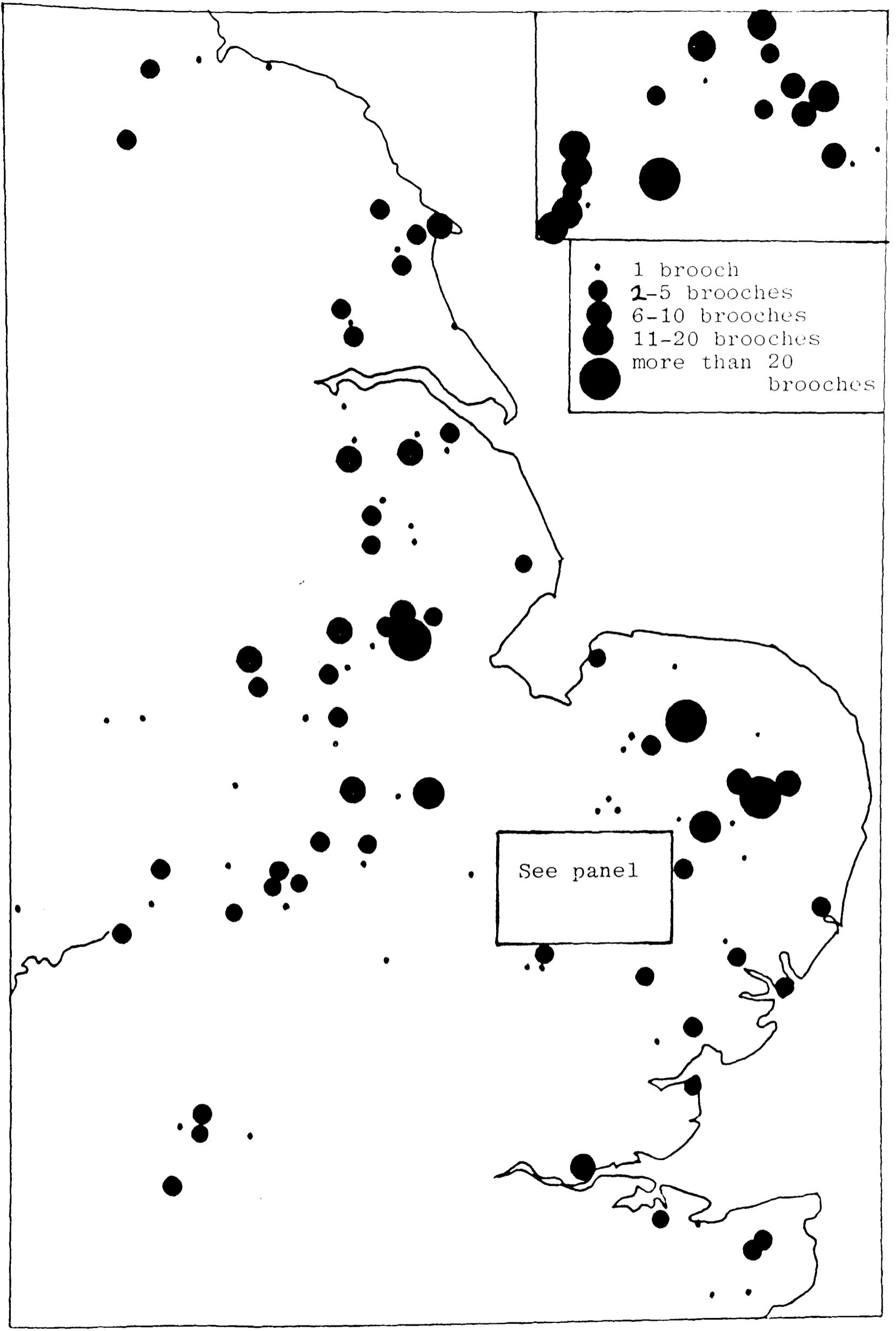
Map 1.1 Location of sites in text

English sites producing cruciform brooches - Map 1.1

1	Barrington A and B	Cambs
2	St Johns Cricket Grounds	
3	Girton	
4	Linton Heath	
5	Newnham Croft	
6	Haslingfield	
7	Little Wilbraham	
8	Soham	
9	St Ives	
10	Trumpington	
11	Woodstone	
12	Undley	
13	Brooke	Norfolk
14	Drayton	
15	Hunstanton	
16	Illington	
17	Kenninghall	
18	Spong Hill	
19	Morning Thorpe	
20	Sporle	
21	Feltwell	
22	Cranwich	
23	Northwold	
24	Swaffham	
25	Walsingham	
26	Bergh Apton	
27	Gissing	
28	Eriswell	Suffolk
29	Exning	
30	Holywell Row	
31	Hoxne	
32	Icklingham	
33	Ixworth	
34	Lackford	
35	Lakenheath	
36	Mildenhall	
37	Snape	
38	Tuddenham	
39	West Stow	
40	Bury St Edmunds	
41	West Garth Gardens, Bury St Edmunds	
42	Akenham	Essex
43	Bradwell	
44	Bulmer	
45	Colchester	
46	Coddenham	
47	Feering	
48	Felixstowe	
49	Mucking	
50	Pakenham	
51	Great Chesterford	

52	Bifrons	Kent
53	Faversham	
54	Howletts	
55	Lyminge	
56	Milton-next-Sittingbourne	
57	Stowting	
58	Ancaster	Lincs
59	Asgarby	
60	Carlton Scroop	
61	Glentham	
62	Fonaby	
63	Grantham	
64	Hatton	
65	Lincoln	
66	Loveden Hill	
67	North Owersby	
68	Partney	
69	Ruskington	
70	Sleaford	
71	South Willingham	
72	Welbeck Hill	
73	Woolsthorpe-by-Belvoir	
74	Bottesford	Leics
75	Glen Parva	
76	Market Overton	
77	North Luffenham	
78	Stapleford	
79	Benwell	Humbs
80	Cleatham	
81	Laceby	
82	Searby	
83	Flixborough	
84	Garton Wold	
85	Driffield	
86	Hornsea	
87	Londesborough	
88	Rudston	
89	Sancton	
90	Sewerby	
91	Goodmanham	
92	Barton Seagrave	North
93	Brixworth	
94	Duston	
95	Holdenby	
96	Islip	
97	Newnham	
98	Rothwell	
99	Rugby	
100	Wakerley	
101	Holme Pierpoint	Notts
102	Willoughby-on-the-Wolds	

103	Brizlincote	Derbys
104	Wychnor	Staffs
105	Catterick	N Yorks
106	Staxton	
107	Abingdon	Oxon
108	Dorchester	
109	Goldbury Hill, Hendred	
110	Frilford	
111	East Shefford	Berks
112	Kempston	Beds
113	Baginton	Warwicks
114	Churchover	
115	Alveston Manor, Stratford-upon-Avon	
116	Longbridge	
117	Upton Snodsbury	H & W
118	Norton-on-Tees	Cleveland
119	Saltburn	
120	Darlington	Co Durham
121	Nassington	Northants



Map 1.2 Number of brooches at sites discussed in text

Map 1.3

Norway

- |   |                  |    |                 |
|---|------------------|----|-----------------|
| 1 | Østfold          | 9  | Buskerud        |
| 2 | Vestfold         | 10 | Hedmark         |
| 3 | Telemark         | 11 | Møre og Romsdal |
| 4 | Aust-Agder       | 12 | Sør-Trondelag   |
| 5 | Vest-Agder       | 13 | Nord-Trondelag  |
| 6 | Rogaland         | 14 | Nordland        |
| 7 | Hordaland        | 15 | Sør-Troms       |
| 8 | Sogn og Fjordane |    |                 |

Sweden

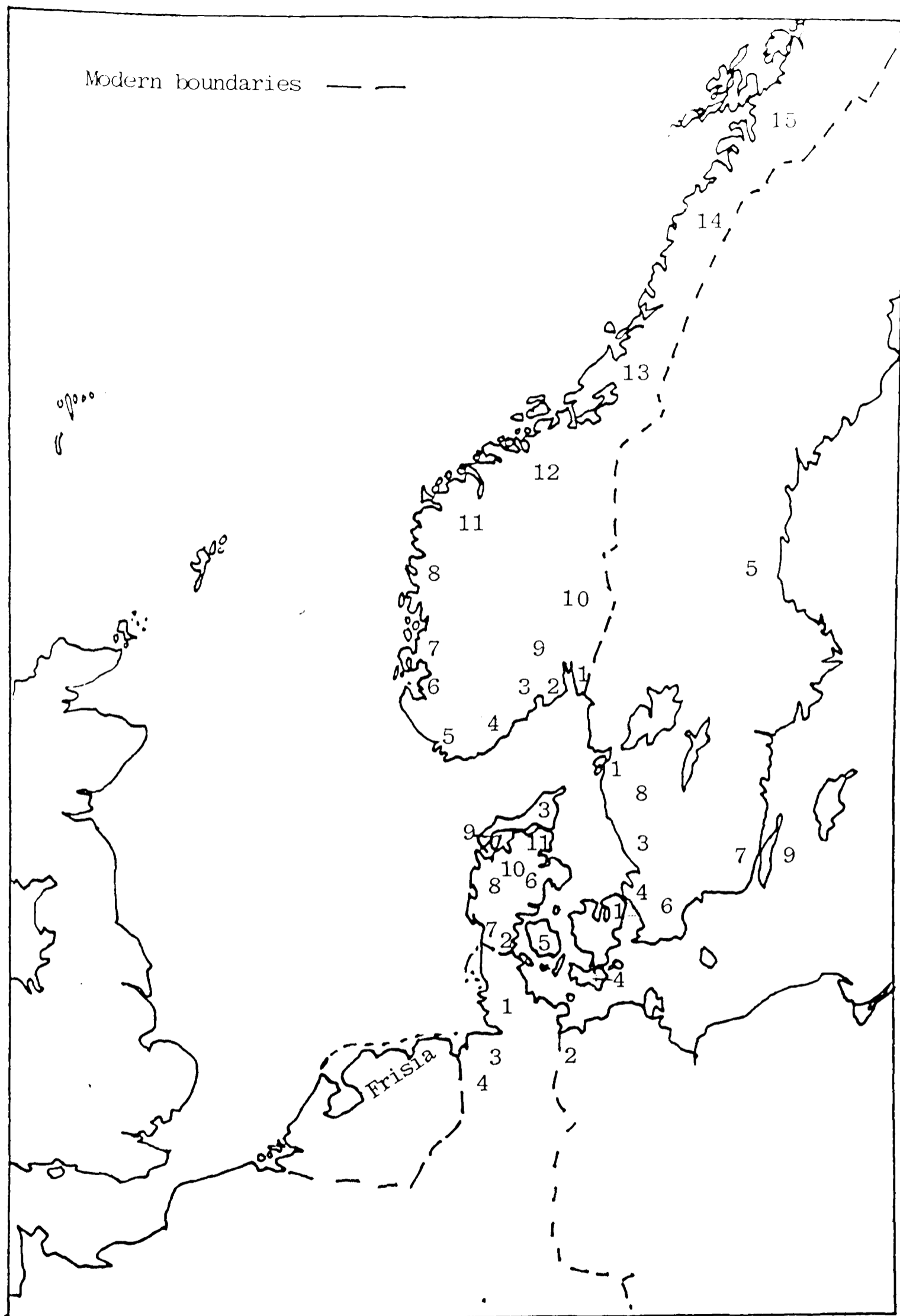
- |   |             |   |               |
|---|-------------|---|---------------|
| 1 | Bohuslan    | 6 | Skåne         |
| 2 | Dalarna     | 7 | Småland       |
| 3 | Halland     | 8 | Västergötland |
| 4 | Halsingland | 9 | Øland         |
| 5 | Medelpad    |   |               |

