

Cosmetic Sets of Late Iron Age and Roman Britain

Ralph Jackson

**British Museum Research Publication
Number 181**

For Sylvia

Publishers
The British Museum
Great Russell Street
London WC1B 3DG

Series Editor Josephine Turquet
Assistant Production Editor: Katherine Candler

Distributors
The British Museum Press
46 Bloomsbury Street
London WC1B 3QQ

Cosmetic Sets of Late Iron Age and Roman Britain
Ralph Jackson

Front Cover: The finds from Hockwold and Itteringham (Cat. nos 261
and 286; see Pl. 8)

ISBN 978-086159-181-7
ISSN 1747-3640

© The Trustees of the British Museum 2010

Note: the British Museum Occasional Papers series is now entitled
British Museum Research Publications. The OP series runs from
1 to 150, and the RP series, keeping the same ISSN and ISBN preliminary
numbers, begins at number 151.

For a complete catalogue of the full range of OPs and RPs see the series
website: www.britishmuseum.org/research/research_publications.aspx

Order from www.britishmuseum.org/shop
For trade orders write to:
Oxbow Books,
10 Hythe Bridge Street, Oxford, OX1 2EW, UK
Tel: (+44) (0) 1865 241249
e-mail oxbow@oxbowbooks.com
website www.oxbowbooks.com

or

The David Brown Book Co
PO Box 511, Oakville
CT 06779, USA
Tel: (+1) 860 945 9329; Toll free 1 800 791 9354
e mail david.brown.bk.co@snet.net

Printed and bound in the UK by Latimer Trend

List of Plates, Figures, Maps and Tables	iv
Acknowledgements	v
1 Introduction	1
2 Typology and Statistics	3
3 Manufacture and Function	9
4 Scientific Analyses K.J. Matthews and M.R. Cowell	15
5 Decoration and Meaning	21
6 Context and Distribution	49
7 Dating and Summary	67
8 Catalogue	71
9 Bibliography	219
10 Concordances	221

List of Plates, Figures, Maps and Tables

Plates

Plate 1 Reginald Allender Smith, Keeper of the Department of British and Medieval Antiquities, 1928–1938	vi
Plate 2 Complete cosmetic sets, end-looped, centre-looped and mixed, in the British Museum collections	2
Plate 3 The mixed cosmetic set from a cremation burial group at Bures St Mary, Suffolk. Photo © Suffolk County Council, courtesy of Jude Plouviez	4
Plate 4 Wear facets on the tip of three end-looped pestles	11
Plate 5 A replica of the end-looped cosmetic set from St Albans (436) showing two alternative ways of holding it when in use (a, b), and with samples of Egyptian Blue in the mortar (c)	13
Plate 6 Some of the mineral powders prepared with the replica cosmetic set	13
Plate 7 The bull terminal on Hockwold mortar 261	20
Plate 8 Iron Age and Roman traditions: the bull on the Hockwold mortar (261) is confronted by his counterpart on one of the Itteringham mortars (286a). Above, pestles from Norfolk (366) and Itteringham (286b)	22
Plate 9 Type J enamelled mortars (278, 578)	25
Plate 10 The Colchester (Garrison site) cosmetic set <i>in situ</i> beneath the skull of inhumation JNF 439. Photo © Colchester Archaeological Trust	48
Plate 11 The non-coin metal objects from the Itteringham hoard, comprising two copper-alloy cosmetic sets (286–7), three silver finger-rings and a copper-alloy key for a rotary lock	51

Figures

Figure 1 The Colchester (Garrison site) centre-looped cosmetic set. Drawing: Emma Spurgeon, © Colchester Archaeological Trust	3
Figure 2 Skipton Street, London: lead model for the manufacture of Type A end-looped cosmetic mortars. Scale 1:1	8
Figure 3 Blossom's Inn, London: the mixed cosmetic set (319) and the associated nail-cleaner and tweezers. Scale 1:1	11
Figure 4 Typology: complete sets, end-looped. Scale 1:2	27
Figure 5 Typology: complete sets, centre-looped and mixed. Scale 1:2	28
Figure 6 Typology: end-looped mortars with zoomorphic terminals. Scale 1:2	29
Figure 7 Typology: end-looped mortars with bird-headed loops and knobbed terminals. Scale 1:2	30
Figure 8 Typology: end-looped mortars with bird-headed loops and knobbed or plain terminals. Scale 1:2	31
Figure 9 Typology: end-looped mortars with knobbed terminals. Scale 1:2	32
Figure 10 Typology: end-looped mortars with plain or spouted terminals. Scale 1:2	33
Figure 11 Typology: end-looped mortars with plain or spouted terminals. Scale 1:2	34
Figure 12 Typology: end-looped pestles. Scale 1:2	35
Figure 13 Typology: end-looped pestles. Scale 1:2	36
Figure 14 Typology: centre-looped mortars with zoomorphic terminals. Scale 1:2	37
Figure 15 Typology: centre-looped mortars with zoomorphic terminals. Scale 1:2	38
Figure 16 Typology: centre-looped mortars with zoomorphic terminals. Scale 1:2	39
Figure 17 Typology: centre-looped mortars, enamelled, with zoomorphic terminals. Scale 1:2	40
Figure 18 Typology: centre-looped mortars, enamelled, with knobbed terminals. Scale 1:2	41

Figure 19 Typology: centre-looped mortars with knobbed terminals. Scale 1:2	42
Figure 20 Typology: centre-looped mortars with knobbed terminals. Scale 1:2	43
Figure 21 Typology: centre-looped mortars with strutted loops and/or extended loop plates. Scale 1:2	44
Figure 22 Typology: centre-looped mortars with plain terminals; multi-looped and anomalous mortars. Scale 1:2	45
Figure 23 Typology: centre-looped pestles. Scale 1:2	46
Figure 24 Typology: centre-looped pestles. Scale 1:2	47
Figure 25 Cosmetic grinders from dated contexts	66

Maps

Map 1a Distribution of cosmetic grinders from all sources	56
Map 1b Detail of Map 1a showing distribution in East Anglia and margins	57
Map 2 Distribution of excavated finds	57
Map 3 Distribution of complete sets	57
Map 4 Distribution of end-looped type, all sources	58
Map 5 Distribution of end-looped type, excavated finds	58
Map 6 Distribution of centre-looped type, all sources	58
Map 7 Distribution of centre-looped type, excavated finds	58
Map 8 Distribution of mortars with plain terminals	59
Map 9 Distribution of mortars with knobbed terminals	59
Map 10 Distribution of mortars with zoomorphic terminals	59
Map 11 Distribution of mortars and pestles with bird-headed loops	59
Map 12 Distribution of mortars with plain bow	60
Map 13 Distribution of mortars with incuse bow decoration	60
Map 14 Distribution of enamelled mortars (Types H and J) and pestles (Type O) and related types (I and K)	60
Map 15 Distribution of mortar types A, D and E	60

Tables

Table 1 Numerical breakdown of cosmetic sets and components	3
Table 2 Data comparison between complete sets and whole sample	3
Table 3 Length values for complete mortars	5
Table 4 Length values for complete pestles	5
Table 5 Weight values for complete mortars	5
Table 6 Weight values for complete pestles	5
Table 7 Distinctive sub-types	7
Table 8 Virtually identical components	9
Table 9 Grave finds, sex of associated human remains	14
Table 10 Analysis by XRF of the uncleaned corroded metal surfaces of mortars and pestles	16
Table 11a Analysis by XRF of uncorroded metal drillings from mortars and pestles	18
Table 11b Scatter plot of drilled samples illustrating the range of alloys used in the manufacture of cosmetic grinders	18
Table 12 Analysis by XRF of the corroded metal surface at several points on two mortars	19
Table 13 Summary context of complete cosmetic sets	62
Table 14 Summary context of excavated finds (excluding sets)	62
Table 15 Summary actual or potential broad context of casual finds	64
Table 16 Context categories: Excavated finds, Level 1	65
Table 17 Context categories: Excavated finds, Level 2	65
Table 18 Context categories: Casual finds, Level 1	65
Table 19 Context categories: Casual finds, Level 2	65
Table 20 Cosmetic grinders in context	65

Acknowledgements

A catalogue of this kind, which comprises hundreds of objects recorded over several decades in many collections throughout Britain, has inevitably involved the assistance and cooperation of numerous individuals and institutions. To all I record my sincere thanks, beg the indulgence of any whose name I have failed to include below, and apologise for the long delay in bringing this book to fruition. I owe an especially deep debt of gratitude to Josephine Turquet, not only for her professional and flexible approach to editing but also for her unwavering support and seemingly inexhaustible supply of patience, tolerance and good humour; and I thank her willing assistant Kit Candler. I am also immensely grateful to Nina Crummy, who for long has shared with me her extensive knowledge of finds and, at short notice, read and enriched the text with new information, insights and bibliographical references.

As always, too, I have benefited enormously from the help, advice and unstinting support of my departmental and Museum colleagues, especially that of Catherine Johns, Val Rigby, Ian Stead, Tim Potter†, Richard Hobbs and J.D. Hill, and, more recently, Jonathan Williams, Jody Joy, Sally Worrell and Dan Pett, and from the unrivalled skills of our illustrators, Stephen Crummy (nos 286–7), Robert Pengelly (nos 22, 192, 261, 517), Karen Hughes (nos 77, 134, 139, 282, 349, 393, 474, 486, 509, 546–8, 566) and Meredydd Moores (nos 34, 50, 73, 213–14, 224, 260, 301, 318–19, 348, 362, 372, 479–80, 482, 518, 578–82 and Fig. 2), who provided a range of fine drawings to accompany my simple outlines. Judith Cash produced an early typescript, and I have been extremely fortunate over the years to be the recipient of Stephen Crummy's computer skills, here put to good effect in Maps 1–15, Fig. 25 and Tables 3–7; and, more recently, of the similar skills of Craig Williams who elegantly resolved the layout of Figs 4–24. To all these I offer my warm thanks, as also to Sandra Marshall† for Plate 5, to Saul Peckham for Plates 2, 7, 8 and 11, to Ian McIntyre for the splendid replica he made of the St Albans (King Harry Lane) cosmetic set (cat no. 436), to Louise Joyner for experimental work with minerals, to Keith Matthews and Michael Cowell for their detailed scientific analyses and to Susan La Niece and Duncan Hook for additional scientific input.

