

The Tinning of Iron Spurs: A Continuous Practice from the Tenth to the Seventeenth Century

By E. M. JOPE

ONE feature brings together this miscellaneous assembly of iron spurs, mostly from in or around Oxford, ranging over some seven centuries—they have all been flushed over (fusion-plated) with a thin coating of tin. This coating has sometimes been noted before and occasionally taken for silver, but it is here shown spectrographically or by X-ray fluorimetry to be tin, or on two, an alloy of tin and lead. Indeed, the blobbing of the metal in many cases makes it clear even to the naked eye that it could hardly have been silver. This tinned iron is, of course, as far as the coating process goes, exactly our modern 'tin-plate', which is thus seen to have a long ancestry.

Although the flushing of a clean iron surface with tin is a simple process, it has rarely been detected on medieval ironwork other than spurs,¹ not even on stirrups, which at first sight often seem to be of similar workmanship. Such fine smith-work was to some extent, however, divided among specialists. By the thirteenth century there was a separate Spurriers' Guild in London, and though the spurs made by them are mentioned in records, no other products of theirs are.² The Lorimers (makers of horse-bits and rein-ornaments, in iron and copper) may have made stirrups, as being part of the horse-harness, the spurs being part of the personal accoutrement of the rider. If this division of the craft had originated in Saxon times it might have explained why only spurs were tinned, but this is most doubtful, especially as some of the finer spurs and stirrups of late Saxon times carry inlaid bronze ornaments similar to each other.³ Also, such sub-division even in later times can only be found in the larger centres of production such as London, and probably never operated to the same extent in smaller workshop centres.

Tinning of iron thus seems to have been particularly a spur-makers' trick, and was practised in England at any rate from the tenth to the seventeenth centuries. It is referred to incidentally in the articles of the London Spurriers in 1345.⁴ It demonstrates the contribution made by the inherited skill of

¹ See note 9. An 'iron pryck-spur coated with white metal' is noted by James James, *J. Brit. Archaeol. Assoc.*, xii (1856), 216.

² H. T. Riley, *Memorials of London and London Life* (1868), 156-62, 226; E. Lipson, *Econ. Hist. England*, i (8th ed. 1945), 314-15, 322, 333; G. Unwin, *Finance and Trade under Edward III* (1918), 58-9.

³ R. E. M. Wheeler, *London and the Vikings* (1927), 39, 41; *V.C.H. Oxon.* i (1939), pl. xxix g.

⁴ H. T. Riley, *Memorials of London and London Life*, 226.

the late Saxon craftsmen to the crafts of medieval and even post-medieval England.

Much of the tradition of life established in Saxon and Danish England continued firmly during the century following the Norman conquest, as is seen sometimes in sculpture⁵ and perhaps more clearly in draughtsmanship, where Saxon line-drawing style persisted into the thirteenth century.⁶ But it is not so easy to trace in material things the broad sweep of continuity into the sixteenth and seventeenth centuries which R. W. Chambers discussed for English prose,⁷ and which is a commonplace in the study of English institutions. At the other end of the social scale, where traditional ways of doing things are more reluctantly changed, pottery making (even though gradually transformed from a peasant craft to an industry) shows the persistence in the later middle ages of some features well established in Saxon times, such as the convex base.⁸ Here in this spur-maker's trick whereby he finished off his iron products for the well-equipped horseman, and catered therefore for taste in the middle and higher grades of society, we see a habit firmly established in later Saxon England which was practised continuously at least into the seventeenth century.

It has yet to be seen whether this tinning of iron spurs was extensively practised on the continent as well as in England: it is occasionally but not frequently mentioned in the continental literature.⁹

'A pair of gilt spurs' was a medieval rent, and the wording of some documents suggests that occasionally a pair of spurs might actually have changed hands—that *j par calcarium deauratorum que valent vjd* was more than a mere convenient formula for fixing a rent.¹⁰ Gilt spurs are not commonly found, but they do exist, usually gilt on bronze rather than on iron. The tenth-century spur from Hamburg¹¹ covered with gold leaf shows the sort of

⁵ Lawrence Stone, *Sculpture in Britain: the Middle Ages* (1955), 45-52.

⁶ F. Wormald, *English Drawings of the 10th and 11th centuries* (1952), 53-8; *Proc. Brit. Acad.*, xxx (1944), 127-45.