Denmark

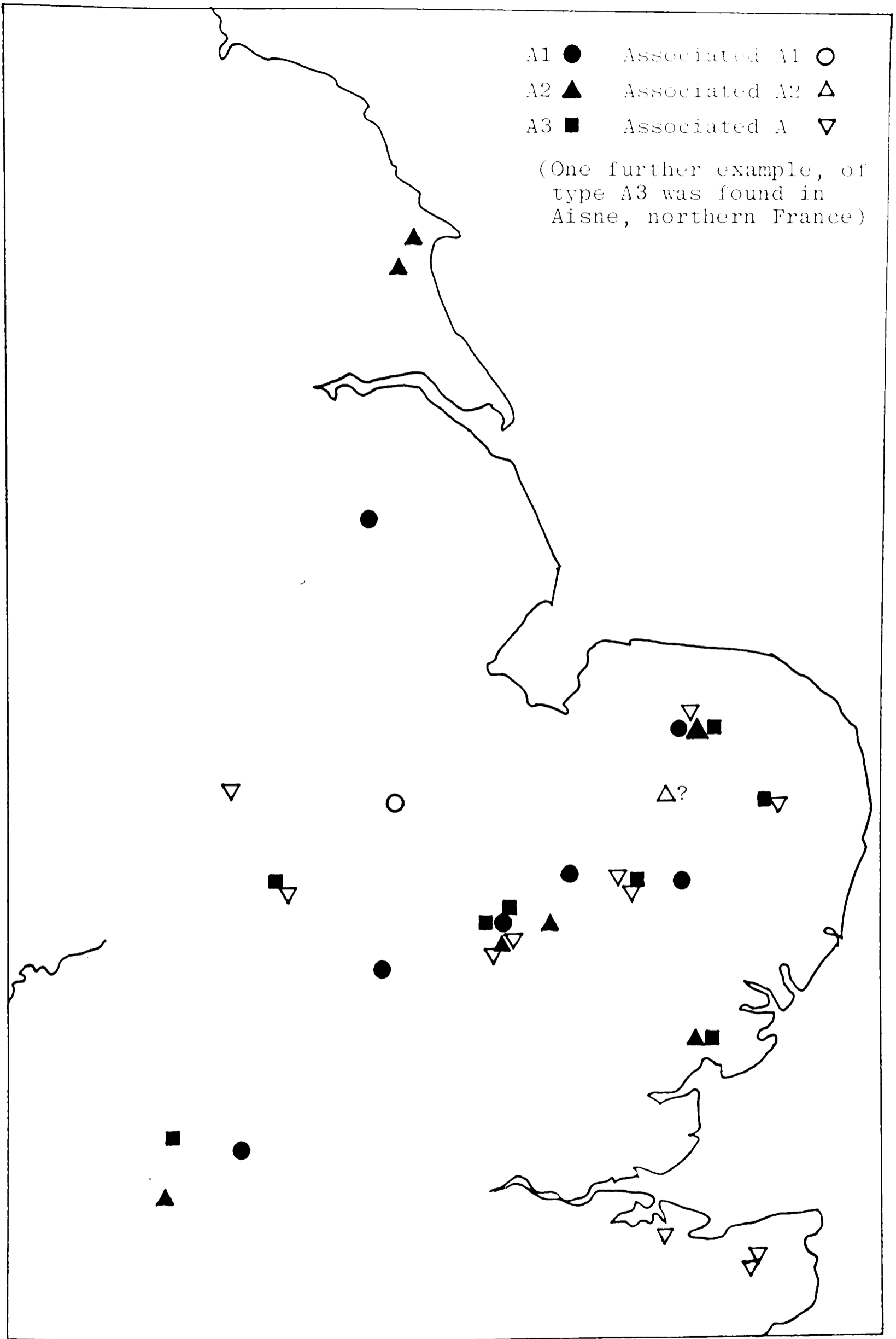
- |   |               |    |            |
|---|---------------|----|------------|
| 1 | Frederiksborg | 7  | Ribe       |
| 2 | Haderslev     | 8  | Ringkøbing |
| 3 | Hjørring      | 9  | Thisted    |
| 4 | Maribo        | 10 | Viborg     |
| 5 | Odense        | 11 | Ålborg     |
| 6 | Randers       |    |            |

Germany

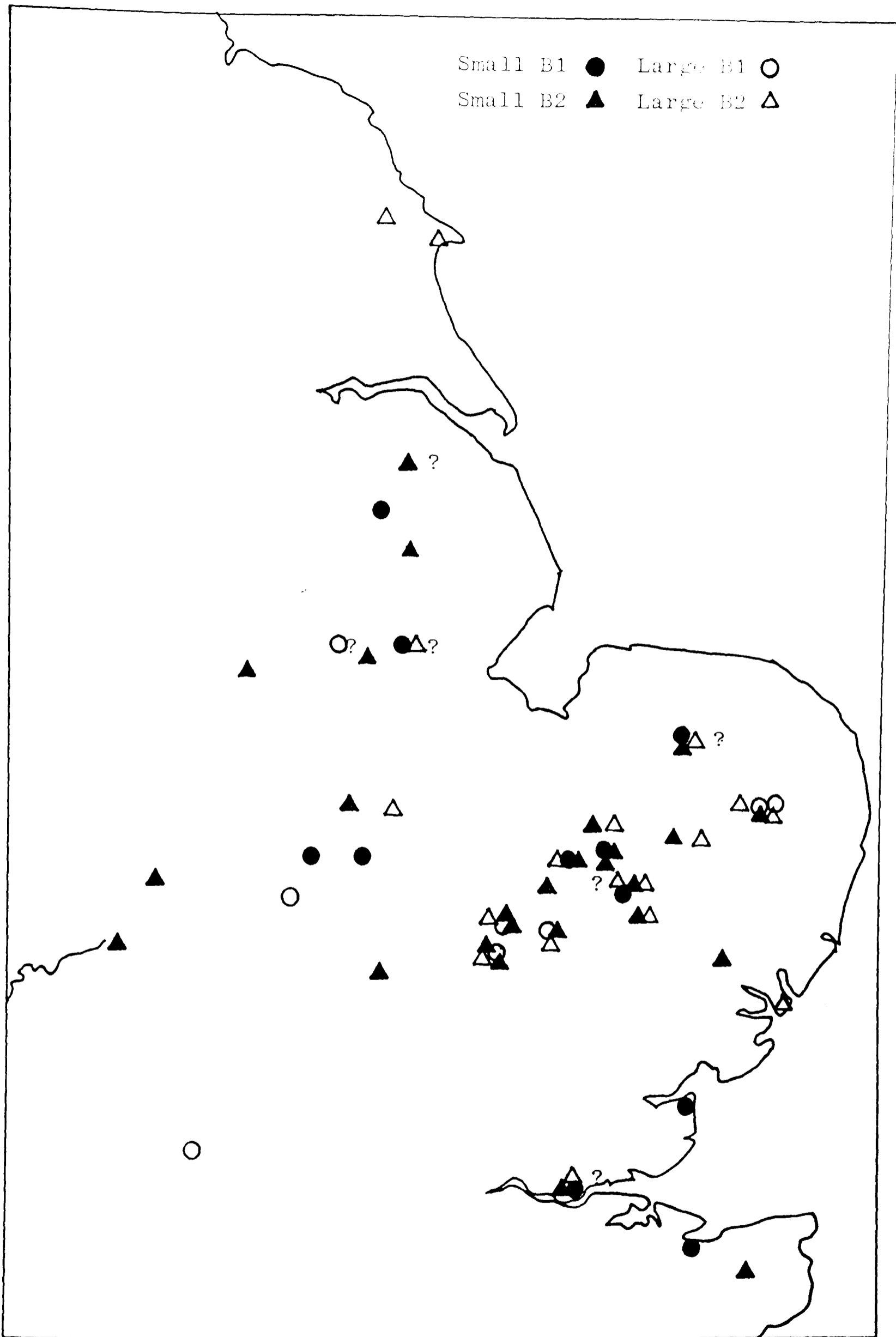
- |   |                         |   |   |
|---|-------------------------|---|---|
| 1 | Schleswig-Holstein      | 3 | Niedersachen                                |
| 2 | Mecklenburg and Pommern | 4 | Nordrhein-Westfahlen and<br>Rheinland Pfalz |