Beyond the British Museum I am particularly indebted to Bill Milligan, formerly of Norwich Castle Museum (NCM), who for many years not only kept me informed of the numerous Norfolk finds but also made arrangements for me to record them, as, more recently, have his colleagues John Davies, Alan West and Helen Geake (NCM), David Gurney, Andrew Rogerson and Steven Ashley (Norfolk Landscape Archaeology). Similarly, Jude Plouviez, Helen Geake, Faye Minter and Donna Wreathall (Suffolk County Council Archaeological Service) have unfailingly communicated information and images on the many Suffolk discoveries, while Angela Wardle (Museum of

London Archaeology Service) and Jenny Hall (Museum of London) have kept me up to date with the increasing number of excavated examples from London. Their constant, kind, knowledgeable and generous help, of especial importance before the creation of the Portable Antiquities Scheme database, has enriched this catalogue beyond measure and I owe them all a very deep debt of gratitude. Through all of them, too, I relay my thanks to the host of un-named owners who made their finds available and supplied finding circumstances. I also record my special thanks to the late David Rogers, an assiduous and tenacious collector, who became fascinated by cosmetic grinders and liked to share with me his enthusiasm for each new purchase. His collection was acquired by the British Museum (Reg. nos P&E 1999,0802.1–96) following his death in 1999. Finally, I am most grateful to the numerous museum curators, conservators, illustrators, archaeologists, finders, owners, collectors and donors listed below, with whom I have had direct contact and who kindly supplied specific information and/or illustrations and enabled the recording of objects.

R. Abdy, D. Abercromby, B. Ager, R. and L. Adkins, K. Ainsworth, P.H. Alebon, J.P. Allan, L. Allason-Jones, T. Austin, L. Babb, P. Barker†, D. Barrett, J.A. Bell, D.J. Bengel, M. Biddle, B. Biktimir, J. Bircher, J. Bird, S. Bird, R. Boast, A.E. Bone, G.C. Boon†, M. De Bootman, H. Bowdler, G. Boyle, S.W. Bragg, K. Branigan, N. Brayne, R. Brewer, L. Brewster, D. Brinklow, A. Britten, P.M. Brown, R.A. Brown, H. Bullock, G. Burleigh, G. Carr, P. Carrington, C. Chippindale, P. Clarke, P. Clayton, S. Clews, S.R. Coleman, J. Collens, P. Collins, R. Collins, C. Conybeare, H. Cool, D. Coombs†, N. Crummy, M.J. Daniells, J. Darlington, A. Daubney, J.L. Dinn, B. Dix, A. Down†, S. Driscoll, T.B. Ellis, M. Erith, J. Errington, M.E. Farley, H.A. Feldman, K.M. Fellows, M. Feugère, A. Fitzpatrick, M. Foley, D. Ford, D. Fox, M. Francis, D. French, J. French, P. Frodsham, P. Garrard, R. Gilmour, C. Going, S. Greep, M. Griffith, N. Griffiths, M.A. Hall, J. Halliday, C. Hardie, C. Hart, A. Havercroft, R.A. Higham, A.P. Hobby, P.E. Holdsworth, V. Holgate, S. Holley, B.R. Hopkins, C. Howard-Davis, J. Hunt, A. Hurley, D. Hurst, J.D. Hurst, S. Hyde, L. Induni, J. Isaac, S. Jackson, C. Johnson, C.E.E. Jones, D. Kelly, R. Knox, E. Künzl, N.A.R. Lang, R.H. Leech, K. Liddell, G. Lloyd-Morgan, C. Longworth, M. Lyne, J.R. Magilton, H. Major, E. Man, J. Mann, F. Marsden, C. Martins, C. Mason, M. Matthews, P.C. McCulloch, C. McDonald, M. McElvaney, D. Miles, N. Mills, S.C. Minnitt, M. Moad, R. Moore, E.L. Morris, C. Mycock, D.S. Neal, S.P. Needham, J. Newman, R. Niblett, N. Nolan, J.M. Paddock, T. Padley, A.B. Page, R.M. Parker, J. Parsons, A. Phillips, R. Philpott, J. Pickin, C. Pinder, L. Pontin, F. Pryor, B. Read, P. Read, S. Read, N. Redhead, K. Reedie, T. Reynolds, C. Richardson, A.J. Roberts, D.J. Rogers†, P.G. Rose, G.E. Sandland, K. Sandwell, C. Saunders, J. Schuster, I.R. Scott, P.R. Sealey, F. Seeley, J. Sell, S. Sell, J. Shepherd, R.J. Silvester, B. Sitch, K.R. Smith, G. Speake, A.J.M. Spence, L. Staves, M. Stokes, M. Stone, J. Summerfield, K. Sussams, H. Swain, A. Taylor, T. Taylor, R. Thomas, D.J. Thompson, M. Thompson, F. Thuillier, S.J. Took, M. Tosdevin, R. Trett, A. Tyacke, M. Vickers, P. Ward, M.J. Watkins, K. Waugh, C.J. Webster, H.A. White, R.H. White, N. Wickenden, D. Williams, J. Williams, S. Williams, C.M. Wilson, C. Wingfield, M. Winter, P.J. Wise, P. Withers, W. and S. Wood, P.J. Woodward, D. Woollestone, B.R. Wooster, S. Wrathmell, S. Wright, R.J. Zeepvat.



Plate 1 Reginald Allender Smith, Keeper of the Department of British and Medieval Antiquities, 1928–1938

I. Introduction

In 1918 the Society of Antiquaries of London published a paper by Reginald Smith, then a 1st Class Assistant in the Department of British and Medieval Antiquities at the British Museum, entitled ‘On a peculiar type of Roman bronze pendant’ (Smith 1918). Smith illustrated 14 examples of these small bronzes (present catalogue nos 89, 111, 116, 121, 275, 279, 332, 427, 462–3, 469, 560, 565, 600) and noted three others (present cat. nos 184, 209, 550). With considerable ingenuity he interpreted them as pendant charms (for ‘those who wished to wear something connected with the horse’) derived from a rather murderous-looking piece of horse equipment, a form of serrated nose-band or cavesson, an idea repeated in his *British Museum Guide to Roman Britain* which was published four years later (Smith 1922, 48, fig. 52). Smith, who was made Keeper of the Department in 1928 (Pl. 1), maintained an interest in these small bronzes and progressively annotated brief details of new (or newly-published) finds on his interleaved copy of the *Guide* down to 1936. His 17 additions (present cat. nos 48–9, 64, 101, 103, 109–10, 112, 114–15, 117, 119, 124, 185, 292, 416–17), half of which were old finds from Colchester recognized and published by M.R. Hull (*Colchester Museum Report* 1930), included six which he termed ‘solid’ (two centre-looped, four end-looped – from Cirencester, Richborough and Brecon), indicating that he had now made a visual connection between the grooved and solid components – all of those included in his 1918 paper had been grooved components. While it may be supposed that there were some who Smith failed to convince on the question of derivation, the objects nevertheless came to be regarded as pendants or amulets, usually termed canoe-shaped, boat-shaped, keel-shaped or crescent-shaped. That identification persisted up to the 1980s, at which stage the number of published examples still stood at only a few dozen, and they continued to be regarded as a rather uncommon type.

In 1983 Robert Trett mustered some 44 examples in his review of the East Anglian finds, ‘Roman bronze “grooved pendants” from East Anglia’ (Trett 1983). Although he rejected Smith’s fanciful derivation from serrated cavessons he still subscribed to the amulet theory. His use of the term ‘grooved pendant’, though cautiously objective, was hardly felicitous since it failed to take into account properly those of his examples that were not grooved. Furthermore, Trett, like most other commentators, was hampered by an assumption that the ‘pendants’ were complete as single piece objects, whether grooved or solid. Thus, Glenys Lloyd-Morgan, who, by 1981, had gathered details of several new examples following the discovery of one in excavations at Bedward Row, Chester (present cat. no. 91), took into consideration only the larger grooved component and regarded them provisionally as some type of amulet or pendant (Dr. G. Lloyd-Morgan *in litt.*).

Conclusive evidence had already emerged from the ground, however, to demonstrate that these small enigmatic bronzes

were originally two-piece sets, comprising a greater, grooved, component and a lesser, solid, component. For, excavations at the King Harry Lane, St Albans site in 1965–8 had yielded a significant new find: one of the cremation burials (203 (SB40)) included an example of both the ‘grooved pendant’ and the solid rod-like ‘pendant’ (cat. no. 436). In the subsequent post-excavation analysis in the 1970s Val Rigby and Ian Stead formed the opinion that the two objects belonged together and that, taking into account their context and that of other finds, they had perhaps been used to mix or grind cosmetics. Shortly afterwards the author started research on two new examples from Stonea Grange, March, Cambs. (cat. nos 479, 482), and by 1984 had recorded 99 examples, including six complete sets. The most crucial set was that from Canterbury, excavated at the Cakebread Robey site in 1981 (cat. no. 73), in which the two components were found fused together in their operative position by their corrosion products, thus demonstrating unequivocally that the bronzes were two-piece sets. In addition, clues were found on many examples which pointed towards a specific function. In particular, a close examination of the groove of the greater component and the corresponding convex face of the lesser solid component revealed that in most cases where preservation was good traces of wear consistent with a to-and-fro or a rocking abrasive action could be discerned. As the sets were evidently a small apparatus for mixing or grinding, it seemed appropriate to name the two components ‘mortar’ and ‘pestle’, since those terms best-suited the perceived function. Furthermore, though conclusive proof was lacking, such evidence as there was indicated a use in the preparation of mineral-based cosmetics, and the terms cosmetic grinder and cosmetic set were coined. With evidence, too, for a virtually exclusive British distribution in the late Iron Age and Roman period it seemed timely to publish a provisional account of what amounted to a hitherto unknown type. That paper, published in the journal *Britannia* in 1985 (Jackson 1985) established the type and quite rapidly gave widespread currency to the new terminology, both within and without archaeological literature, as well as giving rise to a crop of other less appropriate terms – ‘woad applicator’, ‘perfume grinder’ etc.