⁷ *On the Continuity of English Prose* (Early English Text Soc., 1932).

⁸ *Oxoniensia*, vii (1942), 76-8; a similar story may be seen at Exeter. See also *Norfolk Archaeology*, xxx (1952), 310, fig. 12, no. 7; 313.

⁹ H. Arbman (*Birka* (1940), 274) notes a spur from grave 752B on which the grooves are filled with 'silver or white metal'. The tinning of iron was presumably known then, as seen on the strap-buckles from grave 708 (*Birka*, 243). For white metal added to iron spurs, described as silver, see *Bayerische Vorgeschichtsblätter*, xviii/xix (1951), 59-83.

¹⁰ P. Vinogradoff and F. Morgan, *Survey of the Honour of Denbigh in 1334* (British Academy, 1914), 321-2; the totals rendered include spurs—e.g. '5/9½, 2 pairs of spurs with 6d. each, and a pair of gloves'. *Christopher Hatton's Book of Seals* (1950), 471, charter 56, 'render either a pair of gilt spurs or 6d'.

¹¹ *Germania*, xxxi (1953), 224-5, pl. 22, no. 1. Cp. also from Østfold, Norway (J. Peterson *Vikingtidens Redskaper* (Oslo, 1951), 36-8, fig. 36), from Dalmatia (Lindenschmidt, *A.u.h.V.*, v (1911) 230), and even a late eighth-century one from Württemberg (*ibid.*, pl. 42, no. 691).

THE TINNING OF IRON SPURS

spur which might have inspired such a rent value. But these rents are found in the thirteenth and early fourteenth centuries, and gilding is hardly to be seen on prick-spurs or the earlier rowel-spurs found in this country. The London Spurriers were making gilt spurs, evidently of gilded bronze, by the earlier fourteenth century.¹² Gilding was a skill of the bronze-smith and was usually applied to bronze rather than iron. Even bronze prick-spurs are, however, rare in England, though occasionally an iron spur may be covered with thin bronze sheet, as no. 7, which could have been gilded (though in this case there is no evidence for it). In the British Museum are a few bronze rowel-spurs of later medieval and sixteenth-century types which bear traces of gilding,¹³ but it seems difficult at present to produce the actual gilt spurs of the twelfth, thirteenth or earlier fourteenth centuries.

Technology: fusion-plating. This fusion-plating (flushing or flashing) of iron surfaces with tin (or bronze) is simple to carry out, like 'tinning' a soldering-iron, provided the iron surface is kept perfectly clean. This is usually achieved by using a flux (e.g. a resin), and the clean iron surface is simply sprinkled with tin (or bronze) filings, and heated.

The general technique of fusion-plating has been known since early times. Even from the end of the Early Bronze Age some flat bronze axes in Scotland still have preserved a shining surface coating of tin.¹⁴ During the La Tène Iron Age, from about the third century B.C. onwards, fusion-plating of bronze with tin and of iron with bronze were both extensively practised on the continent and in England,¹⁵ and in Roman and Early Christian times small iron bells were fusion-plated with bronze.¹⁶ Fusion-plating of iron with bronze, however, is not so far observed after this (though bronze inlay in iron may sometimes have been fused in), whereas the actual fusion-plating of iron with tin as seen on our spurs from the tenth century onwards does not seem to have been observed on earlier objects (though the Iron Age mirror-plates might have been so finished). No doubt, however, our knowledge of this whole aspect of early technology is at present very imperfect.

On thirteen of the fifteen spurs studied here the coating was of tin alone, and on the other two it was of a tin-lead alloy, probably soft solder. Soft solder (ideally 63 per cent. tin to 37 per cent. lead, fusing at 183° C.) had been

¹² H. T. Riley's *Memorials of London and London Life* (1868), 226. G. Laking, *European Arms* . . . 1, 28-9; III, 163.

¹³ E.g. a fifteenth-century rowel-spur from Houndwell, Southampton, 46, 11-26, 2, and at least fifteen others, some Scottish or Irish, sixteenth or seventeenth century.

¹⁴ *Proc. Soc. Antiq. Scot.*, IX (1873), 428-43; from Migdale, Sutherland and elsewhere.

¹⁵ C. Fox, *Llyn Cerrig Bach* (1946), 28, 29. Note particularly the shiny tinned surfaces of some bronze mounts from Santon Downham, Cambs., *Proc. Cambridge Antiq. Soc.*, XIII (1909), 153-4.