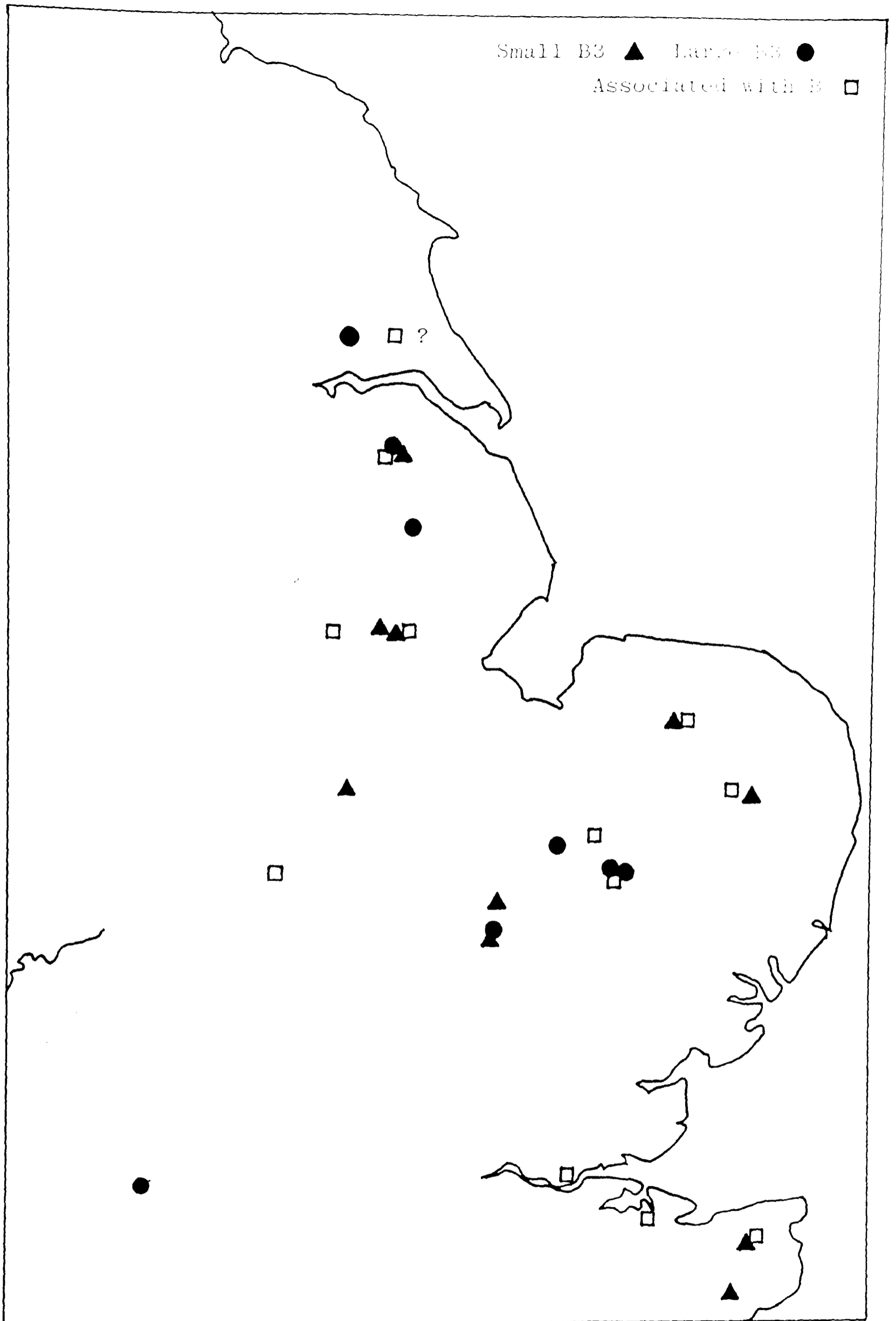
Map 1.3 Regions mentioned in the text



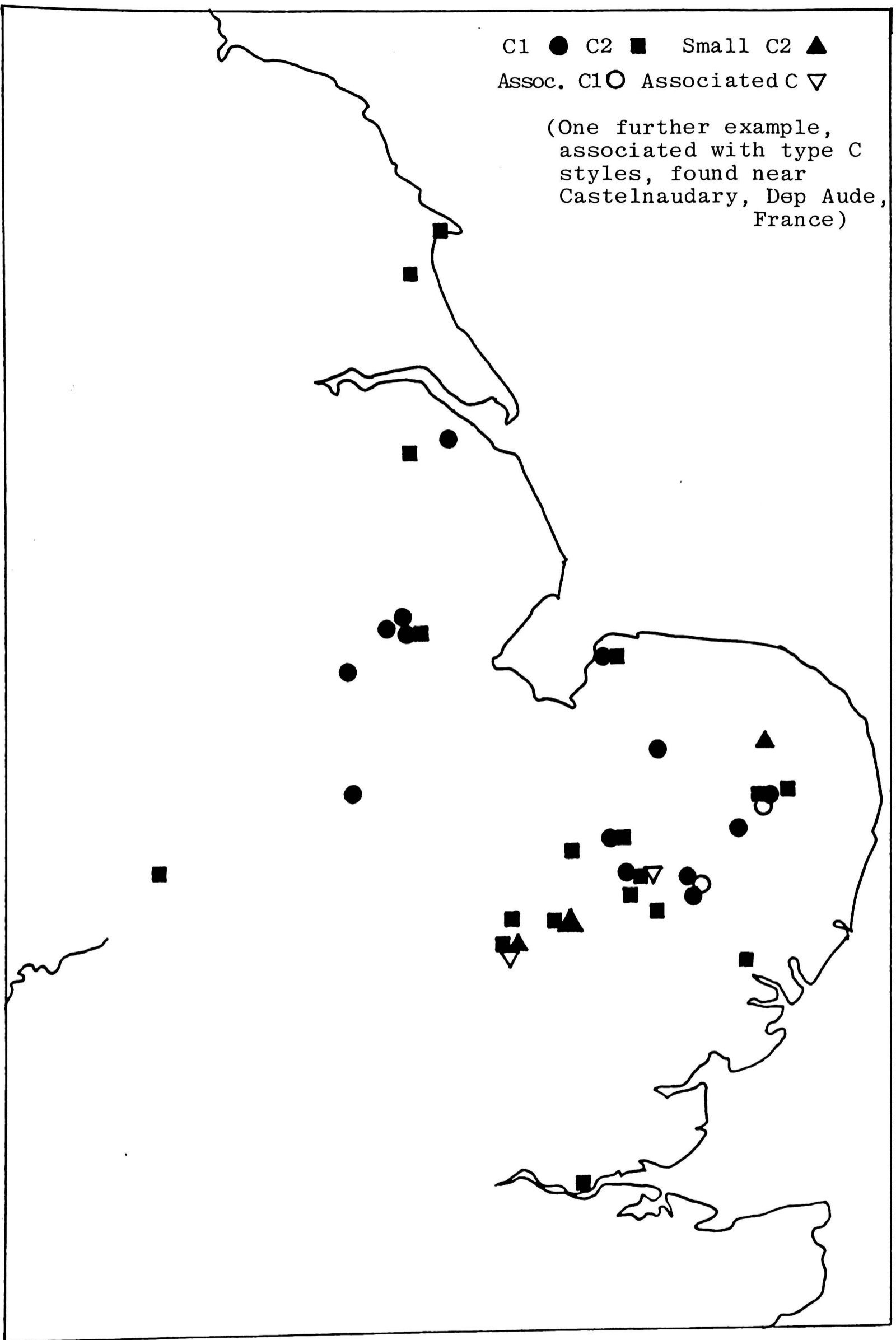
Map 2.1 Distribution of type A brooches



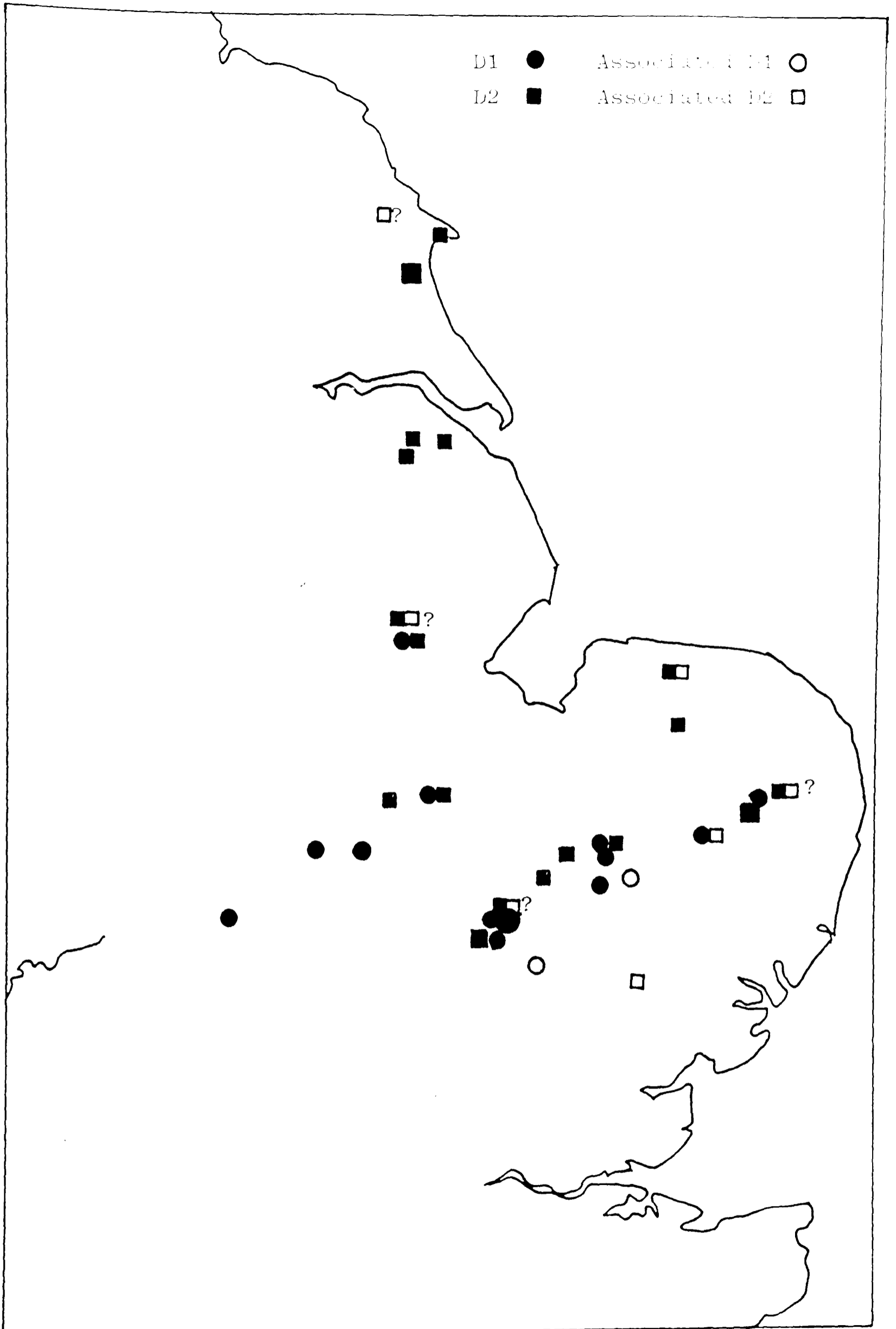
Map 2.2 Distribution of type B1 and B2 brooches



Map 2.3 Distribution of type B3 brooches and those associated with type B forms



Map 2.4 Distribution of type C brooches



Map 2.5 Distribution of type D1 and D2 brooches





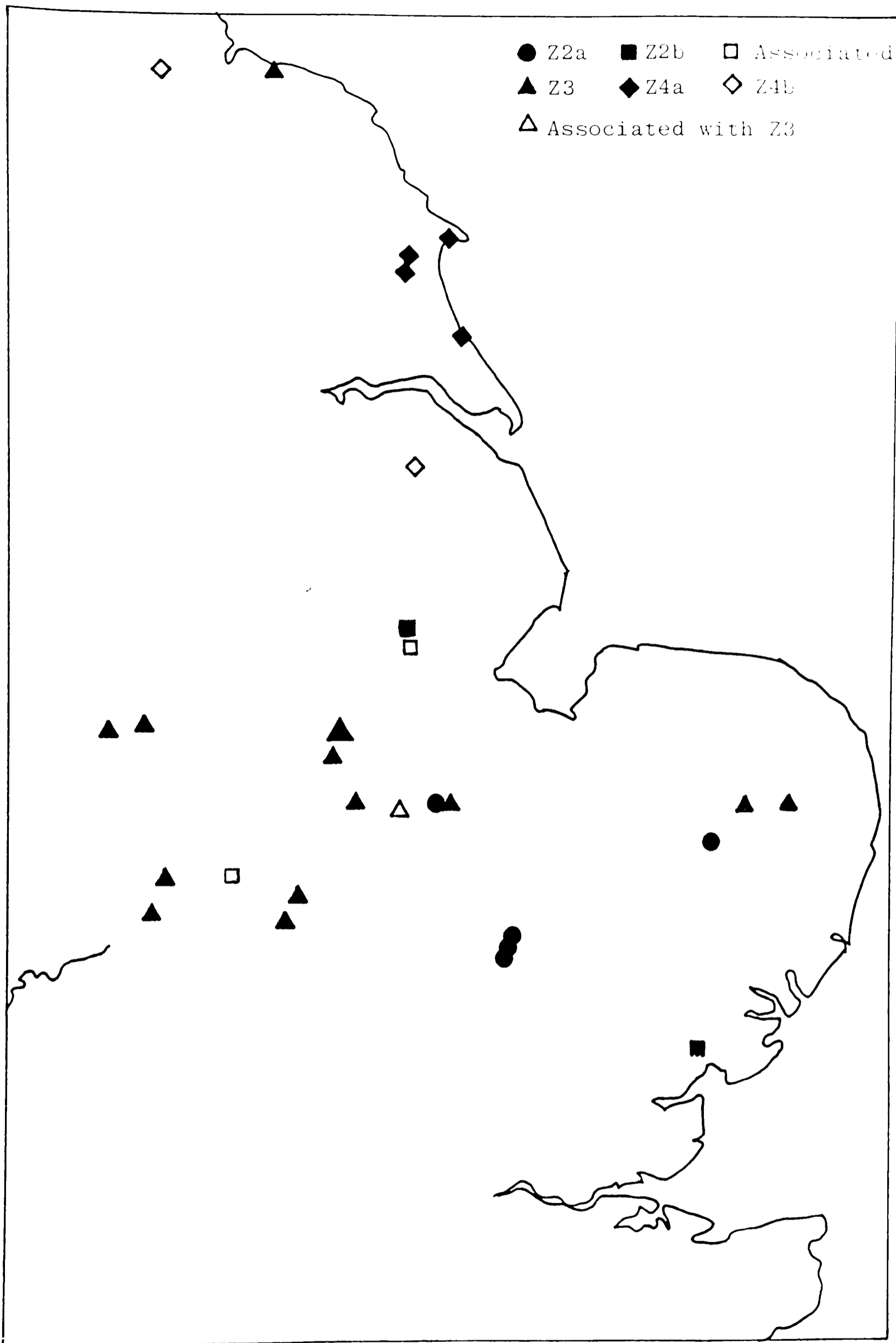
Map 2.7 Distribution of type D5 brooches



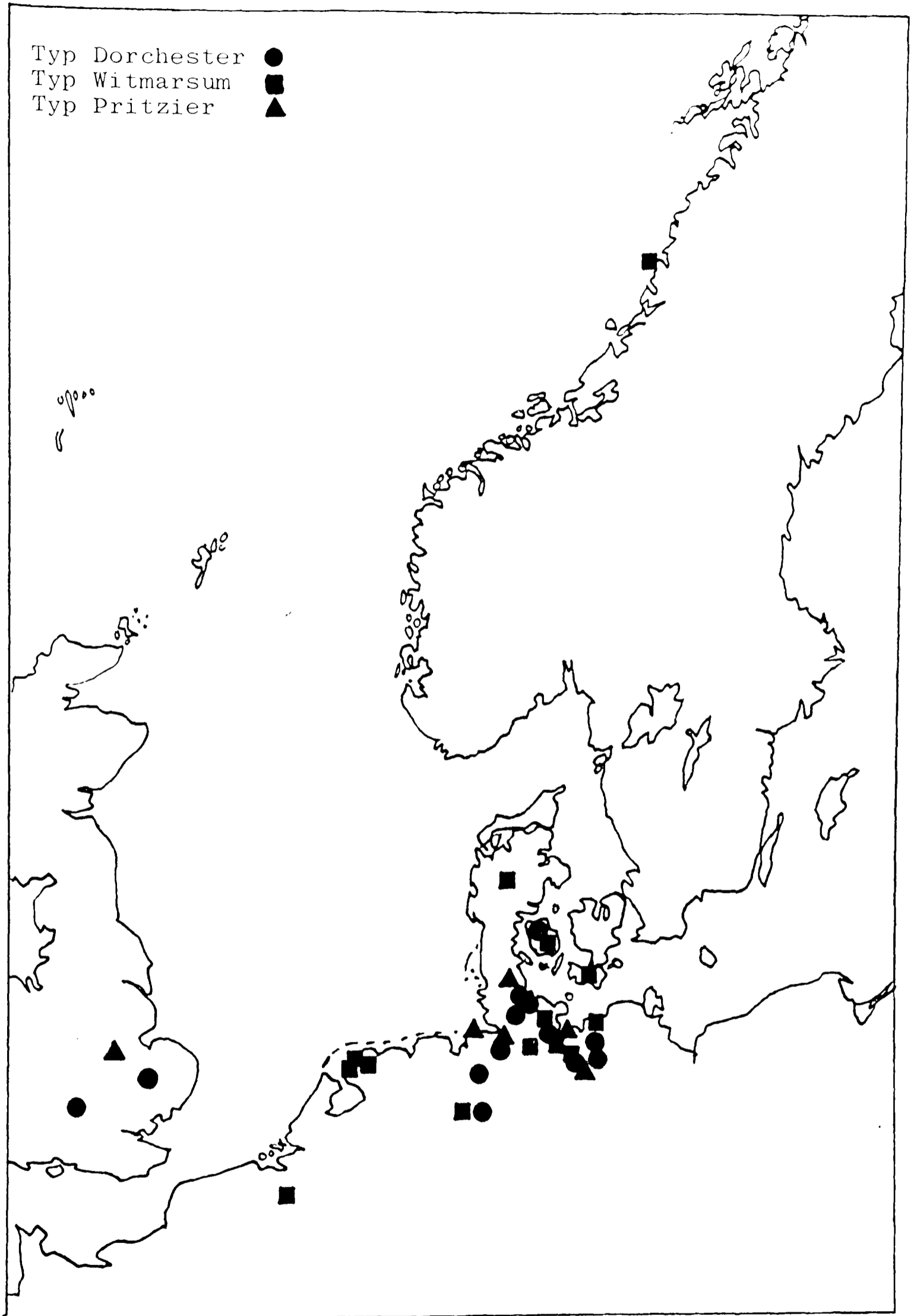
Map 2.8 Distribution of type D6 brooches



Map 2.9 Distribution of type Z1 brooches



Map 2.10 Distribution of type Z2, Z3 and Z4 brooches.