Research on a particular artefact type almost invariably results in an upsurge of reported finds, but the increase in numbers of cosmetic grinders since 1985 has been truly remarkable: the raw statistics are 1918: 17; 1985: 99; 1996: 417; 2004 (this volume): 625. The hundreds of new examples have come both from museum collections and archaeological excavations and also from metal-detector activity. They testify to the increasingly good relationships between museum curators, collectors, archaeologists and metal detectorists. Although the numbers are continuing to rise, and there are still areas of uncertainty, it has seemed an appropriate moment at

which to reassess the provisional conclusions reached in 1984, to discuss fully the huge amount of information gathered in the intervening years and to publish an illustrated catalogue of all those examples recorded by the author up to the 1st September 2004. The decision was taken not to incorporate examples from the database of the Portable Antiquities Scheme (<http://www.findsdatabase.org.uk>) even though already by 2004 some 61

examples had been recorded on it, but to treat those on the PAS database as complementary/ supplementary to this catalogue (albeit some pre-September 2004 examples are recorded in both places and selected post-2004 key finds on the database have been discussed here in the text). For an overview of the cosmetic sets recorded on the PAS database from 1997 to 2008 see Worrell 2008.



Plate 2 Complete cosmetic sets, end-looped, centre-looped and mixed, in the British Museum collections: top left Hockwold (260), top right St Albans (436), bottom left Itteringham (287), bottom right Itteringham (286)

2. Typology and Statistics

Cosmetic grinders are small two-piece sets made from copper alloy, comprising a greater component, the mortar, and a lesser component, the pestle (Pl. 2). Both components have in common two distinguishing features, a crescentic or elliptical shape and, with very few exceptions, a loop for suspension. In addition, and critically, the mortar has a channelled groove along its inner curve, while the pestle is a solid rod. For descriptive purposes both components may be divided into three zones, namely, for the mortar, *loop*, *bow* and *terminal(s)* and, for the pestle, *loop*, *rod* and *tip(s)*.

Smith's division into end-looped and centre-looped varieties (Smith 1918, 60) has stood the test of time, and virtually all cosmetic grinders can be classified according to that scheme.

As Table 1 reveals, the present catalogue comprises rather more centre-looped than end-looped components (320:281), but of the surviving complete sets the end-looped variety is

rather more common than the centre-looped type (9:6), while a not inconsiderable proportion are mixed sets (4), consisting of a centre-looped mortar and an end-looped pestle. With a sample size for the catalogued sets of only 19 it is not possible to draw firm conclusions from these ratios. That point is underlined by four important subsequent finds (not catalogued here), a centre-looped set from excavations in Colchester (Fig. 1) (Jackson 2006), a mixed set from Bures St Mary, near Sudbury (Pl. 3) (M. Mathews and J. Plouviez *in litt.*), and two probable sets, both centre-looped, found by detectorists at Battsford (Worrell 2008, 362–3) and Hempnall/ Topcroft, which result in a ratio of 9:9:5. It does at least seem likely that the catalogued complete sets are a broadly representative cross-section of the type, in view of the fact that the ratio of mortar terminal types in the sets corresponds quite closely to that of the sample as a whole (Table 2).

Table 1 Numerical breakdown of cosmetic sets and components

	2004	1985
mortars	418	77
pestles	207	22
end-looped components	281	60
centre-looped components	320	43
end-looped sets	9	4
centre-looped sets	6	2
mixed sets	4	-
end-looped mortars(including 9 in sets)	185	39
end-looped pestles(including 12 in sets)	96	17
centre-looped mortars(including 7 in sets)	209	36
centre-looped pestles(including 4 in sets)	111	5
anomalous mortars(idiosyncratic loop type)	10	2
indeterminate mortars(broken examples)	14	-
uncertain examples	4	-

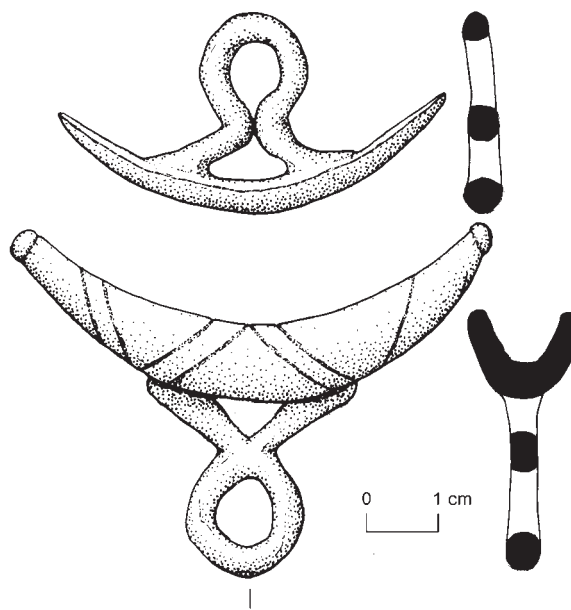


Figure 1 The Colchester (Garrison site) centre-looped cosmetic set. Drawing: Emma Spurgeon, © Colchester Archaeological Trust

Table 2 Data comparison between complete sets and whole sample

	Mortars with zoomorphic terminals		Mortars with knobbed terminals		Mortars with plain terminals		End-looped mortars and pestles with bird-headed loops	
	No.	%	No.	%	No.	%	No.	%
Sets (n = 19)	6	31	10	52	4	21	5 (n = 18)	27
Whole sample (excl. sets) (n = 343)	92	27	174	51	84	24	96 (n = 268)	36

At all events selection of the loop type appears to reflect both chronological and regional trends (see Sections 6 and 7).

The statistics also show that pestles have been much less frequently recorded than mortars (207:418), and the ratio of approximately 1:2 remains constant, also, between examples of both loop types (end-looped 96:185; centre-looped 111:209). This under-recovery or under-reporting is presumably due to the fact that the pestles are less robust, less distinctive and less decorative than their larger counterpart. However, recognition of the type has progressively redressed the balance in their favour, and the total number of centre-looped pestles, the erstwhile least-recognized component, has risen dramatically, from 5 in 1985 to 74 in 1996 and 111 in 2004.

The few exceptions to the loop typology (Table 1, 'anomalous mortars' 59, 91, 102, 134, 139, 389, 390, 403, 440, 576) conform to the type as a whole, namely that while all are united in overall form no two are identical and each new discovery brings with it the possibility of novel, idiosyncratic features. Nevertheless, some examples are very similar in appearance implying a common manufacturing source, while others, which share particular motifs or distinctive features are indicative of craft or workshop traditions (Tables 7–8).

Complete sets (Pls 2–3, Figs 1, 3–5)

Not surprisingly several of the complete sets show a distinct uniformity between the two components, either in their overall shape, especially the form of the loop, or in their décor. Thus, sets 22, 73, 74, 100/101, 154, 287, 436, 517 and those from Colchester (Garrison site) and Battisford, have matching loops, while, in sets 22, 73, 74, 100/101, 154, 287, 514 and 517, the overall shape and proportions of the pestle matches that of the mortar. It seems evident in all these cases that the two pieces were made together by the same craftsman, as also, probably, sets 92 and 501, although they lack any precise matching feature. Noticeable in all these cases, too, is the very exact fit of the pestle in the mortar, whether the 'chunky' form of sets 22 and 517 or the deep, slender, knife-like form of set 73.

Rather different are sets 192, 319, 437 and 438/439, all of which are from secure archaeological contexts but which appear, at first sight, to comprise non-matching components. In the case of set 192 both pestle and mortar are end-looped, but there is a very great contrast between the large, elaborate mortar and the much smaller, completely plain, pestle. However, it should not necessarily be assumed that they were made separately, for the form of the working end of the pestle is closely adapted to the profile of the groove in the mortar. Set 319, on the other hand, like set 438/439 appears to provide stronger evidence for non-contemporaneity of manufacture: not only is there no stylistic similarity between pestle and mortar, but the loop position is also at variance – an end-looped pestle with a centre-looped mortar. It may be that such 'mixed' sets simply reflect the ubiquity of the type, in that a broken or lost component could quite readily be replaced without recourse to fresh manufacture, albeit one might have to settle for a non-matching loop type. Alternatively, and in the light of the find from Bures St Mary, rather more convincingly, it is conceivable that the combination of a centre-looped mortar and end-looped pestle was an intentional and original choice. For, while the two components may have hung in a slightly less satisfactory manner when not in use there could have been



Plate 3 The mixed cosmetic set from a cremation burial group at Bures St Mary, Suffolk. Photo © Suffolk County Council, courtesy of Jude Plouviez

functional advantages when the set was operated. Certainly the very close correspondence between the sets from St Albans (438/439), London (319) and Bures St Mary, which combine a virtually identical centre-looped zoomorphic mortar with an end-looped pestle (Pl. 3, Fig. 3) (also near-identical in the latter two cases), hints at a common supplier of those mixed sets, while the stylistic similarity of the disc-like loops of another mixed set from St Albans (437) also implies contemporaneous manufacture. The mixed set from Itteringham (286), which combines a large ostentatious centre-looped zoomorphic mortar with a small plain end-looped pestle, recalls the similar contrast between the components of the end-looped Fishtoft set (192). As in that set the rod and tip of the pestle conform closely to the profile of the groove in the mortar and separate non-contemporaneous manufacture of the two components need not be assumed. The question must remain open, but for the present it may be observed that all of the recorded mixed sets come from contexts dated within the period late 1st to late 2nd century AD (Fig. 25).