¹⁶ R. E. M. Wheeler, *Maiden Castle* (Res. Rep. Soc. Antiq., XII, 1943), 288-9; *J. Roy. Soc. Antiq. Ireland*, LXXIV (1944), 27.

E. M. JOPE

used in the ancient world,¹⁷ and in the north in early times.¹⁸ No doubt the metal for fusion-plating the spurs was taken from workshop stock, and not made up specially.¹⁹

DESCRIPTION OF SPURS²⁰

Abbreviations : (S)—spectrographic analysis (E.M.J.).

(X)—analysis by X-ray Fluorimetry (Drs. E. T. Hall and S. Young).

The types of point and terminal are those of Ward-Perkins, *Lond. Mus. Med. Cat.* (1940).

FIG. 13. *Prick-spurs : 10th-13th centuries.*

1. From Queen St., Oxford ; Ash. Mus. 1869.33. Iron spur fusion-plated with tin (S). It has a long point of rhomboid section with a baluster-moulded tip and a swelling rib at the junction with the arms. The terminals are missing. Probably 11th century ; compare *Lond. Mus. Med. Cat.* (1940), 98, fig. 29, no. 4. This long point was probably obsolete by mid-12th century.
2. Bruern, Oxfordshire ; Ash. Mus. 1956.238. Found in 1950 while digging drainage ditches in the grounds of Bruern Abbey : given to me by Mr. Reginald Edginton. The Domesday village of *Tretona* (D.B. fol. 158) was displaced in the mid-12th century in order to give the desired isolation to Nigel Bassett's newly founded Cistercian house of Bruern.
Spur of iron fusion-plated with an even, thin, well-preserved layer of tin (S), thickening to blobs in places. It has a long, slender point of rhomboid section and swelling moulding at the base (as no. 1) but with a plain, unmoulded tip. Both terminals are preserved, of square unpierced form (type A i) with strap-rivets surviving : the straps were held between the terminals and an inner iron plate, parts of which survive on each side. 11th century ; cp. *Lond. Mus. Med. Cat.*, 98, fig. 29, no. 4, from Moorfields.
3. From 18 ft. below the street known as Pavement, York : Yorkshire Mus. 1951.52.1. Bronze spur fusion-plated with a mixture of tin and lead (X). It has a long point of octagonal section with moulded tip, and light ornament on the arms near the junction. The rectangular slotted terminals are of

¹⁷ H. Maryon, *Metalwork and Enamelling* (1954 ed.), 35.

¹⁸ *Ulster J. Archaeol.*, xiv (1951), 27-8.

¹⁹ Compare the medieval lead-glazes containing tin, *Trans. Bristol and Gloucs. Archaeol. Soc.*, LXXI (1952), 88-97. A fifteenth-century rowel-spur is described as 'pewtered' in *Cat. Scott. Coll. Arms*, spur no. 71 ; cp. also no. 6. I owe this reference and that in note 1 to Mr. W. A. Seaby.

²⁰ I am most grateful to the former Keeper of the Department of Antiquities at the Ashmolean Museum, Mr. D. B. Harden, for the opportunity of studying these spurs, and for allowing me to use Mrs. M. E. Cox's fine drawings of nos. 10-14 ; to Miss J. R. Kirk for her constant help in the Museum, and to Mr. R. L. S. Bruce-Mitford, Mr. J. W. Brailsford, Mr. Peter Lasko and Mr. David Wilson for help with the British Museum collections.

Nine of the spectrograms were taken in the Inorganic Chemistry Laboratory, Oxford, and four in the Agriculture Department, Queen's University, Belfast ; I am most grateful to Mr. F. M. Brewer and Dr. Stuart McConaghy for allowing me to use the spectrographic equipment under their care. The remaining analyses were done by Dr. E. T. Hall and Dr. Stuart Young on the X-ray fluorimeter in the Laboratory for Archaeology and the History of Art, Oxford, and I am most grateful to them.