Map 2.11 Distribution of Reichstein's 'ältere' brooch forms (based on Reichstein' (1975) Abb 9)

Jüngere form

■ Gross Siemss

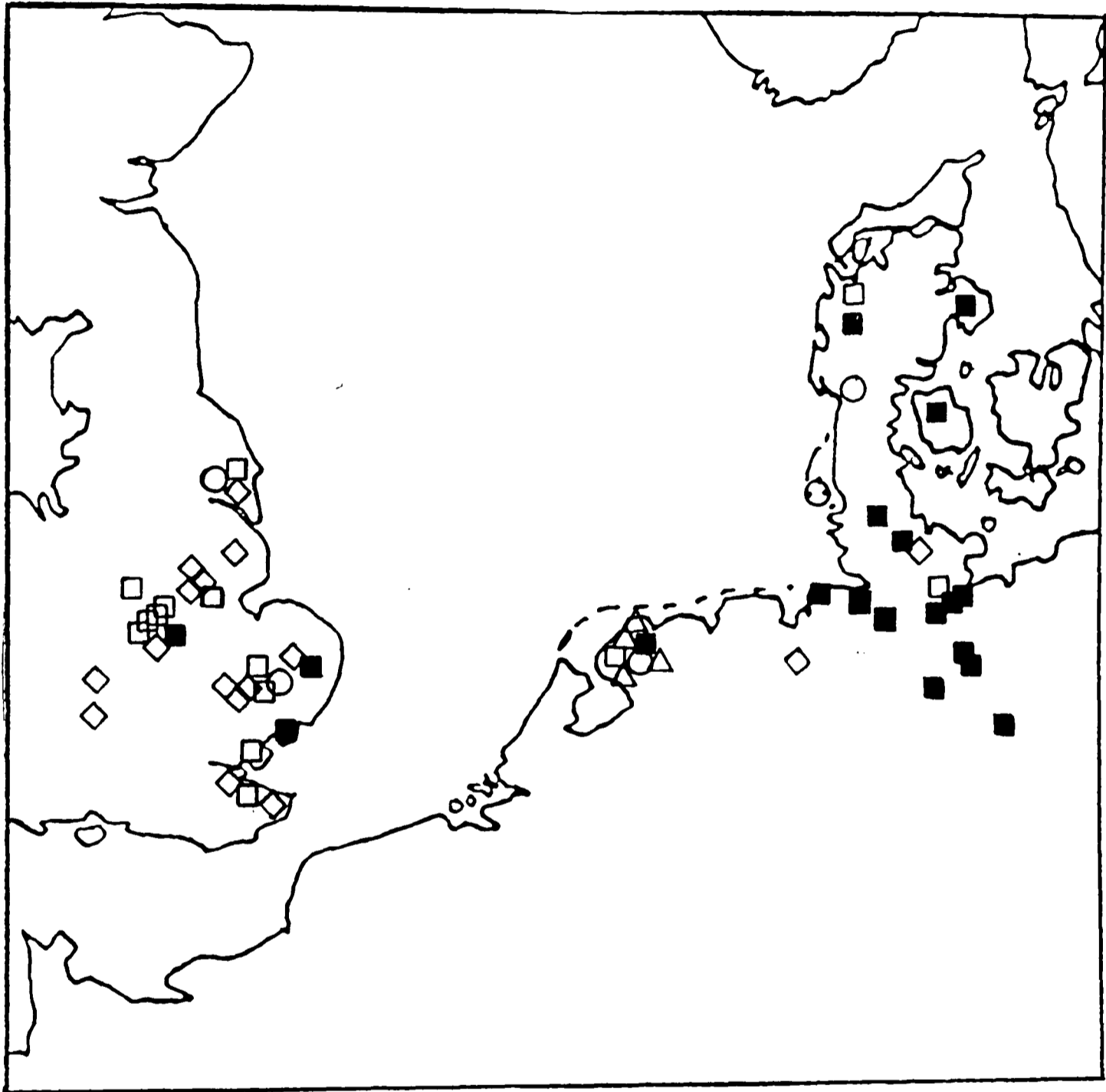
Späte forms

□ Midlum

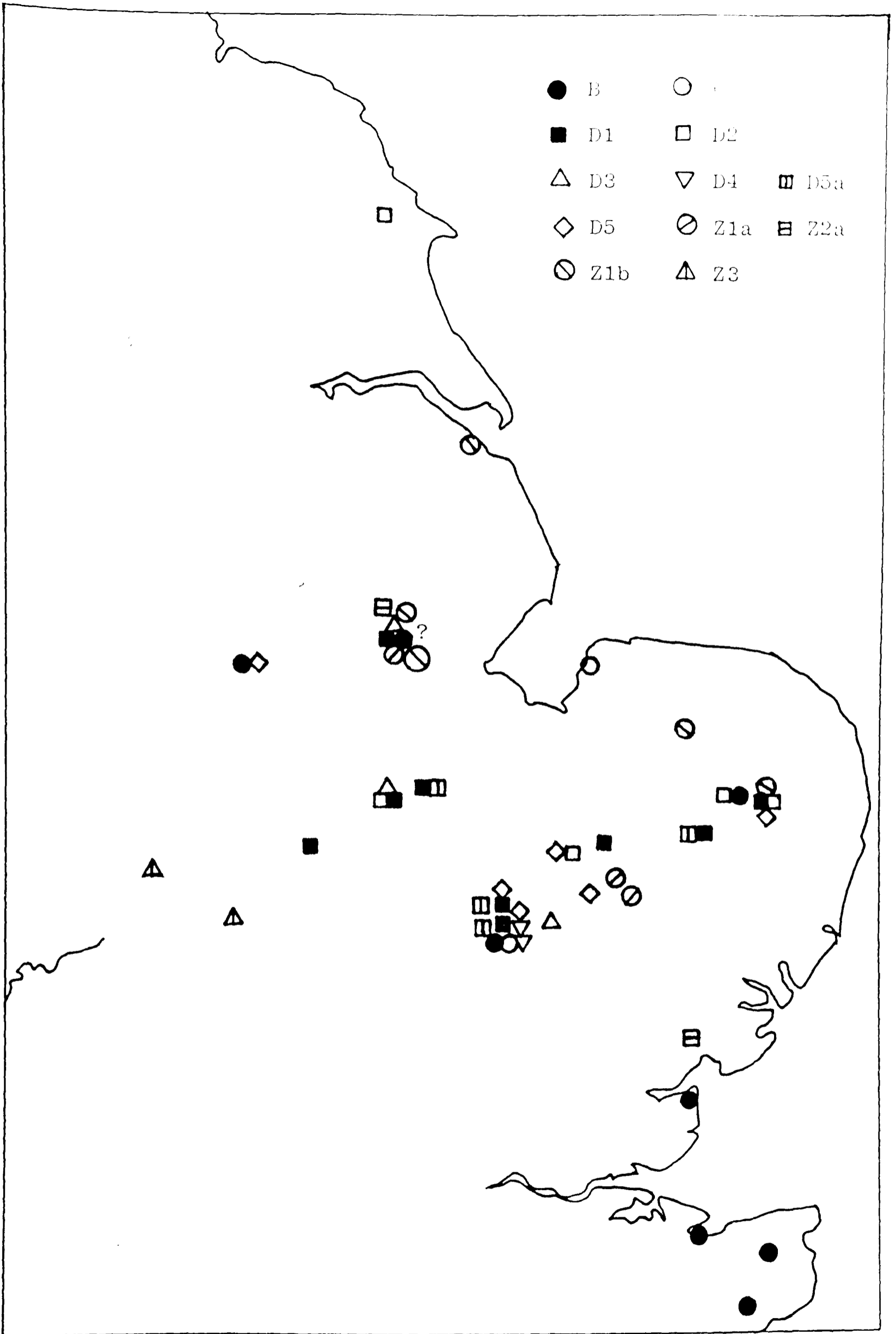
◇ Stratford

△ Achlum

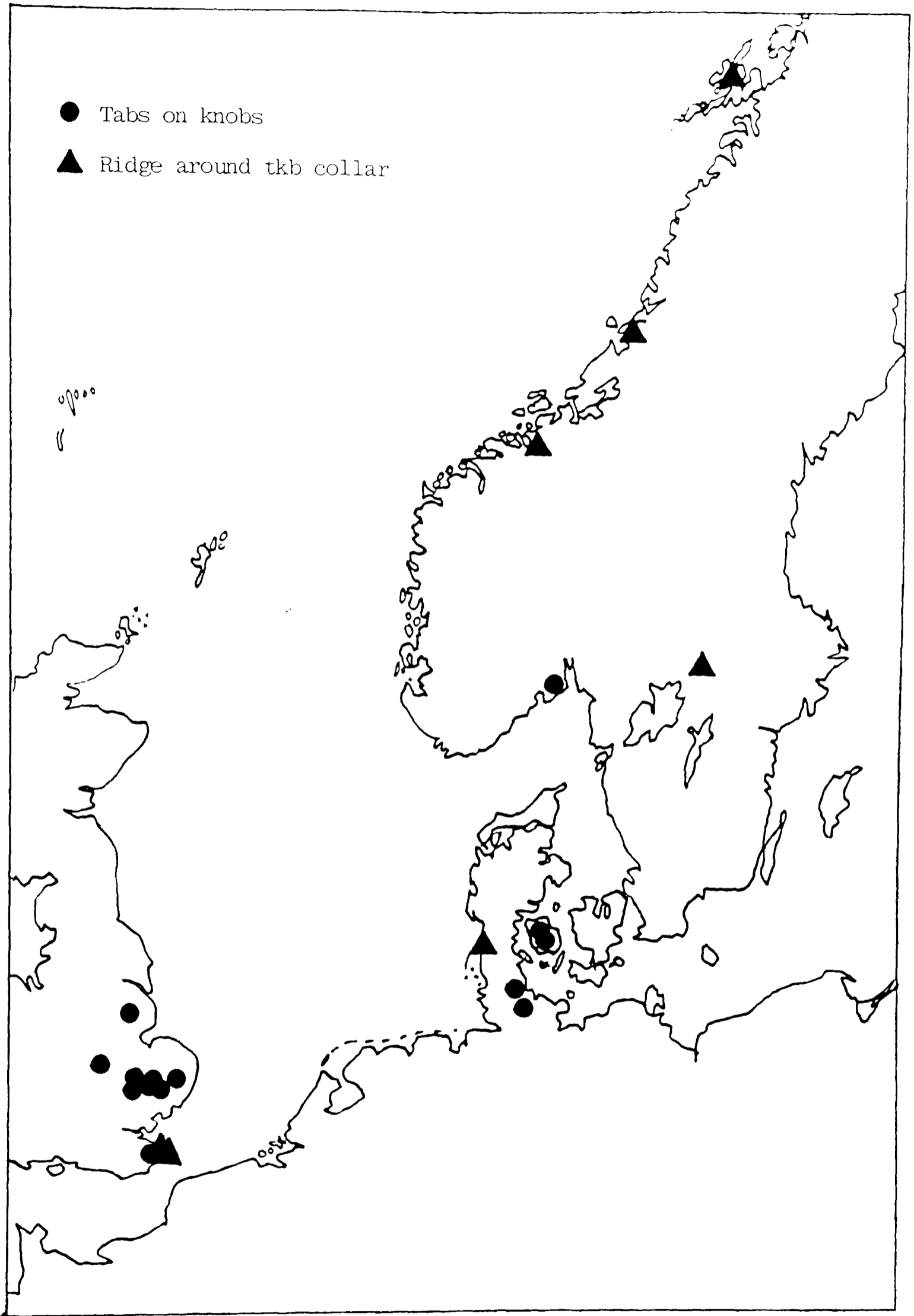
○ Krefeld-Gellep



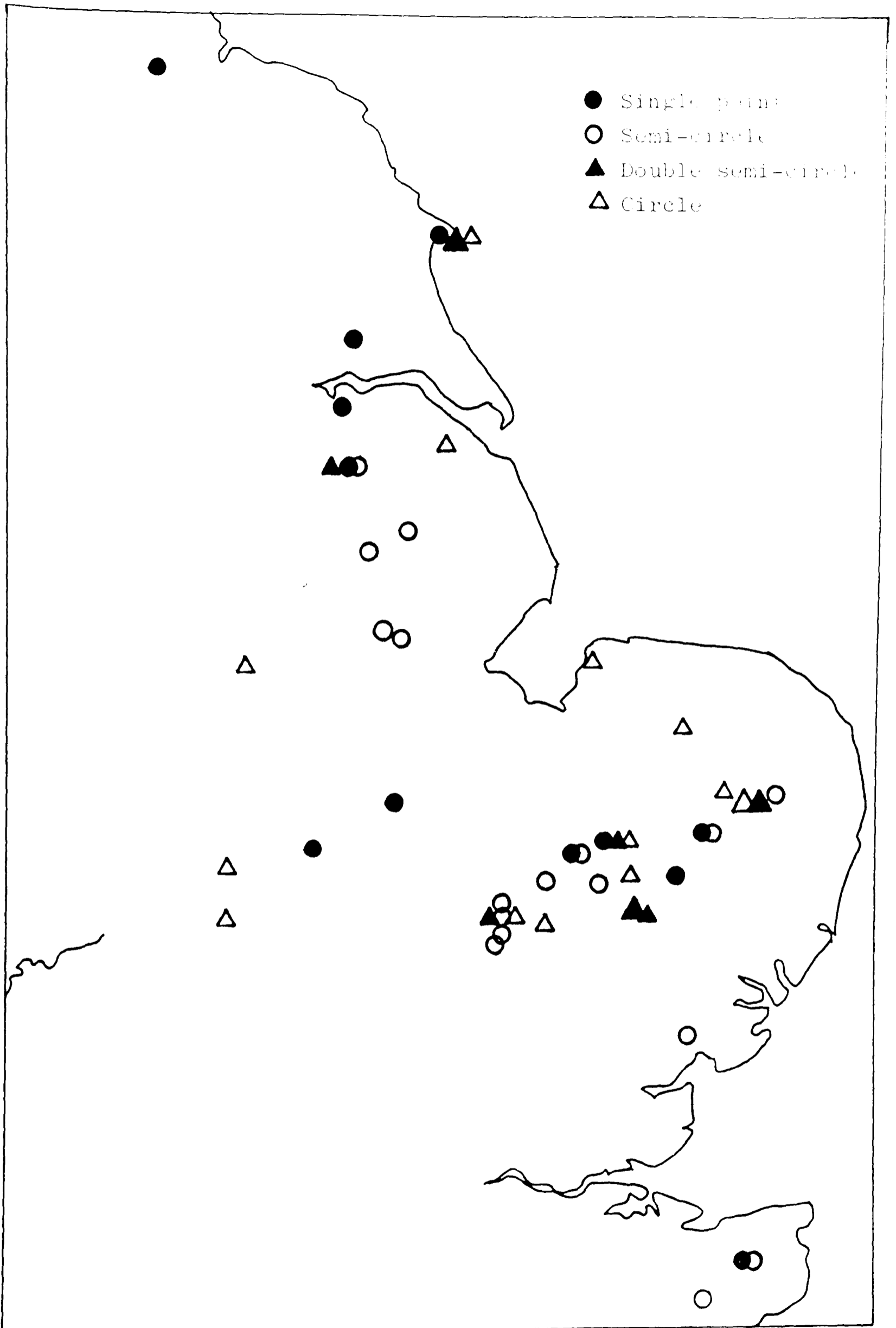
Map 2.12 Distribution of Reichstein's jüngere and späte brooch forms (based on Reichstein (1975) Abb 10 and 11, with additions)