Mortars (Figs 6–11 and 14–22)

Of the two components of cosmetic sets the mortar displays much greater variety in size, shape and degree of elaboration. At one extreme are tiny, absolutely plain examples (e.g. 13, 124, 365, 512), at the other large and richly decorated pieces (e.g. 50, 261, 301). Within these extremes there is a wide spectrum, the form being constrained only by the need to provide a groove and, evidently, to keep to a 'pocket-sized' length. Tables 3 and 5 graphically illustrate the length and weight values of complete mortars where those measurements could be determined. The whole-sample length range ($n = 335$) is 29–123.5 mm, but the great majority of mortars are between 45–85 mm long. Indeed, excepting only two examples (nos 50, 406) measuring 98 mm, the end-looped mortars ($n = 143$) are restricted to the range 42–88 mm. However, there is a wider spread of values for the centre-looped variety ($n = 180$), with the majority lying within the range 47–85 mm, but with both smaller examples (down to 29 mm – no. 282) and, especially, larger examples (five over 100 mm and one at 123.5 mm – no. 301).

Much more extreme than the length range (max. ratio 4:1) is that for weight, with a whole-sample range ($n = 170$) of

Table 3 Length values for complete mortars

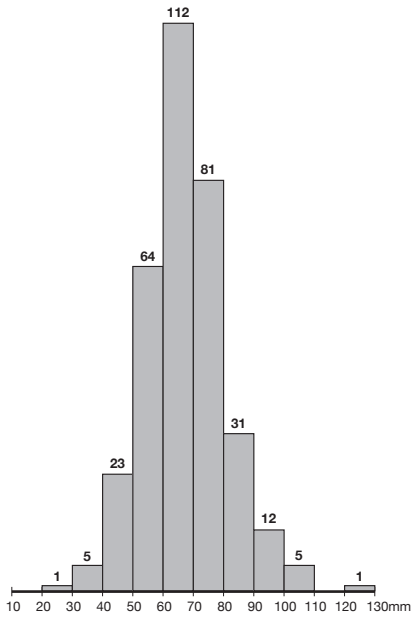


Table 3a - No./length complete mortars

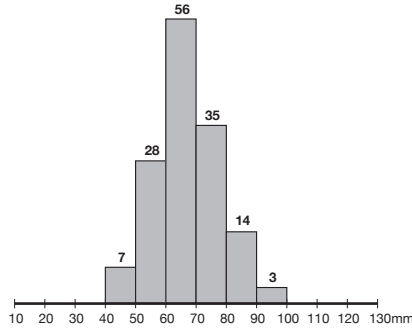


Table 3b - No./length complete end-looped mortars

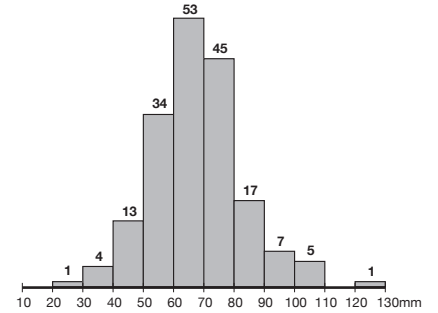


Table 3c - No./length complete centre-looped mortars

Table 4 Length values for complete pestles

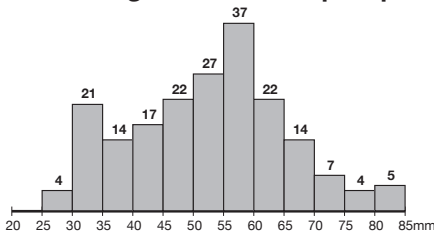


Table 4a - No./length complete pestles

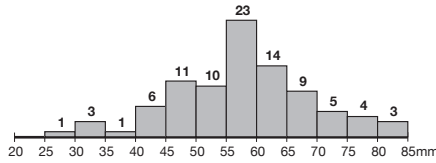


Table 4b - No./length complete end-looped pestles

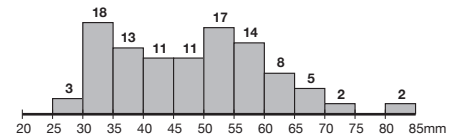


Table 4c - No./length complete centre-looped pestles

Table 5 Weight values for complete mortars

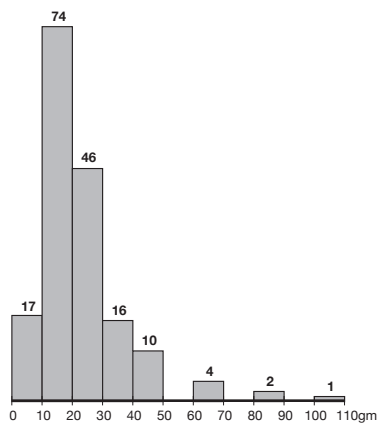


Table 5a - No./weight complete mortars

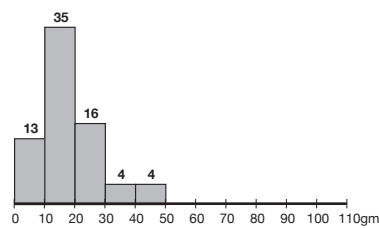


Table 5b - No./weight complete end-looped mortars

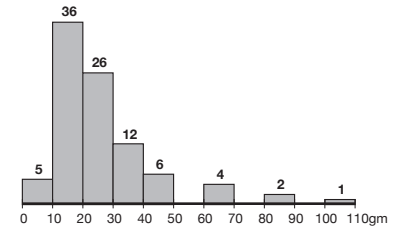


Table 5c - No./weight complete centre-looped mortars

Table 6 Weight values for complete pestles

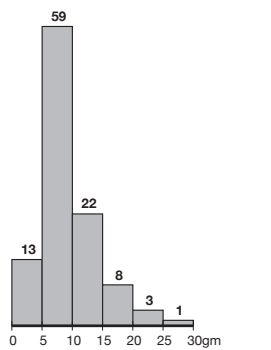


Table 6a - No./weight complete pestles

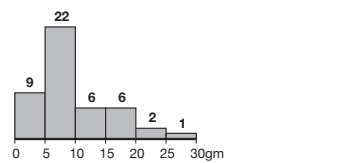


Table 6b - No./weight complete end-looped pestles

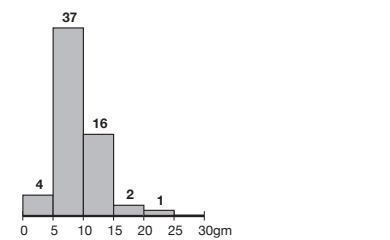


Table 6c - No./weight complete centre-looped pestles

5.0–103.2 g (max. ratio 20:1). As with the length measurement end-looped mortars display the more uniform weight, with all the measured examples ($n = 72$) lying within the range 5.0–49.5 g and all except eight weighing between 5.0 and 28.7 g. The weighed centre-looped mortars ($n = 92$) lie within the range 7.4–49 g, except for seven examples which weigh from 62.4 to 103.2 g.

The provision of a groove necessarily required the provision of a bow with walls. Variation in the size and degree of curvature of the bow, from virtually straight examples to very strongly curved pieces, affected the overall form, while differences in the wall height could provide greater or lesser scope for potentially decorative fields. The groove itself is similarly variable in length, breadth, depth and curvature. Its cross-section is generally U-shaped or rounded V-shaped, and its capacity varies from deeply-channelled to excessively shallow examples. Like the bow walls mortar terminals afforded great potential for elaboration. A few were adapted to function, but their prominent position made them a prime site for ornamental treatment in the round, and considerable effort was lavished on the decoration of some examples. The terminals can be categorized as zoomorphic/ornithomorphic, knobbed, spouted or plain.

The final defining feature, the suspension loop, was no less varied than the other parts of mortars. Beyond the functional requirement of a closed ring many different forms were possible, according to the loop greater or lesser prominence. A few are tiny unadorned perforations through the end or base of the bow, while, exceptionally, one is a finely-modelled stylized boar's head, but most are projecting loops of ring-like, collar-like or plate-like form. Many of the end-looped variety take the shape of a more or less stylized bird's head, while the centre-looped mortars lent themselves to the provision of a projecting loop plate or a strutted openwork decor symmetrically arranged around the loop. An unusual variant has the loop set in a different plane. This feature, present on a small number of both mortars (50, 73a, 237) and pestles (207, 473), was perhaps a concession to function, though a regional explanation is possible since the majority of examples are from northern Kent. Other idiosyncratic mortars have multiple loops or have a slot or central aperture in place of a loop. The eye of the loop is generally circular, though there are distinctive D-shaped and heart-shaped varieties, and, where the loop was adapted to the profile of a bird's head, the eye is sometimes elliptical or tear-shaped.

Pestles (Figs 12–13 and 23–24)

Functional requirements limited the potential for decorative embellishment of the pestle component. The pestle had to be worked in the groove of the mortar, so its rod tends to be completely plain (though, exceptionally, see 12, 74b, 586, 603) and, as the surviving complete sets demonstrate, the shape of its tip or base generally corresponds closely to that of the groove. Thus, the rod may be broad or slender, and its cross-


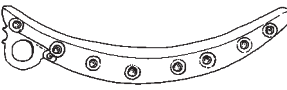
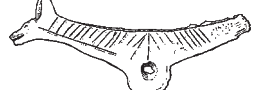
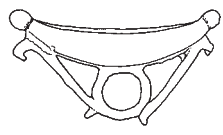
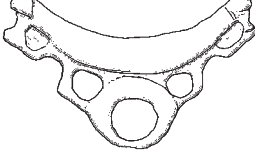
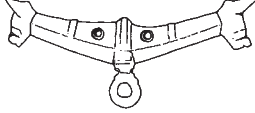
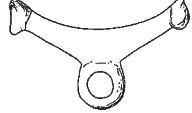





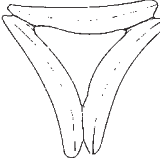


section D-shaped, lentoid or knife-like. Despite those constraints there was still considerable scope for variety in the size and form of pestles and in the elaboration of their loop.