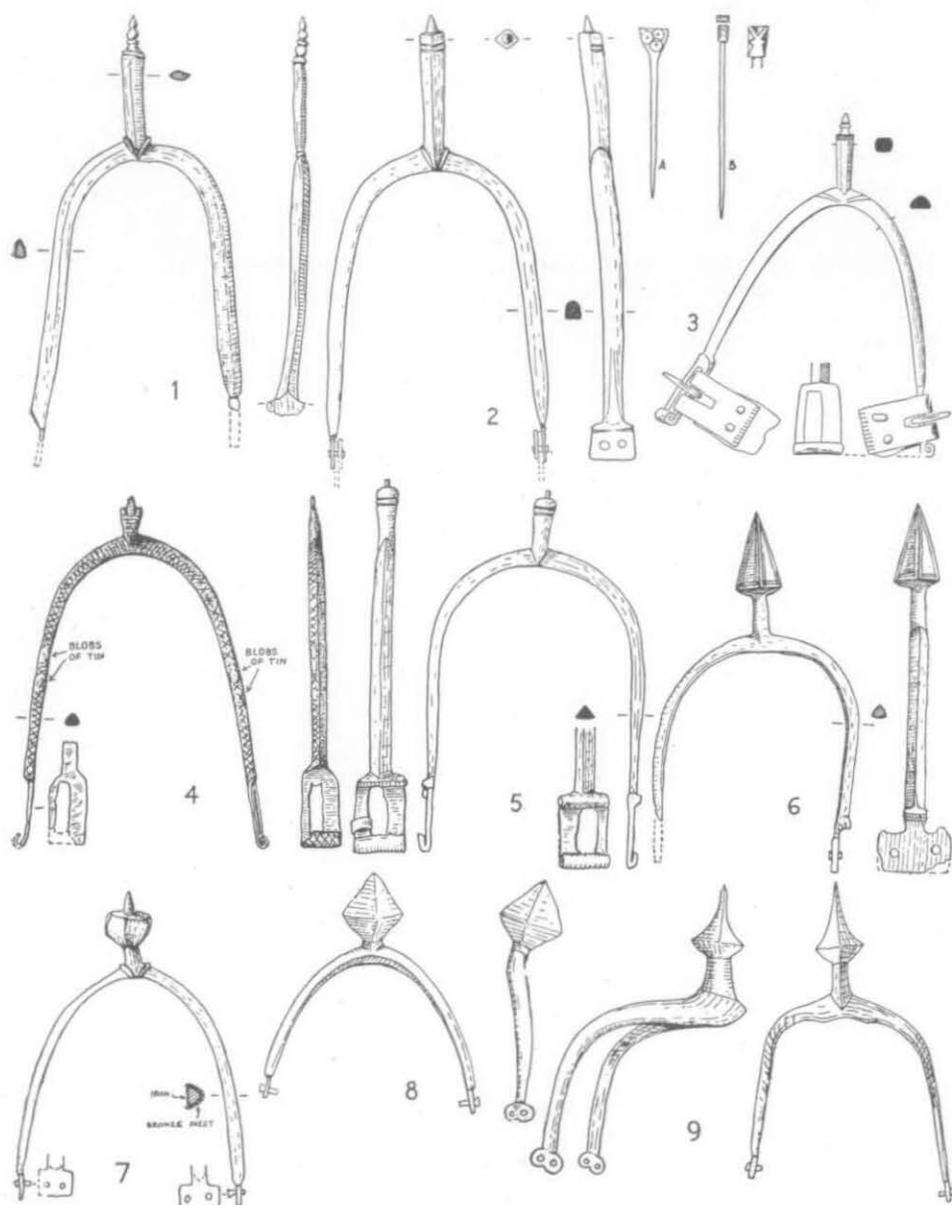


FIG. 13

Prick-spurs of tinned iron : 1, 6, Oxford ; 2, Bruern, Oxon. ; 3, York (tinned bronze, with the pins, 3a, 3b) ; 4, Ixworth, Suffolk ; 5, R. Thames, Shifford ; 7, London ; 8, Maidstone, Kent ; 9, R. Thames at Radcot Bridge.

Scale : $\frac{1}{4}$

E. M. JOPE

type C. The simple strap-ends survive, with parts of the straps held by two rivets.

This spur was found with two bronze pins (FIG. 13, nos. 3a, 3b; 3a has three perforated holes, 3b a faceted head) and two coins of Edgar (959-975) (*Num. Chron.*, 6th ser. XII (1952), 118, where there is no mention of spur or pins). It is of particular value for extending the range of this general type of spur in England back into the 10th century, at least in the north (it is known from the 8th century on the continent—e.g., Lindenschmidt, *A.u.h.V.* v, pl. 42, 691, 692). It is also of interest to see the type wholly interchangeable between wrought iron and cast bronze, and the fusion-plating with tin or soft solder used also on the bronze, as it had been, indeed, since the Early Bronze Age and Early Iron Age. I am grateful to my colleague Mr. D. M. Waterman for bringing this spur to my notice and allowing me to use his drawings.