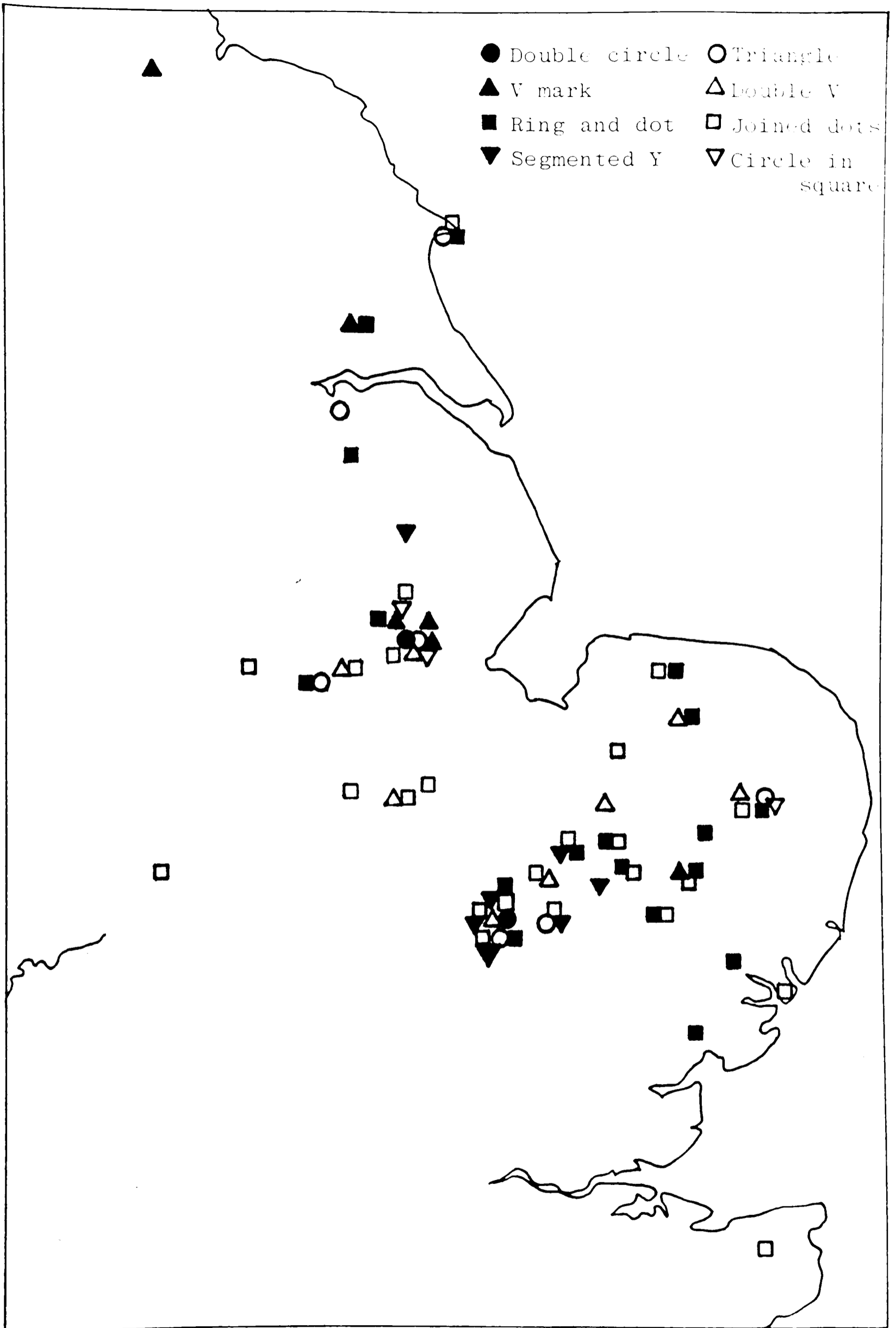
Map 3.1 Distribution of cruciform brooches with two pin lugs



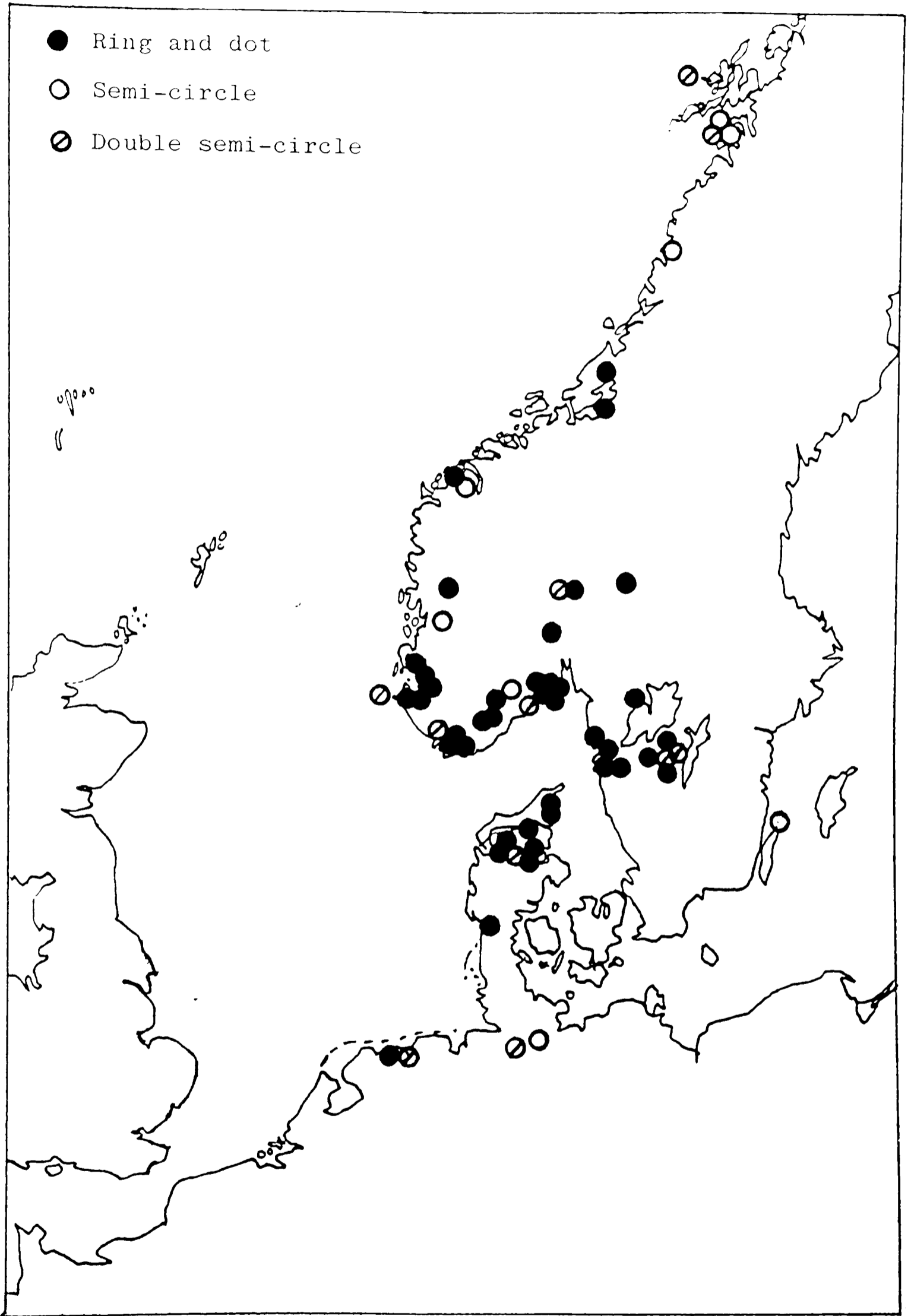
Map 3.2 Unusual technical features



Map 3.3 Distribution of punch marks, England



Map 3.4 Distribution of decoration styles, England



Map 3.5 Distribution of decorative styles, Scandinavia and the continent (for English distribution, see Maps 3.90,3.91)



Map 3.6 Distribution of unusual technical combinations

# Plates



Plate 1 Sleaford 1 Type Z1a



Plate 2 Swaffham Associated with type Z1a



Plate 3 Woodstone 10 Type Z3



Plate 4 Unknown provenance 4 Type Z3



Plate 5 Sleaford G169 Associated with type Z2



Plate 6 Longbridge Type Z3



Plate 7 Baginton 4 Type Z3

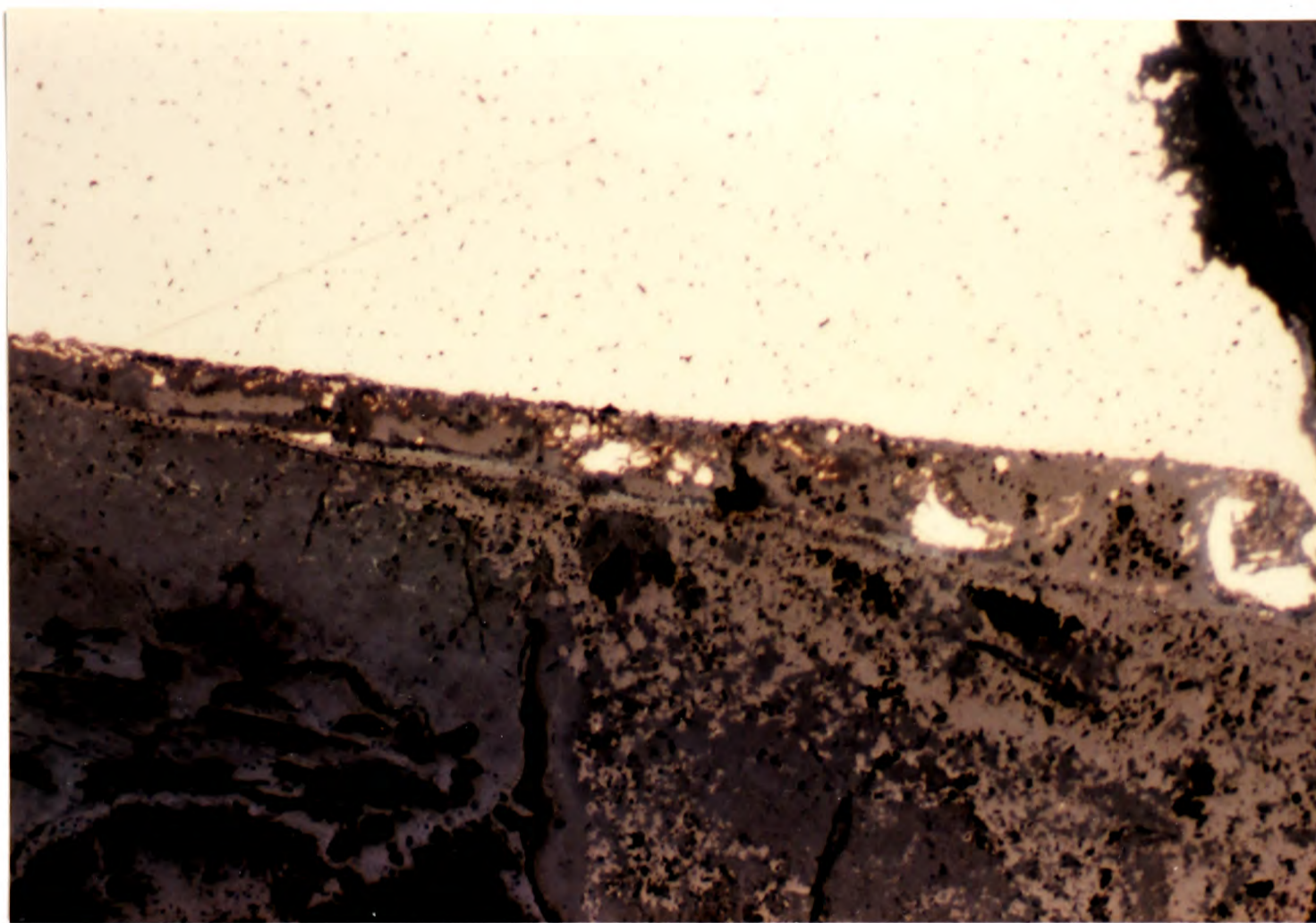


Plate 8 Inside sideknob boring, showing curls of copper-alloy material forced up by sideknob axis passage. x100