Like the mortars, pestles vary in shape, from strongly-curved ellipses to virtually straight examples, and in size, from a diminutive piece just 25 mm long (444) to an outsize example measuring 82 mm (74b). **Tables 4 and 6** provide a graphic illustration of the length and weight values of those pestles whose measurements could be determined. The whole-sample length range ($n = 194$) is broad, with extremes of 25 mm (444) and 82 mm (74b) but the great majority of values fall between 30–70 mm and peak at 55–60 mm. The centre-looped pestles tend to be rather shorter than the end-looped type, with the majority of examples falling below the 60 mm peak within the range 27–70 mm, with just two outliers at the upper end (586, 74b). The majority of end-looped pestles lie within the range 40–75 mm, with a virtually equal spread either side of the 55–60 mm peak and extremes of 25 mm (444) and 81 mm (151, 381). Weight values for pestles ($n = 106$) are concentrated within the range 4–14 g with a strong peak at 5.9–9.9 g and extremes of 2.1 g (137) and 25.1 g (127). Values for end-looped pestles ($n = 46$) fall mainly in the range 3.7–17.6 g, with a peak at 4–10 g, while most centre-looped pestles ($n = 60$) weigh between 4.3 and 15.5 g, with a peak at 6–14 g.

The majority of suspension loops on pestles are simple circular or sub-circular rings, sometimes of collar-like or plate-like form. The loop of the end-looped variety may be set on, above or below the axis of the rod. Occasionally it is coiled or ornamented with neck mouldings, but, like the end-looped mortars, the commonest elaboration involves the working of the loop into the form of a stylized bird's head. In common, too, with their mortar counterpart, a few end-looped pestles have their loop set in a different plane. Centre-looped pestles also tend to mirror the configuration of their mortar counterpart, and common variants include a ring-like loop with heart-shaped or D-shaped eye, and strutted or projecting loop plates. Rarer are loops with knobbed finials or sitting birds (Type N), while two examples with enamel inlay (Type O) match the decor of a distinctive group of centre-looped mortars (Types H and J).

A type of object with similarities to centre-looped cosmetic pestles is represented by two catalogued examples (513 and 593). Initially rejected, the type was re-considered on the strength of the wear pattern displayed by no. 593, which resembles that often encountered on cosmetic pestles. However, none has yet been found in a dated context and there is no obvious 'matching' mortar type, and, although the type has not been recognized as a product of any other era, the particular distribution of the examples recorded on the PAS database (Worrell 2008, fig. 3), which differs from that of cosmetic sets, suggests it is probably not a form of cosmetic pestle. Currently, therefore, identification as some form of fastening toggle, of as yet un-established date, seems preferable (Read 2010, 7, 10, no. 24).

Table 7 Distinctive sub-types

		mortars
Type A (Fig. 6)	Bovid-headed mortar with end-loop positioned beneath the terminal. Cat. nos 88, 163, 236, 318 (archetype), 325, 380, 394, 422, 495, 558	A 
Type B (Fig. 6)	End-looped mortar with thick, sharply-carinated walls, incuse ring-and-dot and herringbone ornament and end-loop positioned beneath the terminal. Cat. nos 483, 597	B 
Type C (Fig. 15)	Centre-looped mortar with one bovid and one small knobbed terminal and incised hatching on the bow. Cat. nos 319a, 357, 438	C 
Type D (Fig. 21)	Centre-looped mortar with knobbed or plain terminals and large strut-encircled loop. Cat. nos 429, 430, 541, 582 (with variants 90, 542, 581)	D 
Type E (Fig. 16)	As Type D, but with stylized bovid terminals and more sinuous struts. Cat. nos 36, 213, 496, 510 (with variants 65, 109, 358)	E 
Type F (Fig. 15)	Centre-looped mortar with two bovid terminals and relief-moulded bow. Cat. nos 53, 158, 174, 555	F 
Type G (Fig. 16)	Centre-looped mortar with two different enigmatic zoomorphic terminals, a slender bow and a large ring-like loop. Cat. nos 110, 241, 356, 523	G 
Type H (Fig. 18)	Light centre-looped mortar with thin-walled enamel-inlaid bow, tiny simple knobbed terminals and a heart-shaped or D-shaped loop. Cat. nos 37, 46, 74a, 83, 99, 106, 111, 112, 133, 138, 176, 208, 256, 258, 293, 311, 315, 360, 428, 469, 472, 487, 497 580	H 
Type I (Fig. 18)	As Type H, but without the enamel decoration. Cat. nos 27, 58, 478	I 
Type J (Fig. 17)	As Type H, but with highly-stylized and simplified bovid head terminals. Cat. nos 92a, 129, 147, 215, 278, 281, 289, 302, 322, 361, 452, 455, 578 (with variants 16, 188, 501a)	J 
Type K (Fig. 17)	As Type J, but without the enamel decoration. Cat. nos 193, 309, 405, 559, 579.	K 
Type L (Fig. 19)	Centre-looped mortar with knobbed terminals, angled bands of incuse hatching on the thin-walled bow and thin D-shaped plate-like loop. Cat. nos 114, 191, 320, 349, 466, 476 (with variants 30, 113)	L 
Type M (Fig. 22)	Triple mortar with central triangular aperture. Cat. nos 134, 139	M 
Type N (Fig. 24)	Centre-looped pestle surmounted by a swimming water-bird. Cat. nos 297, 366, 543, 592	N 
Type O (Fig. 23)	Large centre-looped pestle with inlaid enamel decoration and heart-shaped loop, the counterpart to mortar Types H and J. Cat. nos 74b, 586 (with variant 232)	O 

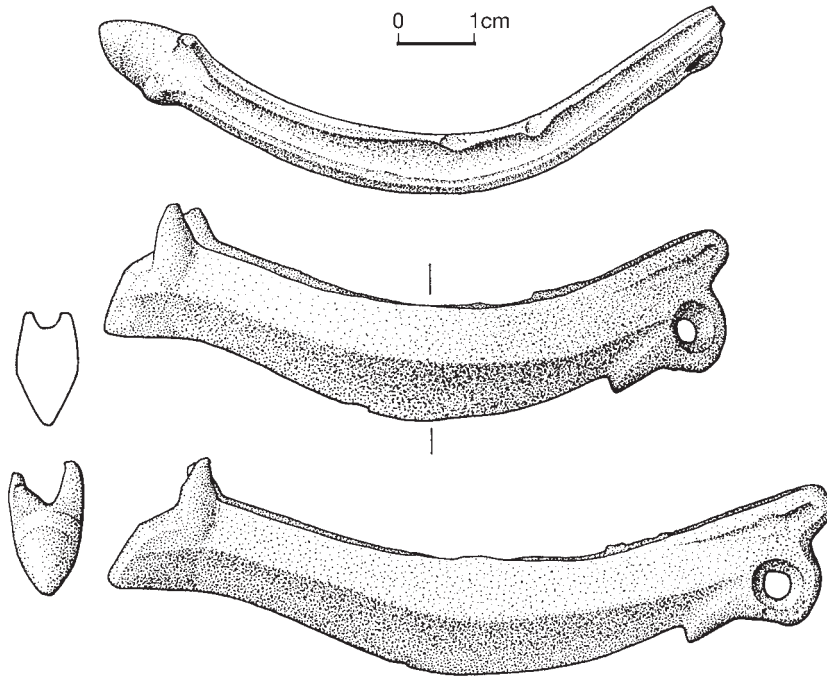


Figure 2 Skipton Street, London: lead model for the manufacture of Type A end-looped cosmetic mortars. Scale 1:1

3. Manufacture and Function

Manufacture

With few exceptions cosmetic grinders appear to have been made by the casting process. One of the merits of casting is that it enables repeat production of identical objects, and at first sight this would seem to conflict with the evidence for cosmetic grinders, which shows the type to have been diverse rather than uniform. Indeed, the infinite variety may be regarded as one of the defining features of cosmetic grinders, and it is still true to say that no two examples are identical and many are unique (Jackson 1985, 169). However, as shown above, the increase in sample size has revealed a growing number of distinctive sub-types (Table 7). What emerges is that choice of variety lay partly in the overall design, controlled by casting, but even more so in the style and mode of decoration, the great majority of which was applied after casting. In this way virtually identical cast components could easily be adapted to individual taste resulting in a myriad of different forms.

In 1985 little technological evidence was available, but since then the data have expanded considerably. One find of particular significance was made at Skipton Street, London, in 1988, on a site excavated by the Department of Greater London Archaeology (Fig. 2). An object that initially appeared to be a cosmetic grinder in its own right was soon recognized as a lead-alloy model or archetype (318) for the production of end-looped mortars (Jackson 1993, 167–9). X-ray fluorescence (XRF) analysis has shown its composition to be almost pure lead, the malleability of which has resulted in a few scrapes and dents and a slight distortion of the bow. However, it is otherwise in extremely good condition, and the light patina preserves details of the original surface treatment. The vestigial groove retains its manufacturing score-marks, while working facets and file marks are clearly visible, too, on the rudimentarily formed stylized bovid-head terminal. It is evident that working of the piece had been completed and, with its overall form determined, it was ready for the casting process. The product, to be made via piece-moulds or, perhaps, by a 'lost-lead' process, could then be finished to a greater or lesser degree by cold-working (For the use of lead models as an intermediate stage in the process of casting see Branigan and Bayley 1989, 47 and Ager 2006, 248).

The archetype is related to a distinctive series of end-looped mortars, sub-type A (Table 7, Fig. 6). These have a characteristically long bow with steep carinated walls and a stylized bovid-head terminal, but their most idiosyncratic feature is their loop, which is not at the end of the bow, as is normal, but is set beneath and a little back from the end. As anticipated, while they all display an overall uniformity they vary in the type and degree of post-casting finish and decor. Of the nine catalogued examples six come from East Anglia. Eight are metal detector finds lacking an archaeological context, but they may be dated, broadly, by the Skipton Street archetype,

which was associated with pottery of the 3rd century AD, and by an excavated example from London (325) with a context date of AD 100–140.

Further evidence for repeat castings made either by use of an archetype or mould, or by direct moulding of an existing mortar or pestle, may be seen in the occasional occurrence of virtually identical components. These are listed in Table 8.