4. From Ixworth, Suffolk: Ash. Mus. 1927.6487 (Evans coll.). Iron spur fusion-plated with a mixture of tin and lead (S), which coating is blobby in places. The arms are ornamented on one face only with criss-cross filed lines. Short flattened point splaying into a fish-tail with a projecting central prick. The terminals are long, slotted, rectangular plates, one having criss-cross filed lines on the fold-over at the base. 11th or early 12th century; cp. *Lond. Mus. Med. Cat.*, 98, fig. 29, no. 5, from London Wall.
5. From the River Thames at Shifford near Standlake, Oxon.: Ash. Mus. 1914.455. Spur of iron fusion-plated with an even layer of tin (S). The fairly short point has a rounded end with two grooves below it, and a small cylindrical tip. The terminals are slotted, rectangular plates (type C i) with a solid moulding across the top and folded over at the bottom. What looks like part of a buckle-pin remains round one of the terminals. Probably later 11th-early 12th century.
6. From St. Aldate's, Oxford: Ash. Mus. 1883.196. Iron spur fusion-plated with tin (S). The point has a tall pyramid standing on the end of a round-sectioned shaft. The pyramid faces have engraved double bordering lines. There is no moulding at the base of the point-shaft, but a ribbed moulding at the junction of the surviving terminal, which is a plain rectangular plate with top edge curling upwards to an ear on either side of the arm. The straps were fixed with two iron rivets. These features may all be found distributed between two spurs from London (*Lond. Mus. Med. Cat.*, 98, fig. 29, nos. 6 and 7). c. 1100.
7. From London: Roach Smith coll., British Museum (see W. de Lacy Lacy, *History of the Spur*, pl. ix, fig. 2). Iron spur, with straight arms covered by a band of thin bronze sheet folded over the two outer facets (contrast the bronze strip wound round the iron stirrup from the River Ray at Islip, *Oxoniensia*, xv (1950), 30, fig. 12 A; 42). The strips on the stirrup are in fact a golden coloured bronze (X). The point-tip projects from the flat face of an inverted 8-faced 'half egg', which is set on a short cylindrical shaft, both also covered with thin bronze sheet. There are the usual swelling mouldings at the junction. The terminals are small square plates, also covered on the outside with thin bronze sheet, the straps being held with two rivets. Early to mid-12th century.
8. From Maidstone, Kent: Ash. Mus. 1879.256. Spur of iron fusion-plated with tin (S). Small, and with slightly curved arms, convex on the inner surface. The point is a large solid cube set diagonally on a stumpy cylindrical shaft, a well-known 12th century type. The terminals are small figure-8 plates

THE TINNING OF IRON SPURS

with a strap-rivet in each circle, type B ii (cp. *Lond. Mus. Med. Cat.*, 102, fig. 31, nos. 1, 2). Second half of 12th century.

9. From the River Thames $1\frac{1}{2}$ miles from Radcot Bridge, Berks. : Ash. Mus. 1886.580. Spur of iron fusion-plated with tin (S). It has fully developed curved arms, a point formed by a concave-faced pyramid set on a shaft of almond section, and small figure-8 terminal plates, type B ii. This is a fairly advanced example of a 13th-century type perhaps lasting into the 14th, as it may be seen on an effigy of 1327 (*Lond. Mus. Med. Cat.* 100, fig. 30, no. 1 ; cp. also no. 2, and 102, fig. 31, no. 3). Probably late 13th century. A very similar spur, but with no tin traceable, comes from a late-13th-century context at Deddington Castle, Oxon.