Plate 9 Ditto, showing crystal structure (recrystallisation) x100

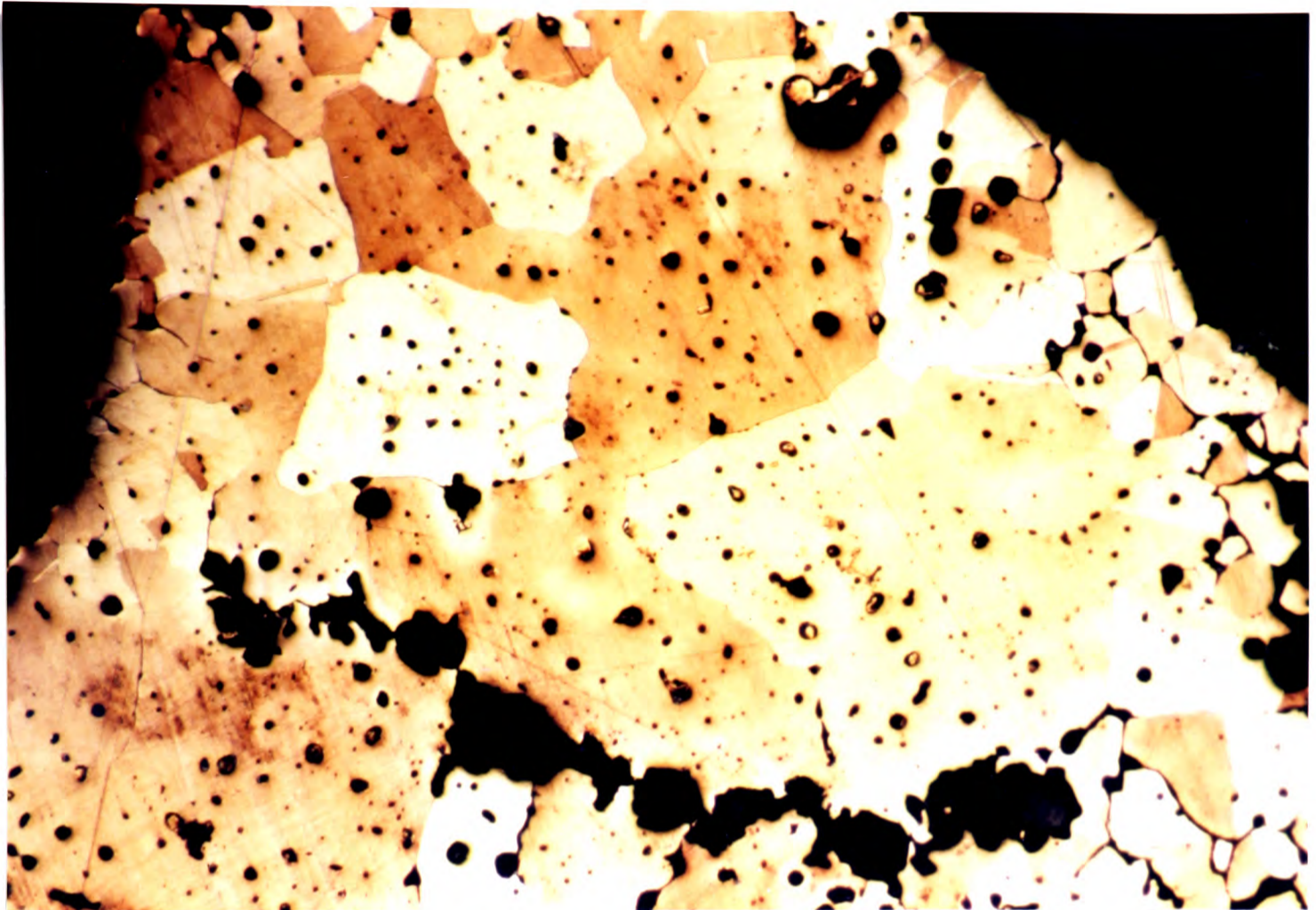
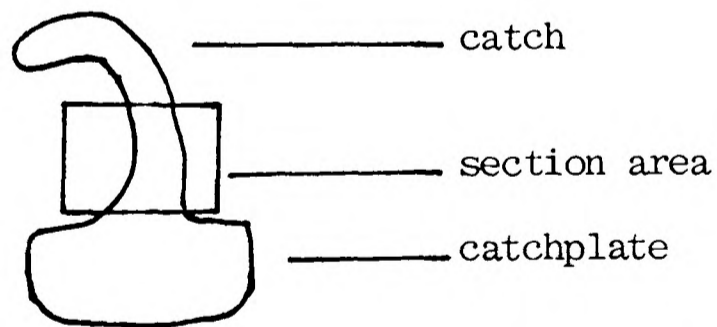


Plate 10 Section through catch, showing crystal structure,  
recrystallisation at outer surfaces x50



(These brooches are from Spong Hill, Norfolk, probably from Urns  
C1468, C1469; samples taken by J Manser-Jones)