Table 8 Virtually identical components

End-looped mortars		
Cat. nos	483, 597	Fig. 6
Centre-looped mortars		
Cat. nos	319a, 357, 438	Fig. 15
Cat. nos	53, 158	Fig. 15
Cat. nos	36, 213, 510	Fig. 16
Cat. nos	129, 278, 578	Fig. 17
Cat. nos	112, 360	Fig. 18
Cat. nos	399, 584	Fig. 20
Cat. nos	429, 582	Fig. 21
Anomalous mortars		
Cat. nos	134, 139	Fig. 22
Centre-looped pestles		
Cat. nos	74b, 586	Fig. 23

The extent and degree of cold-working varied widely, from un-worked castings to carefully filed pieces, and from those only rudimentarily finished to immaculate and finely polished examples. Two centre-looped pestles appear to be unused castings: 190 was evidently unfinished as it retains extensive unsightly flashing, while 447 may have been a finished casting destined for re-melting since it has both un-cleaned flashing and a blemish. End-looped pestle 97 may also have been an unused casting with an untrimmed spur-like sprue. Other examples appear to have been used with little or no surface finishing after casting: 582, a centre-looped mortar, was poorly-cast with several flaws and an unfinished loop-and-strut assembly. Yet a marked basal wear facet in the groove shows it to have been used in that condition. Likewise, 605, an end-looped pestle, had been very heavily used despite the fact that its crude loop was never finished.

Rudimentarily worked castings are quite numerous (102, 196, 239, 271, 299, 338, 349, 372, 503, 517, 552, 590–1), as are examples with casting flaws or blemishes, mainly blow holes (67, 200, 229, 239, 292, 298, 310, 329, 425, 524, 552, 581–2, 591). Imperforate apertures sometimes appear to reveal a lack of finish (eg. 582), but they can also be a deliberate feature of a carefully worked decor (eg. 213). The overall design and decorative motifs are in some instances quite crude, ungainly, irregular, or carelessly done (34, 50, 67, 113, 349, 388, 393, 438, 474, 482, 581). On other examples cold-worked finishing marks can still be discerned, most frequently the facets and striations left by fine files (42, 200, 217, 310, 318, 329, 338, 397, 579, 581, 591).

Sometimes, however, the surface was given an extremely

fine finish which can be properly appreciated on a few examples where it has not been obscured or destroyed by corrosion. The finish was independent of elaboration, and simply-designed pieces like mortars 44 and 181 were very finely crafted and smoothly polished, while more ambitious designs could be quite cursorily finished. Nevertheless, the more ornate mortars offered greater scope for a thorough and careful finish, most notably 301 from Lakenheath, the largest and most elaborate example of all. An unblemished casting, it was subsequently extensively worked by sensitive modelling of the zoomorphic terminals, precise shaping of the bow and loop plate, and a carefully applied punched and incuse decoration of the surface.

Prolonged, intense or careless usage occasionally took its toll, and several examples have undergone repair. The suspension loop of 392 wore through in antiquity but was restored by hammering together the broken ends, file-roughening one face and soldering on a repair patch, while apparent breakage of the loop of 389 was probably considered irremediable and the fractured end simply filed or hammered smooth. Likewise, one end of the rod of centre-looped pestle 470 appears to have broken close to the loop and then been smoothed off. Two further examples of repairs are on grinders blemished at manufacture: 425, a centre-looped pestle, has a cast-on tip at one end of the rod, presumably a repair effected after a failed casting; 229, a centre-looped mortar, was also flawed at manufacture by a partial fissure at one end of the bow. Re-working of the other end of the bow may well have followed breakage caused by a similar flaw, but wear in the groove shows that it was well-used anyway.

In just a few cases it is either evident or probable that manufacture was not by casting. No. 275, a simple, plain end-looped mortar from Hunsbury, was fashioned from a rod of copper by hammering out a thin-walled bow and turning down the end of the rod to form a butted loop. A more ornate and finely-finished end-looped mortar from Brettenham (51) also appears to have been worked up from a rod, and it, too, has a turned-over loop with its tip butted against the underside of the bow. Similarly, the idiosyncratic end-looped mortar from Felthorpe (186), with its coiled loop of rather irregular gauge metal, was more likely worked from a rod than cast. Working, as opposed to casting, more readily enabled economy in the use of metal, and all three of the foregoing examples are at the lower end of the weight range, with that from Hunsbury being the lightest mortar so far recorded. Three other examples, end-looped pestles from Brecon (49) and Norfolk (388), and an end-looped mortar from Stonea (482) have a turned-over loop with free end, which was more probably hand-worked than cast.

Function

The key to a fuller understanding of cosmetic grinders is a study of their function, and the basis for that has been a detailed and comprehensive examination of the objects themselves. It was, indeed, a misunderstanding of their function that impeded progress for some 60 years after the appearance of Reginald Smith's pioneering paper. Certainly there is much of interest in their varied decoration (section 6), but, by concentrating on their shape and decor attention was diverted from their primary function as small grinding kits. However, it has now been established beyond doubt that they

were used to prepare a substance or substances by crushing or grinding a small quantity in the groove of the mortar.

The main proof of this is in the traces of wear that survive on many examples of both components. The principal wear site on mortars is the inner surface of the groove, both on its walls and, especially, on its base. There is great variety in the degree of wear displayed. Some examples appear to have been used hardly at all, while at the other extreme there are mortars which have been substantially altered or damaged by prolonged, intense or heavy usage. On those examples that retain their original surface and are not obscured by corrosion the most commonly observed evidence is a distinctive wear-polish, which usually stands out in marked contrast to the finish of adjacent surface areas. Frequently, too, differential wear has resulted in the development of a basal facet running along the main axis of the groove. Sometimes the facet deepened the groove (eg. 124, 228, 314, 392, 467) or developed to one side of the axis producing a marked 'ledge' (eg. 129, 354, 403, 484). Occasionally, however, the line of wear can be seen to have deviated from the central axis, and the oblique facet which resulted sometimes developed into a deep 'rut' which encroached upon one end of each wall at diagonally opposing ends, occasionally causing severe attrition of the rim and wall (eg. 13, 60, 120, 199, 233, 288, 507, esp. 145, 424, 533, 559).

Corresponding to the wear patterns observed in the groove of mortars there is a distinct zoning of the wear traces discerned on pestles. The wear is invariably found on the convex underside of the rod. On end-looped examples wear-polish or wear-facets are located at the tip of the rod and usually extend back no further than the mid-point of the curve. Just as the shape of mortars could be altered by heavy wear so, too, the form of end-looped pestles could be substantially modified. This is seen most graphically on pestles 96, 219, 220, 382, 383, 605, where the rod has been shortened by heavy wear at the tip (Pl. 4). On other end-looped examples the wear was sometimes more evenly distributed, and this applies particularly to those of knife-like form with a wedge-shaped or shield-shaped cross-section (eg. 73b, 152, 192b, 285, 300, 514b, 516, 520, 564). They were evidently close-fitting in their mortar groove so that friction and wear were not restricted to the base but extended onto the sides as well (see eg. 192b).

Centre-looped pestles display less and different evidence for wear. The principal site is at the centre of the rod's convex face, but wear-polish and light wear-facets sometimes extend also along the full length of the rod to both its tips, and occasionally those sites take precedence (eg. 296). As on some end-looped pestles the shape of the rod of the centre-looped type was evidently sometimes closely adapted to the form of the groove in the mortar resulting in a more even distribution of wear. However, there was also a difference in the precise mode of use which would have affected the site and degree of wear. For the suspension loop on both types also served as a grip for opposed finger and thumb. This would have dictated use of the opposite end of the rod of end-looped pestles and likewise would have encouraged use of the central zone of the rod of centre-looped pestles, whether for a to-and-fro grinding action or a rocked crushing action.

That crushing and grinding were the primary functions seems indisputable when the wear patterns are examined as a whole. Anything less strenuous is unlikely to have caused such



Plate 4 Wear facets on the tip of three end-looped pestles (l. To r. 96, 383, 382)

marked abrasion. But what was the substance being ground, and what was it used for? It has to be admitted that neither question can yet be answered conclusively. For, no substance has been detected in direct association with any of the complete kits or individual components, nor, as yet, has any reference to the kits been found in the contemporary literature. This is hardly surprising. The type is unequivocally British (see section 6) so no native record can be expected before the introduction of writing at the time of the Roman conquest. Nor is there particular reason to expect a reference to the kits in Roman literature, since the type was clearly alien to that society. The most likely context for mention in Roman or Greek texts would be as an observation of, perhaps, a quaint British

tradition or custom in the writings of geographers, historians or social commentators. Martial, for example, draws attention to various regional commodities such as British baskets and German hair-dye. (*Epigrams* xiv, xxvii and xcix). However, the activity was probably so mundane or commonplace as not to merit attention. Furthermore, it was probably the kits rather than the product that differed from those in use in other parts of the Roman world.

It seems improbable, then, that a description will ever be found in any of the existing texts, but there is perhaps the merest chance that a British source, like the Vindolanda writing tablets, may one day supply a reference in a list, inventory or letter – always assuming that the word or phrase could be recognized. Greater, perhaps, is the chance of finding and identifying the physical remains of the substance or substances in association with a set, and potentially the most fruitful contexts are graves, for they generally combine controlled deposition with optimal preservation. In fact already in 1985 two grave finds had provided direct associations with toilet implements, if not the substance to be ground (Jackson 1985, 171), and this connection was strengthened by the discovery of the London set (319) in 1992 (Jackson 1993, 166–7). The former finds were from Chichester, St Pancras Roman cemetery (92) and from St Albans, King Harry Lane cemetery (436), both from cremation burials. That from Chichester was found with a ligula amongst other things (see section 6), while that from St Albans was associated with a set of toilet implements and a brooch. A subsequent grave find from the St Stephens Roman cemetery, St Albans, another cremation burial, yielded the unburnt remains of a bronze-studded wooden casket containing a cosmetic set (437) and a glass flask. No trace of mineral substances or pigments was recorded by the excavator, and scientific analysis of a residue in the base of the flask unfortunately proved negative (see cat. 437).