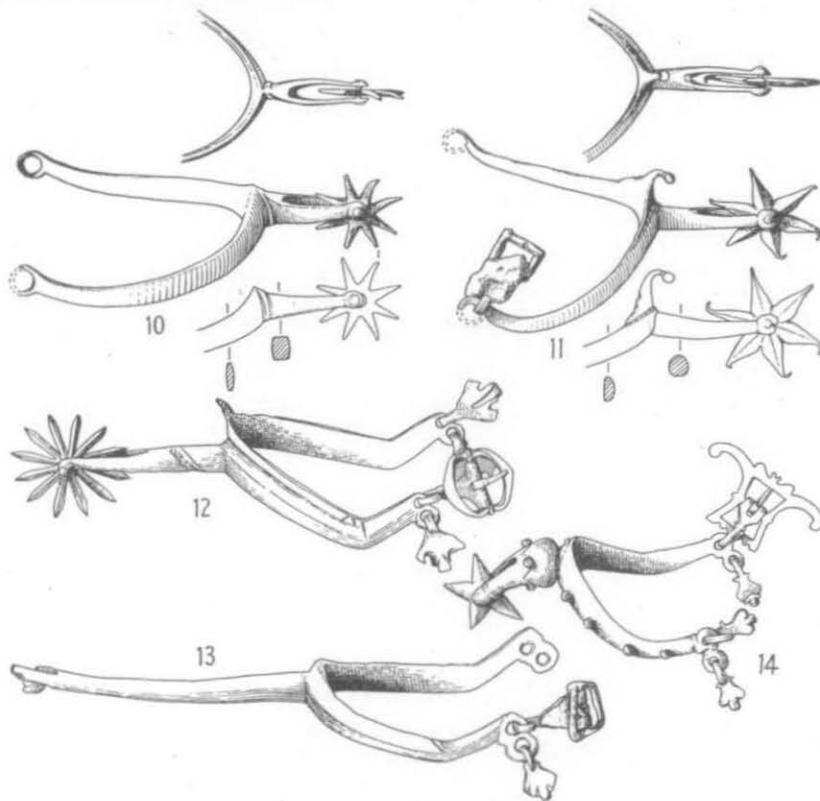


FIG. 14
Rowel-spurs of tinned iron : 10, 12, 13, Oxford ; 11, 14, Ixworth, Suffolk.
Scale : $\frac{1}{4}$

FIG. 14. *Rowel-spurs* : 14th-17th centuries.

10. Oxford, Thames Street : Ash. Mus. 1910.297. Iron fusion-plated with tin (S) still traceable in places. It has an 8-spiked wheel on the end of a shaft of

E. M. JOPE

medium length, a lightly curving body and a single-holed terminal, all very simple (cp. *Lond. Mus. Med. Cat.* 109, fig. 34, no. 4). This is a later 14th-century type.

11. From Ixworth, Suffolk : Ash. Mus. 1927.6492 (Evans coll.). Spur of iron on which a trace of tin (S) fusion-plating survives by the knob at the back. It has a gently curving body and a wheel with 6-ogee-curved spikes set at the end of a slightly curved shaft of medium length. The terminals are single-holed. This combines features usually datable to the later 14th-early 15th centuries.
12. Oxford, City Ditch, George St. ; Ash. Mus. 1910.464. Spur of iron fusion-plated with tin (S). It has a 12-spoked wheel set on a fairly long shaft, arms with sharp 'elbows', and a channelled expansion rising above the shaft at the back, two-holed terminals, and slightly waisted buckle on one side (cp. *Lond. Mus. Med. Cat.*, 111, fig. 35, nos. 3, 5). All these are features of the first half of the 15th century.
13. Oxford, City Ditch, George St. : Ash. Mus. 1910.463. Spur of iron with a thin fusion-plating of tin (S). The wheel is broken away. It has slightly curved arms, two-holed terminals, and the very long shank characteristic of the second half of the 15th century (cp. *Lond. Mus. Med. Cat.* 111, fig. 35, nos. 6, 7).
14. Ixworth, Suffolk, Abbey Grounds (one of a pair) : Ash. Mus. 1927.6494 (Evans coll.). Two fine spurs of iron evenly coated with tin (S). Each has curving arms, with two-holed terminals, an elaborate winged buckle, and a stumpy shaft carrying a 5-pointed wheel. Both arms and shaft are decorated with small spherical knobs. Probably late 16th or 17th century. This type of spur was probably worn the opposite way up from that illustrated.

On the fine 11th-century prick-spur from near Slaughterford, West Wilts. (*Antiq. J.*, xvii (1937), 76 and pl. xxviii), recently given by Mr. A. D. Passmore to the Ashmolean Museum (*Ash. Mus. Rep.*, 1955, p. 31), the white metal coating has now been shown to be tin (S).