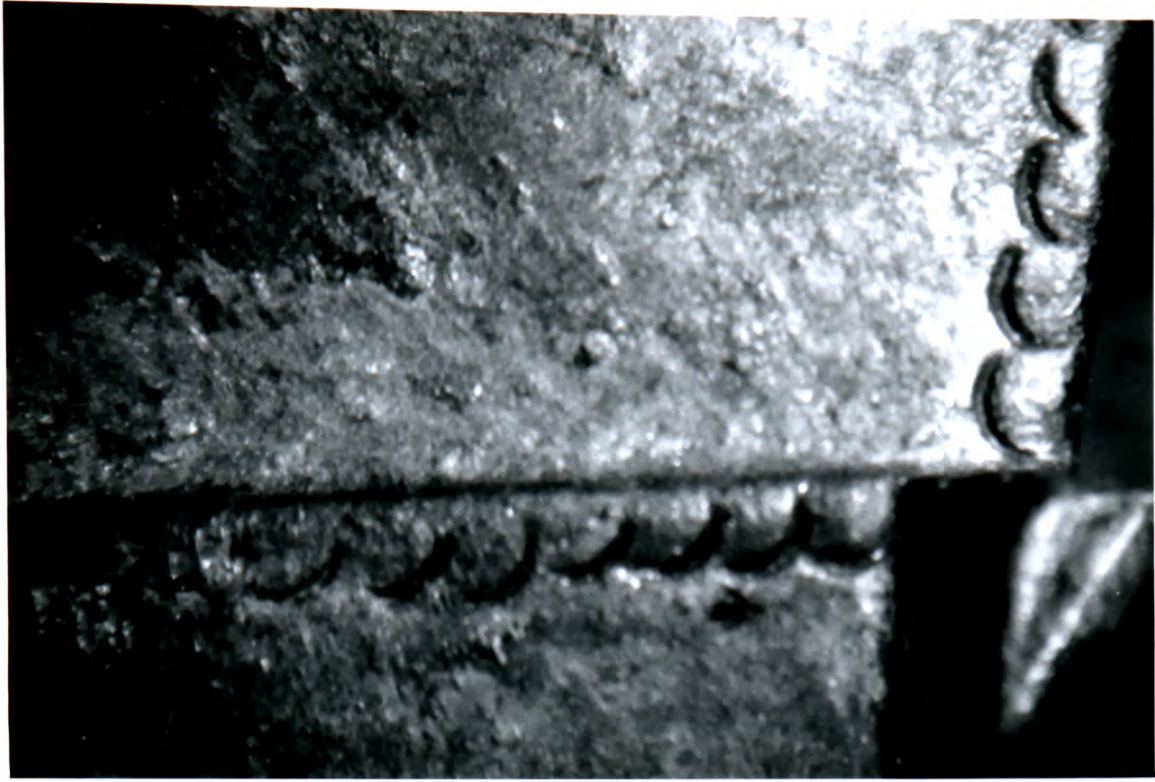


Plate 11 Semi-circular punch marks - Barrington 9

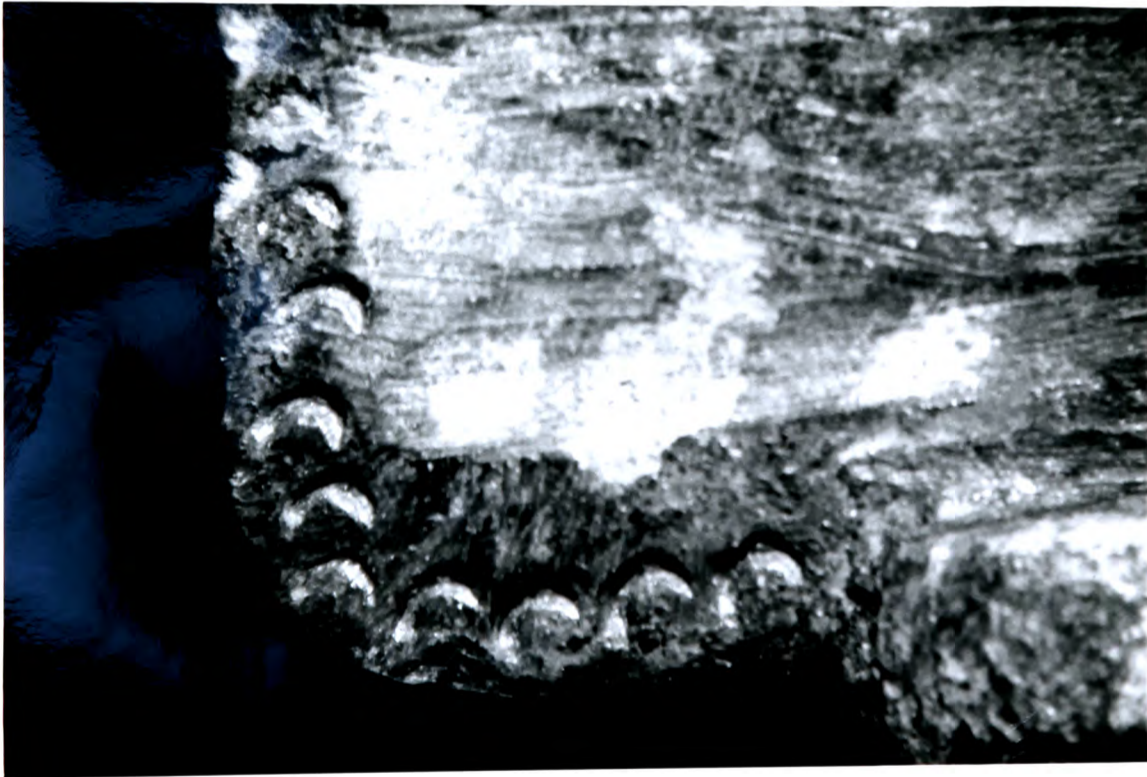


Plate 12 Semi-circular punch marks - Barrington 9

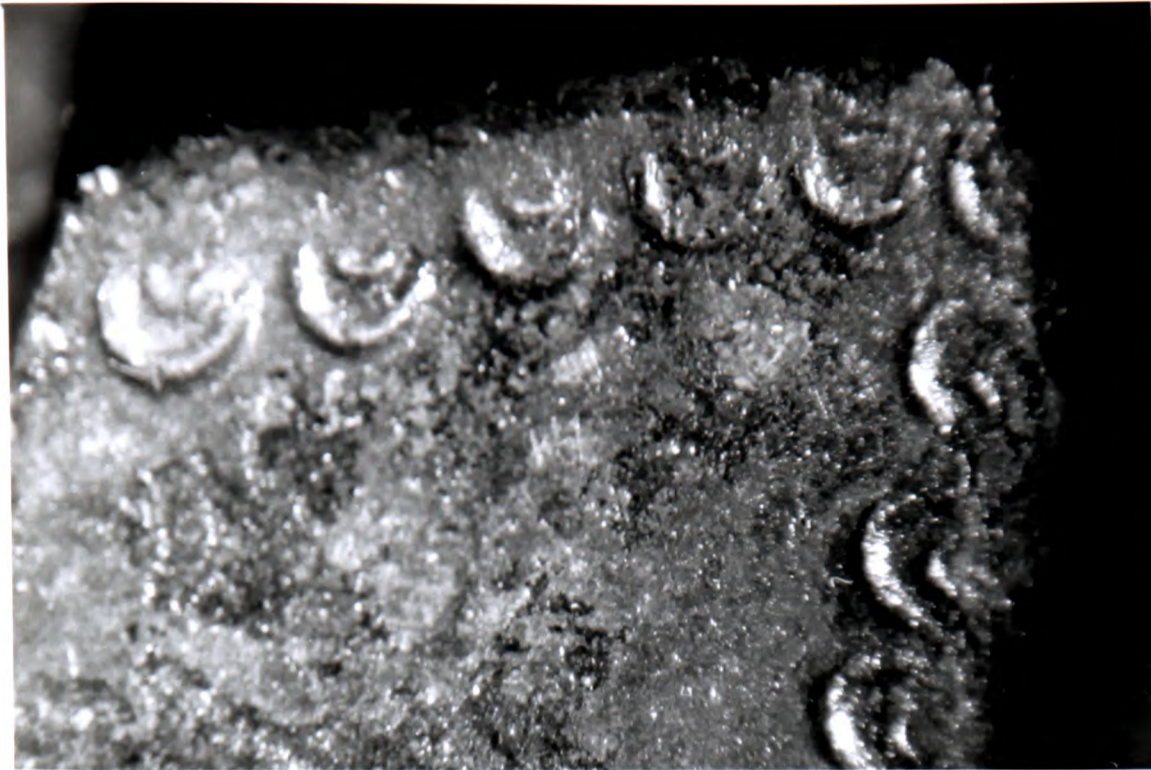


Plate 13 Double semi-circular punch marks - Kenninghall 2

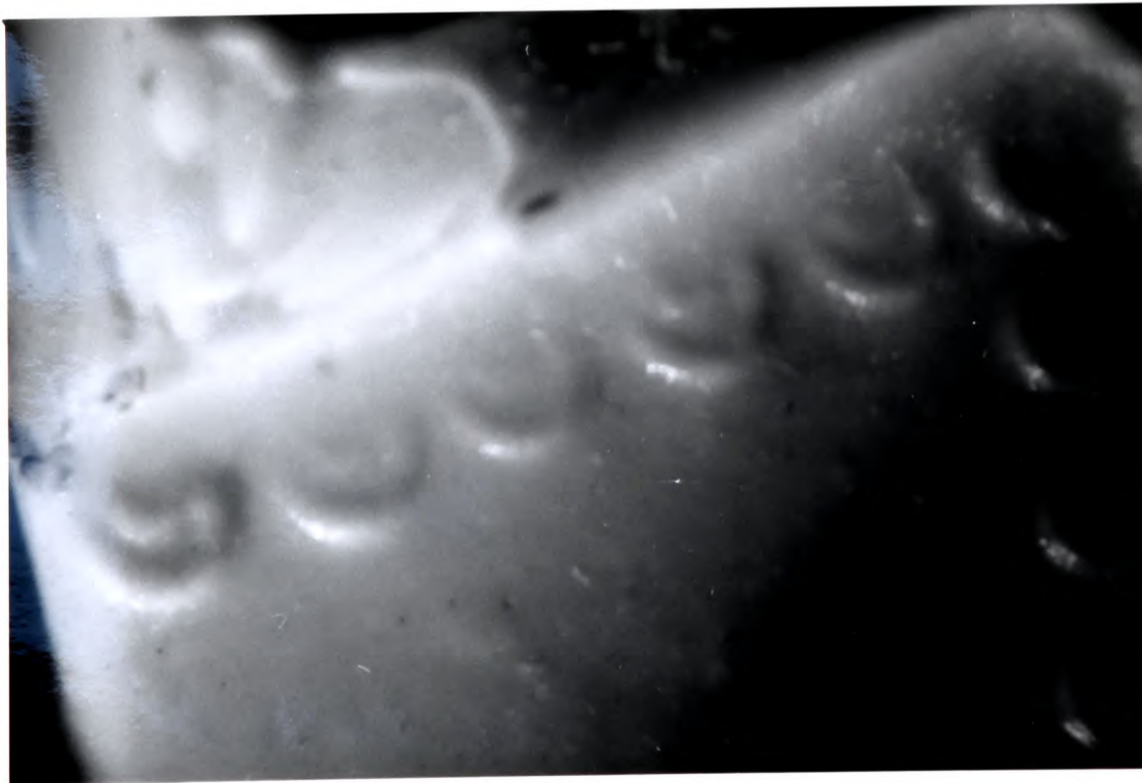


Plate 14 "Squeezy" impressions of double semi-circular punch marks - Kenninghall 2



Plate 15 Segmented Y punch marks - Mitchell's Hill 6

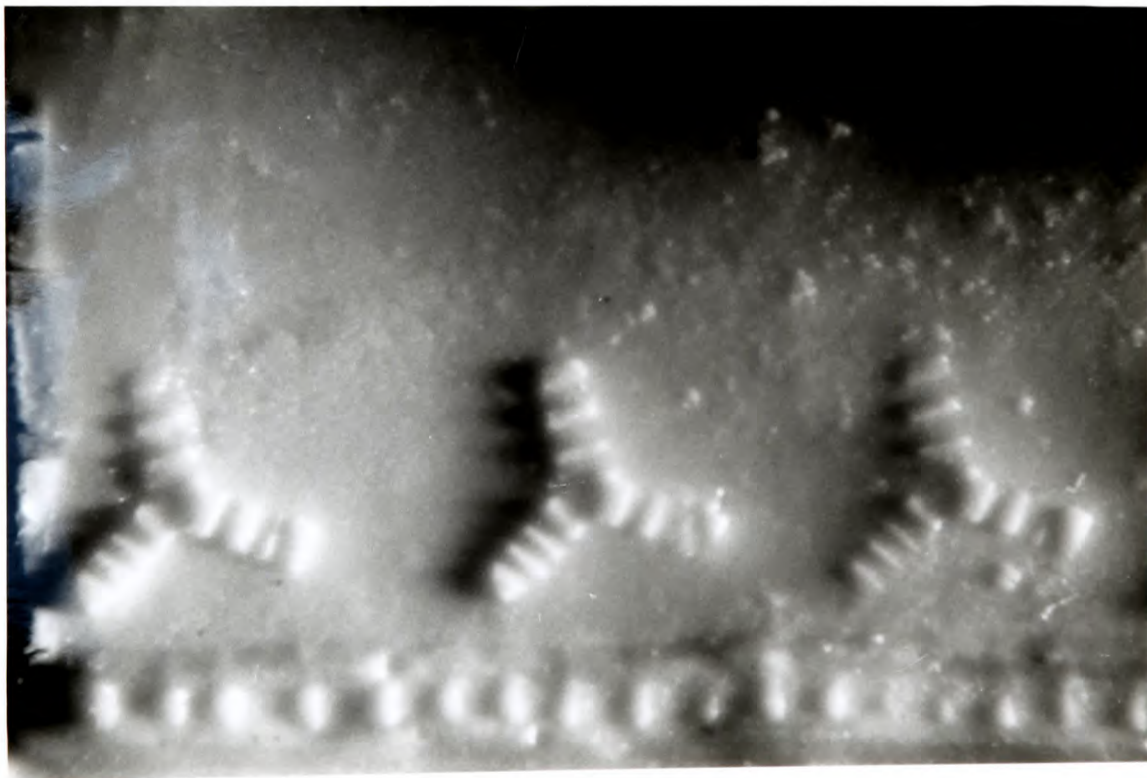


Plate 16 "Squeezy" impressions of segmented Y punch marks  
Mitchell's Hill 6



Plate 17 Large ring and dot design, with concentric ring inside - Bury St Edmunds

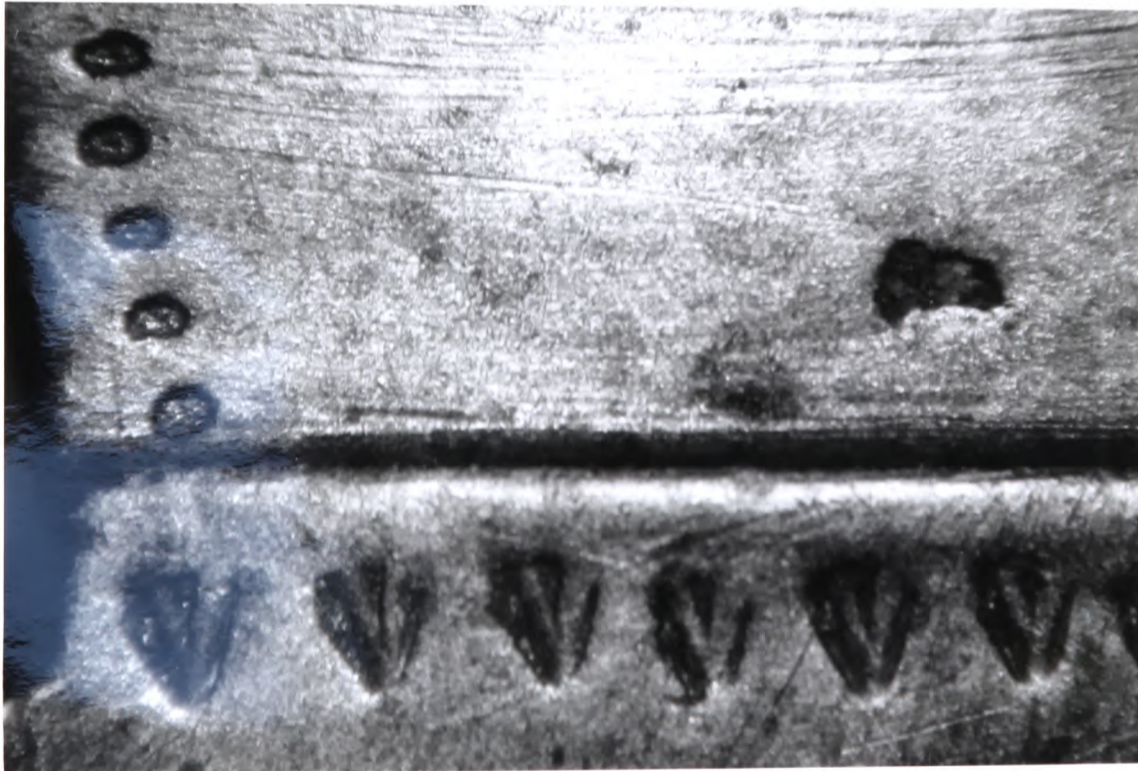
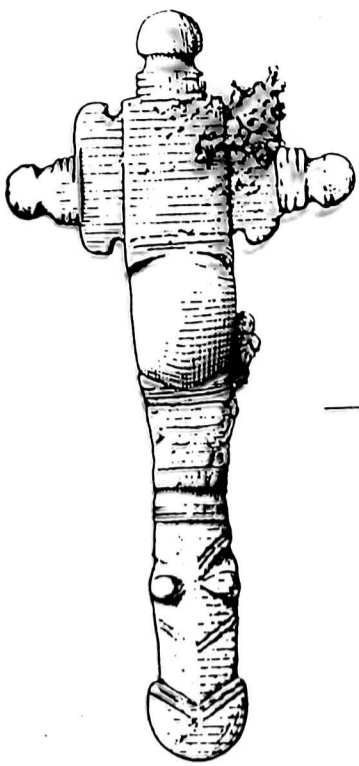
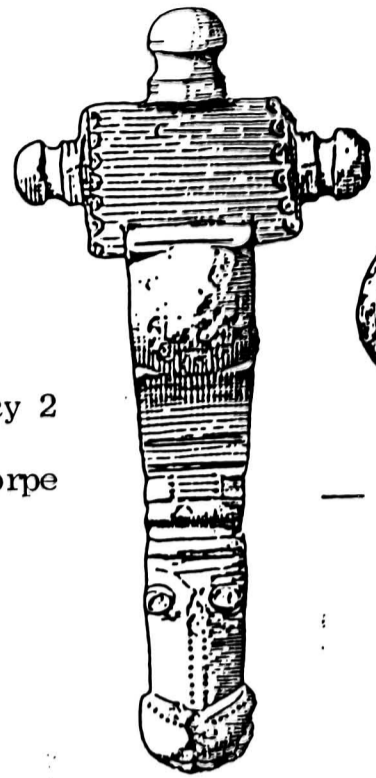


Plate 18 Double V and single point punch marks - Rothwell 3

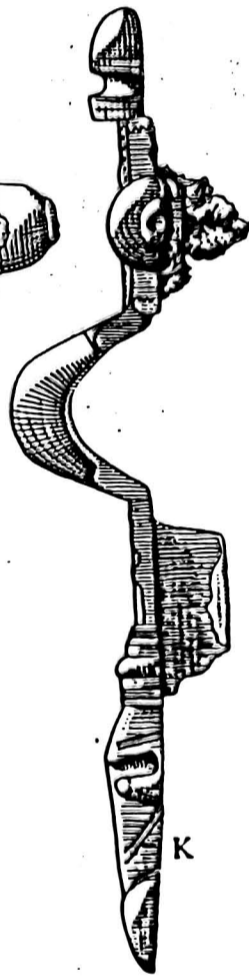
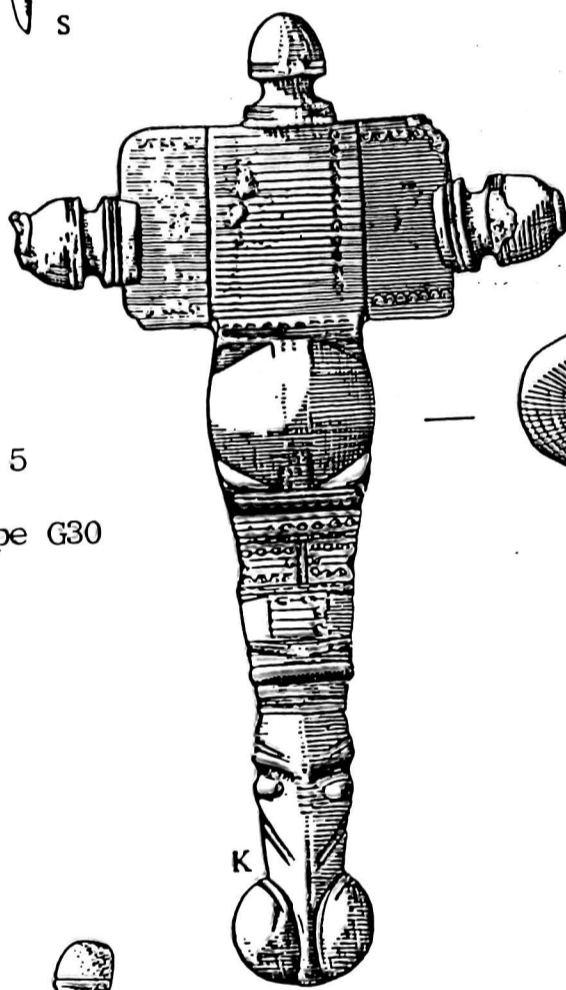
**Transparencies**