In the case of the London find the cosmetic set was fused together with a nail-cleaner and tweezers in an indisputably direct association (**Fig. 3**), thus giving firm support to the

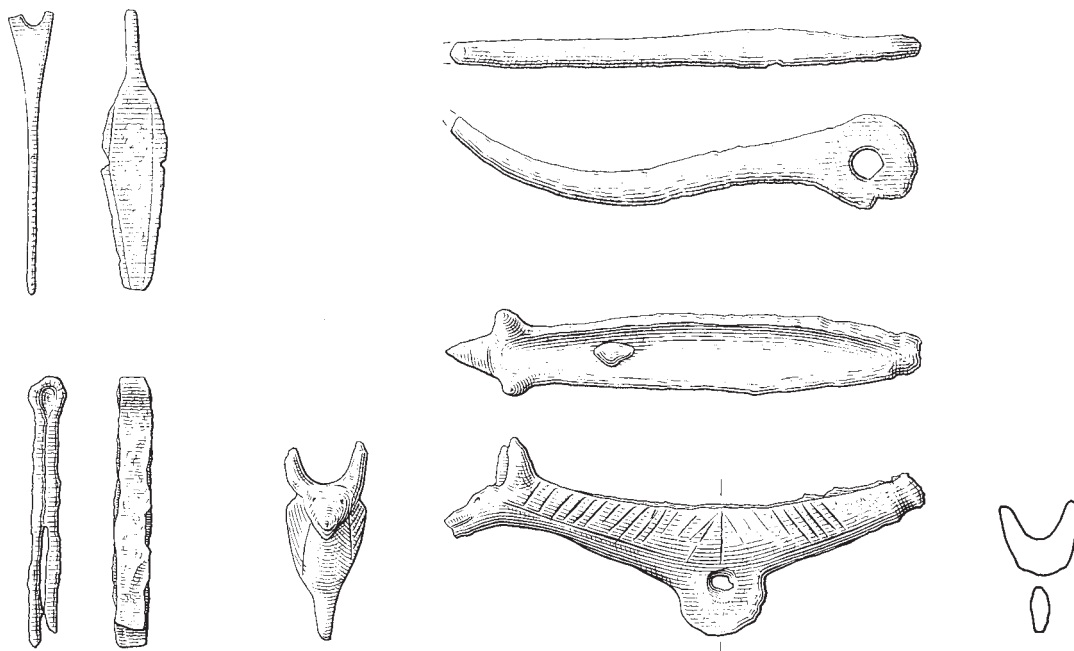


Figure 3 Blossom's Inn, London: the mixed cosmetic set (319) and the associated nail-cleaner and tweezers. Scale 1:1

supposition that cosmetic grinders were, indeed, employed in some aspect of body care or beautification. It was also virtually certain that all four implements had been suspended on the same cord or thong. For, unlike the normal Iron Age and Roman 'pocket sets' of toilet implements, usually comprising tweezers, nail-cleaner and ear-scoop, which were used individually and were therefore often conveniently secured on a closed metal ring, the two-piece nature of cosmetic sets required them to be detachable. Good fortune preserved the London cosmetic set intact and in its original juxtaposition with the nail-cleaner and tweezers, even though their securing cord or thong had long since perished. Similarly, the juxtaposition – loop-to-loop – of the two components of the Colchester (Garrison) set (Pl. 10) suggest that they were tied together when placed in the grave. But the use of a cord which might come untied, break or rot made cosmetic sets especially vulnerable to loss or separation, and this is reflected in the relative scarcity of surviving complete sets.

The loop on many mortars and pestles shows signs of wear on an arc of its inner surface. On some examples the wear was so extreme that the eye became elongated or wore away completely at that point (eg. 101, 178, 220, 314, 377, 392, 411, 462, 601). Such a wear pattern is consistent with free-running suspension of the components on a cord, which was fastened, perhaps, on a garment at waist level or on a belt or sash, similar to Anglo-Saxon girdle hangers. A few examples show little or no sign of wear in the loop yet had evidently been used since their grinding surfaces are worn (eg. 141, 474, 605). They were presumably either suspended in a manner that prevented free-running on the cord or were not suspended at all. Alternatives to direct suspension include storage in a box or, perhaps, in a pouch together with the substance to be ground.

As previously observed (Jackson 1985, 171; 1992, 165–6) the substance was one (or more) evidently required to be prepared in small quantities only, either because it was costly or because only a small amount was needed. It was then to be used immediately or decanted since the mortars were not designed to stand upright. Some, indeed, were equipped with a small lip or spout or an open end to facilitate control of the decanting process (17, 44, 51, 64, 308, 404, 423, 492, 576). The commodity seems unlikely to have been medicaments in view of the ubiquity of the type, and pepper may be discounted, too, since its import, from India, began only in the Roman period. Salt is possible, though such kits for its preparation are unparalleled in the ancient world. Were salt indeed the commodity there would in any case be little likelihood of ever establishing its former presence, even in the 'secure' conditions of a grave find. There seems little to commend the theory of a connection to the use of woad (Carr 2005; Cuddeford 2008), the preparation and application of which hardly corresponds to the very particular design of cosmetic sets. Such indirect and circumstantial evidence as there is points rather towards the substance having been mineral ingredients for use in cosmetics, and there is a reasonable chance that these might occasionally survive as an identifiable deposit in an undisturbed context. For what kind of substances might be expected we can turn to the classical world, where the evidence for cosmetics is much fuller.

Roman perfumes and cosmetics were numerous, varied, often costly and frequently the subject of sarcastic or caustic

comment by contemporary writers. A stock satirical portrait depicted the inevitably vain attempts by women and men alike to restore their youthful looks or mask the effects of age by over-lavish use of plasters, unguents, perfumes, pastilles, wigs and make-up. The reality was doubtless less extreme, but in Rome by the early empire it is evident that there was a general and widespread use of cosmetics by those women who could afford to do so. There was an extensive literature on cosmetics which frequently featured in works by Greek and Roman medical writers – Theophrastus, Dioscorides, Archigenes of Apamea, and Trajan's physician, Crito, amongst others. Galen considered cosmetic adornment one of the 'perverted arts' (5.821 K. Singer 1997, 60). From a passage in one of the *carmina* of the Roman love poet Propertius, written probably in the mid-20s BC, it may be construed that the people of Britain, too, were acquainted with cosmetics at that time:

'Do you even imitate the Britons, now, stained with woad, you crazy girl, and play games, with foreign glitter on your face? Everything's proper form is as Nature made it: Belgian colour looks foul on Roman cheeks.' (Propertius *The Elegies* II. 18B, 1–4. ('Painted Lady'). Trans. A.S. Kline).

That cosmetics were also extensively traded is attested both by the ancient writers, who comment, usually disapprovingly, on the unguent markets, notably the *seplasia* at Capua, and by the excavated remains of ointment pots, unguent phials and other cosmetic containers and impedimenta.

In addition to liquid perfumes, oil-based unguents, cerates and ointments Roman women used various cosmetic and dusting powders (*diapasmata* and *parapasta*), many of which were made from mineral substances. Despite its toxicity psimythion (powdered lead white – basic lead carbonate) was the favoured face-whitener, while minium (red lead – lead oxide), vermilion and cinnabar (mercury sulphide) were dusted onto the face as rouge. Galena (lead sulphide) and stibnite (antimony sulphide) were powdered for use as black eye-paints, as had long been the case in Egypt, where the copper ore malachite was also employed for its green colour (Forbes 1955, 17–21, 38–43). For all the foregoing manufactured mineral colours alternative, cheaper or more readily available natural materials could, of course, be substituted – white and red chalk, red ochre, haematite and powdered charcoal or soot, for example, just as they sometimes were for painter's pigments (Bierbrier 1997. Middleton and Humphrey 2001).

Preparation of the powders and eye-paints was no complicated business. The mineral ingredient was ground on a flat stone palette and the resulting powder was made into a paste by the addition of water, gum-water or spittle. The paste could then be applied, whether as eye-shadow or mascara, with the finger tip or the olivary terminal of a scoop probe (*cyathiscomele*), spatula probe (*spathomele*) or *ligula*, the Roman equivalent of the Egyptian kohl-stick. The same roles could have been performed using the mortar and pestle of the British cosmetic grinders, and it seems probable that the British kits were an insular version of the cosmetic implements used elsewhere in the Roman world. After Roman contact with Britain and the conquest of AD 43 it is apparent that both modes of preparation continued alongside each other, for there was no rapid decline in the use of cosmetic grinders after the introduction of the Roman range of cosmetic paraphernalia – stone palettes, bronze rods, glass phials etc.

The British cosmetic sets were differentiated by their suspension loop, and it may be envisaged that this portability extended also to the container for the cosmetic raw materials. In Egypt the mineral ingredients of eye-paints were carried in small pouches of leather or linen or in shells, reeds or leaf wrappings, all of which have occasionally been found in graves, while lumps of white lead have been found in pottery containers in Athenian tombs (Forbes 1955, 18, 39–40). The substances ground in the British cosmetic grinders are likely to have been mineral ingredients of this kind, perhaps in the form of lumps or pellets, which were probably contained in cloth or leather pouches and suspended on the same cord or thong as the kits. In time it is to be hoped that remains of the mineral ingredients, and even, perhaps, their container, will be found with a cosmetic set in a secure archaeological context. Something similar appears to have been found in Enclosure 1 at Stanway, where a tiny cloth bag containing what may have been mineral powder or paste, perhaps some kind of cosmetic, was part of the burnt pyre goods of an adult ?female cremation burial (AF18) of the second half of the 1st century BC (Crummy *et al.* 2007, 167–70).

In the absence of direct evidence for the identity of the substance to be ground an alternative intrinsic source was investigated – the contact surfaces of the pestles and mortars. For, although the instability of the mortars precluded the survival of any of the ground product in their groove, it was thought possible that the repeated grinding process might have caused the surfaces to absorb some of the material being prepared. It was hoped that scientific analysis might reveal traces of particular and identifiable materials. However, since it was considered that the substances ground were likely to have comprised, or to have included, the widely available and colourful compounds of lead, copper or antimony, which might be difficult to distinguish from the alloy constituents of the grinders themselves, the analyses of the contact surfaces were compared with analyses of other parts of the implements in the hope that enhanced values for particular constituents might be identified. In the event, however, no conclusive or consistent result was obtained (see section 4).