Transparency 1  
Morning Thorpe G353



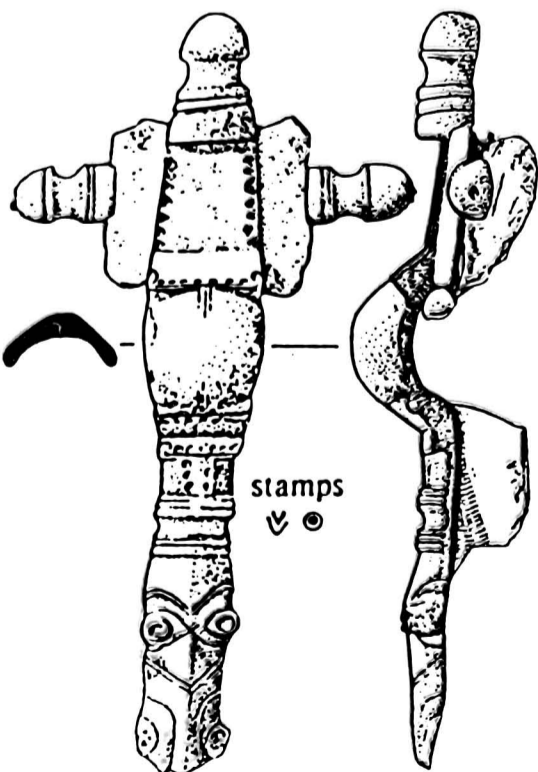
Transparency 2  
Morning Thorpe  
G90



Transparency 5  
Morning Thorpe G30

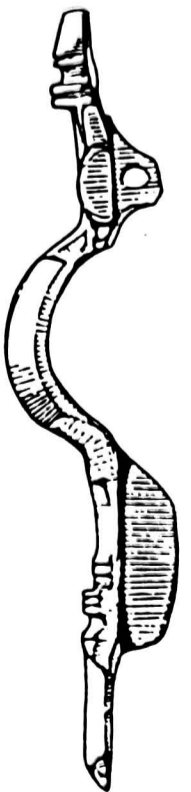
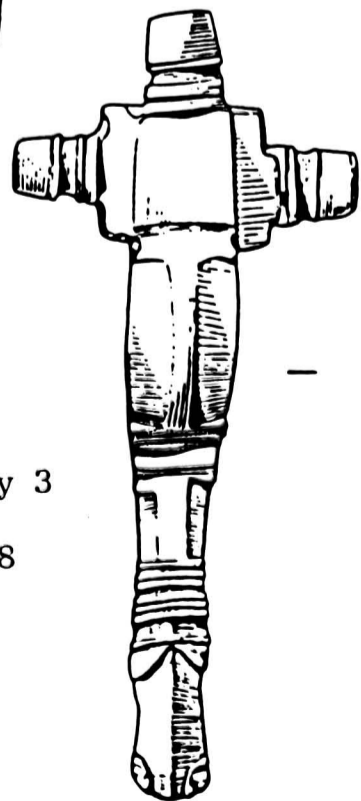
K

K

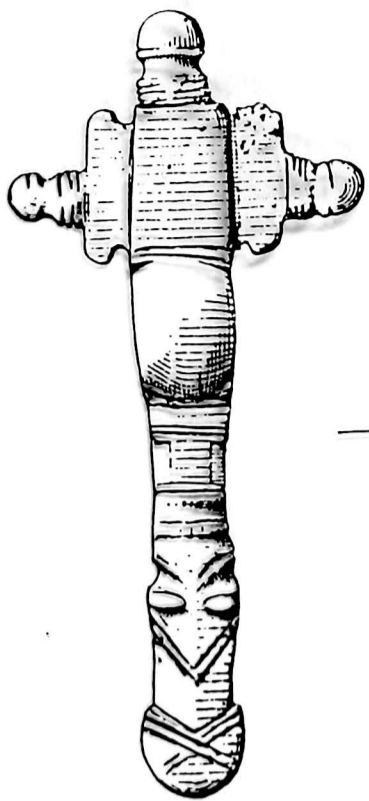


stamps  
▽ ●

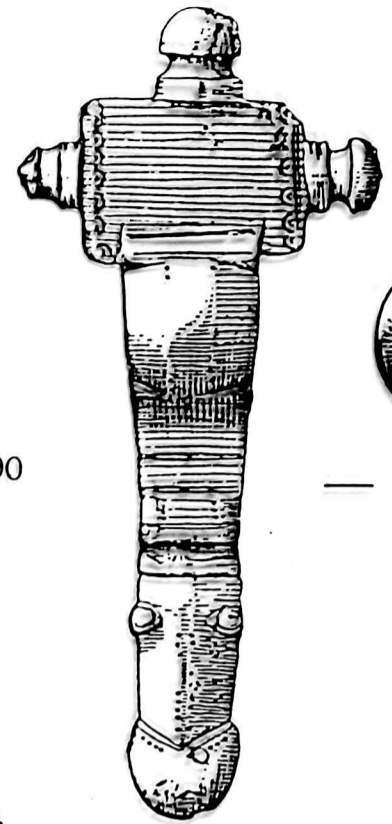
Transparency 4  
Spong Hill G22



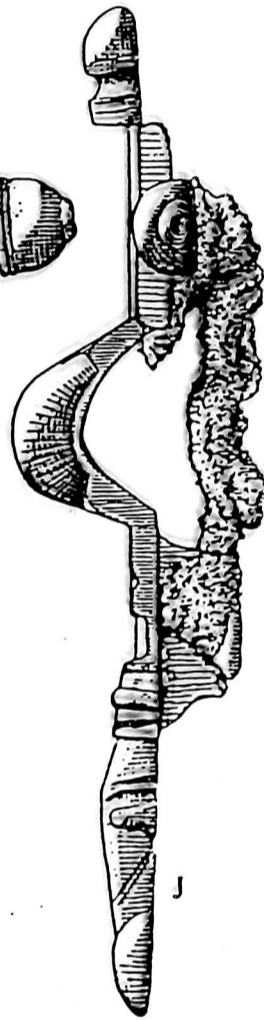
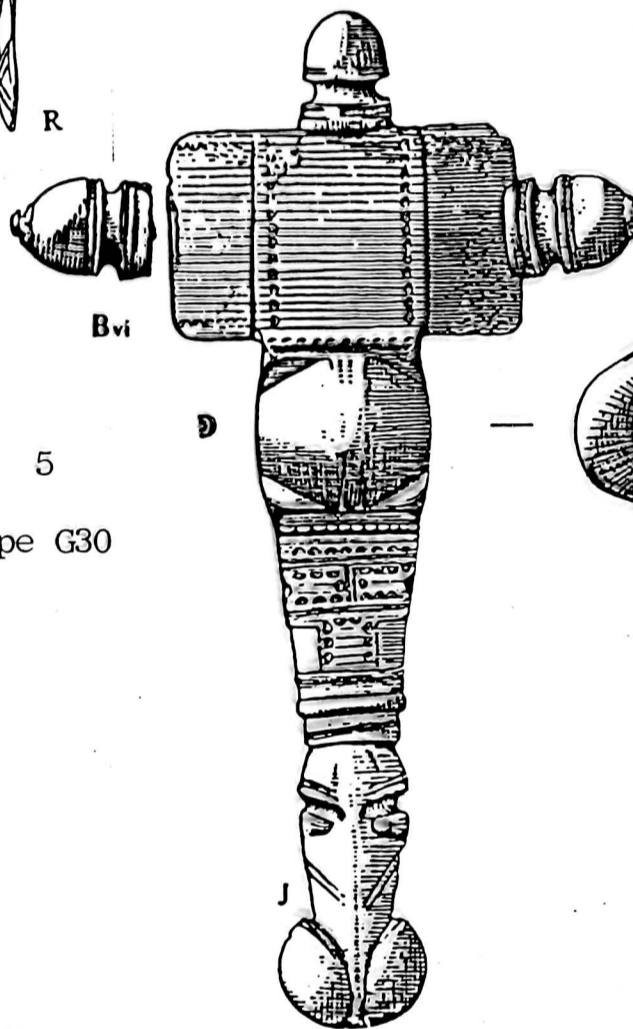
Transparency 3  
Mucking G878



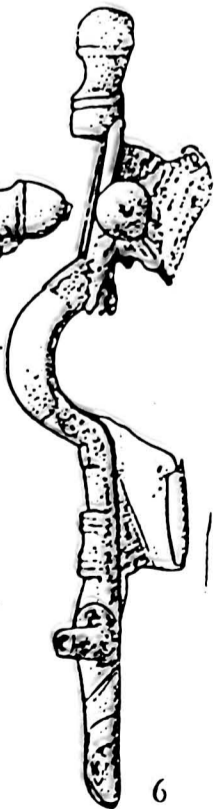
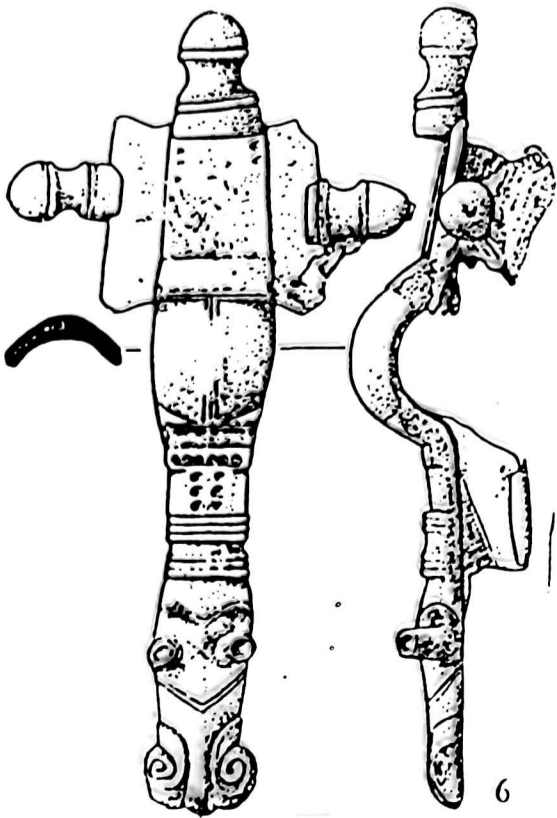
Transparency 1  
Morning Thorpe G353



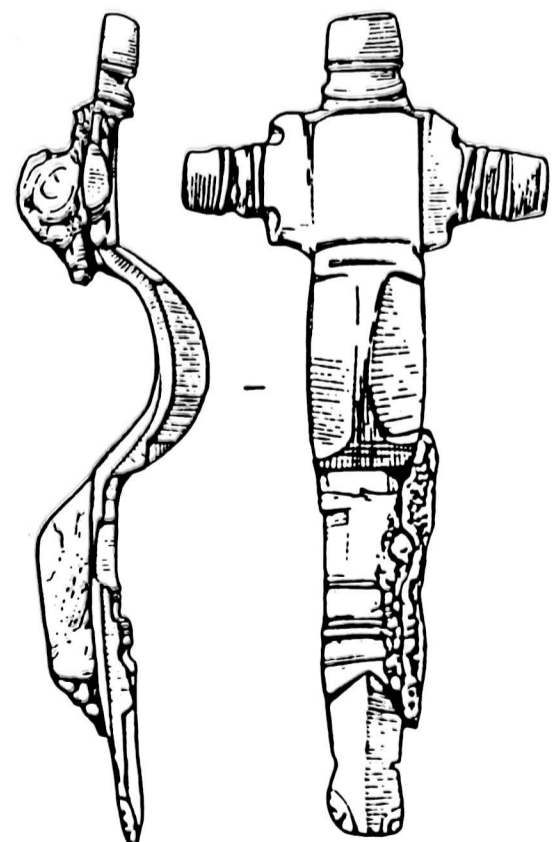
Transparency 2  
Morning Thorpe G90



Transparency 5  
Morning Thorpe G30



Transparency 4  
Spong Hill G22



Transparency 3  
Mucking G878

R

Bvi

D

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