In order to test function and efficiency a brass replica was made of the end-looped cosmetic set from the King Harry Lane Cemetery, St Albans (436). Experiment showed that the tendency of right-handed users is to hold the rod by its loop between the thumb and index finger of the right hand, while the mortar is held in the left hand in one of two ways. Either it is gripped centrally by the bow walls, with the thumb opposing the four fingers, or it is gripped with the loop between thumb and index finger and the distal end supported by the little finger. A simple reversal of components accommodates the kit to left hand users (Pl. 5). In these operative positions a range of commodities was tested. Peppercorns and other plant seeds of rounded or spherical form proved resistant to crushing or grinding, as they were difficult to control and tended to shoot out of the mortar, but salt crystals were easily reduced to fine granules. Similarly, charcoal and chalks could be quickly powdered, but so, too, could a range of tougher substances, and the kit proved remarkably efficient in quickly powdering even a hard mineral like ilmenite sand (iron titanium oxide).

Other minerals tested included galena, malachite, azurite, haematite, realgar and graphite, which yielded respectively

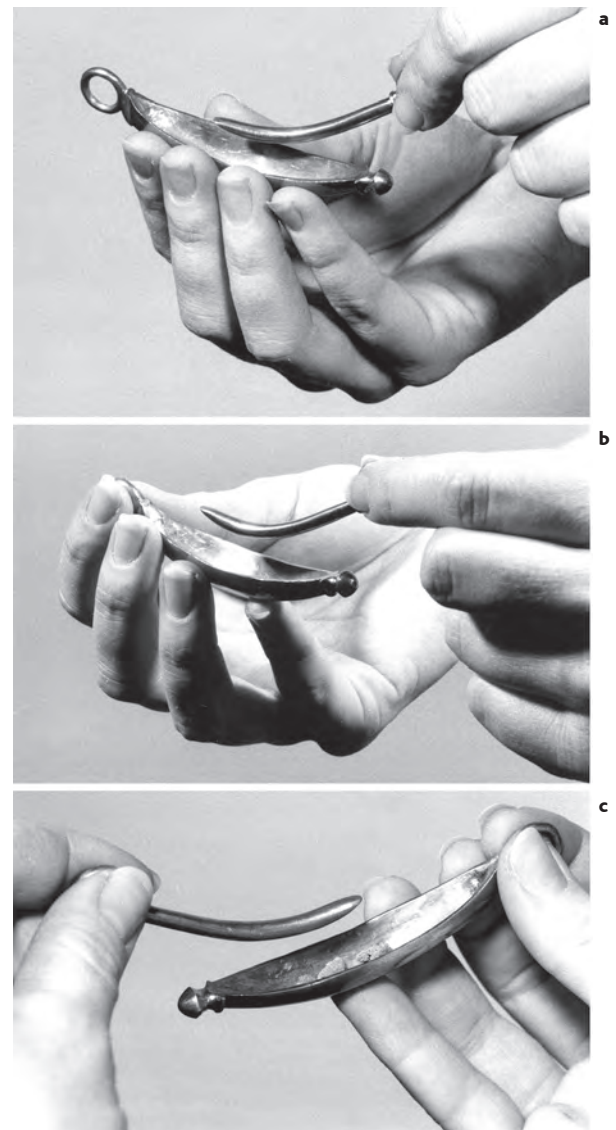


Plate 5 A replica of the end-looped cosmetic set from St Albans (436) showing two alternative ways of holding it when in use (a, b), and with samples of Egyptian Blue in the mortar (c)

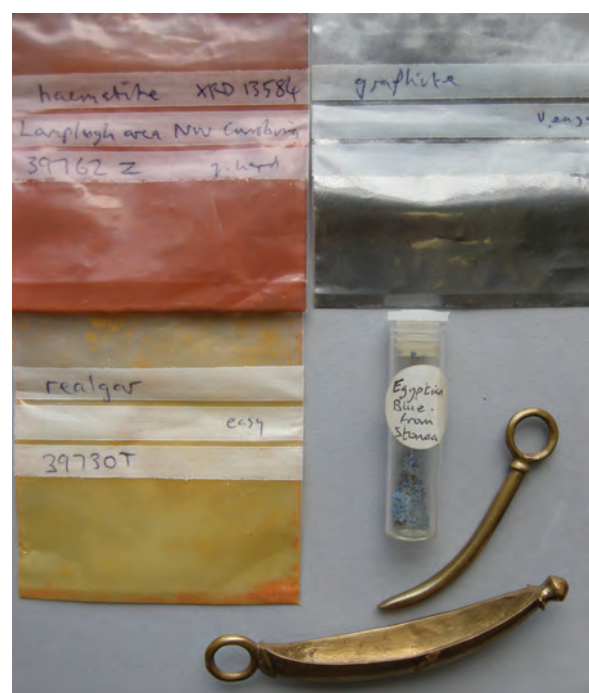


Plate 6 Some of the mineral powders prepared with the replica cosmetic set

powders of grey, green, blue, red, yellow and sparkly grey colour (Pl. 6). Best results were achieved by using a very small quantity and by first crushing the larger pieces by pressing them with the tip of the rod before grinding the product along the groove to convert it to a fine powder. All of these minerals would have been available locally in Britain or by means of trade. Haematite was especially widespread in Britain and was a very common pigment in Romano-British wall-paintings (see eg. L. Biek in Davey and Ling 1982, 220–2). As a cosmetic its powder makes a very effective rouge or eye-shadow, which adheres well to the skin whether applied dry or by licking the tip of the finger before dipping it in the powder. Its range of shades could be further widened by the addition of varied amounts of powdered white lead or chalk, while a sparkle could be added by dusting on a little powdered graphite. A reddish powder found in two glass *unguentaria* from the *colonia* of Celsa in north-east Spain (Hispania Tarraconensis) is suggestive of that sort of use, for analysis demonstrated that its constituents were haematite, gypsum, calcite and an organic binding substance (Perez-Arantegui 1996; Eckardt and Crummy 2008, 27).

In view of the suggestion that the Roman artificial pigment *caeruleum*, a calcium-copper silicate, known today as Egyptian Blue, may have had a cosmetic application as blue eye-shadow (Riha 1986, 97–8) as well as its more widely accepted usage as a pigment for painted plaster, a sample was tested in the replica kit. The c. 5–10 mm diameter sub-spherical balls in which Egyptian Blue was widely traded could not be accommodated in the groove of any cosmetic grinder, but the balls are quite friable and are readily broken into smaller pieces. These fragments were easily reduced in the mortar, though, as with some of the raw minerals occasional tiny quartzite grain inclusions had to be flicked out of the mortar with the tip of the pestle before the product could be reduced to a uniformly fine powder.

While some of the mineral powders proved to have good adhesion when simply rubbed on dry or combined with spittle, others, including Egyptian Blue, were less stable and probably required the addition of an oil or gum-water base. The tests also revealed, strikingly, how small a quantity of the minerals is required. For example, a tiny lump of haematite of 1–2 mm diameter yielded more than sufficient powder to shadow both eyelids and brush on to the cheeks. Appropriately enough, the kit was found to function most effectively when preparing a single lump of that order of size, and even the smallest mortars and shallowest grooves would have been capable of use in this way.

The experiments with the replica kit thus confirmed that the design of cosmetic grinders is very precisely adapted to crushing and grinding small quantities of mineral substances and that a broad palette of colours in considerable quantity could be carried in a small pouch or pouches containing tiny lumps of various minerals.

Who used these kits and their product? That it was no restricted group is evident from the sheer number of finds (over 600 catalogued examples) and their distribution (section 6), and we can infer that cosmetic grinders were in everyday and widespread use in Roman Britain. On the question of gender it might be anticipated that an unequivocal answer would be

provided by the evidence from grave finds. However, as a summary of the available evidence shows (Table 9) the answer is neither as full nor as clear-cut as might be wished. Only five sets from graves provide evidence of gender, and of those only one is certain. Four of the burial associations of complete sets are female or probably female and one is possibly male, while a probable pestle accompanied the female inhumation at Saintes, and there is another female association in the early 6th century AD Anglo-Saxon grave at Horton Kirby. The possible male association is the cosmetic set from King Harry Lane, St Albans (436), which was found with a cremation burial in grave no. 203 (Stead and Rigby 1989, 103; Stirland 1989, 243). In contrast, the set from the St Stephen's cemetery, St Albans (437) was found with a probable female cremation burial. Niblett has drawn attention to the apparent gender bias in the sexed cremation burials in the King Harry Lane cemetery (out of use by the Flavian period) – 16% male/ 5% female – comparing them to the (as yet unpublished) results for the St Stephens cemetery (Claudian to early Antonine), where female burials outnumbered those of males – 28% male/ 35% female for the 1st to early 2nd century AD. Her suggestion that the dearth of males in the late 1st and early 2nd century may have been a result of local youths being recruited into the Roman army is tempered by the acknowledgement that cremated remains are difficult to sex (Niblett 2000, 103–4 and fig. 10.8). Likewise, in discussing another equivocal determination from the King Harry Lane cemetery – a possible male burial with an imported mirror – Eckardt and Crummy, while aware of the difficulty of sexing cremated remains at the site, raise the interesting possibility that the find reflects 'fundamental changes in the impact of Roman imports on the expression of elite and gender identities' (Eckardt and Crummy 2008, 31–2 and 89). The King Harry Lane and St Stephen's cosmetic sets could also be interpreted as possibly reflecting changes in the expression of identities, though as an essentially British type rather than an imported commodity. Whether or not that was the case the wider evidence indicates a predominantly female association with cosmetic grinders but male use cannot be entirely ruled out.

Table 9 Grave finds, sex of associated human remains

22	Beckford, set with female inhumation, Late Iron Age
436	St Albans, set with possible male cremation, AD 40–60
437	St Albans, set with probable female cremation, 1st–2nd cent. AD
---	Bures St Mary, set with adult cremation, probably female (mirror and casket included in grave goods), 1st–2nd cent. AD
---	Colchester (Garrison), set with inhumation, adult, sex unknown, late 1st–late 2nd cent. AD
92	Chichester, set with probable female cremation, 2nd–3rd cent. AD
501	Thérouanne, set with cremation, unexamined, late 2nd/early 3rd cent. AD
273	Horton Kirby, mortar in female grave, early 6th cent. AD
444	Saintes, probable pestle with female inhumation, AD 40–50