

Book reviews

British Iron Age swords and scabbards by I M Stead, with a report on the technology of some of the swords by J Lang. *British Museum Press, London, 2006, A4, xiv+287pp, 108 figs, 31 b/w plates, 55 tables, indexes, ISBN 0-7141-2323-4, £85-00, h/b.*

This is the first detailed study of British Iron Age swords and scabbards since Piggott's relatively brief account in 1950, and it is the result of Ian Stead's long-term study, begun in 1977 while at the British Museum. In total the corpus includes 283 items of which 246 are fully catalogued. A further 29 listed items are hilt ends, mouth guards or chape ends, and the addenda are eight recently discovered swords still under investigation at the time of completion of the main catalogue in 2003. The bulk of the entries are swords or swords with scabbards, although around a fifth are only parts of blades or scabbards. They date from the 4th century BC to the 1st century AD.

Almost half of the book is devoted to the very detailed catalogue and the accompanying high-quality line drawings. The blades are all ferrous whereas the scabbards were made of iron, copper alloy, or organic materials such as wood and leather. Because few of the swords have clearly dateable associations, dating has relied mainly on typologies and these were established for the swords, the scabbards overall, their chapes and suspension loops, and for decoration. There are clear distinctions between the developments of swords and scabbards in the north and south of Britain, with the Humber separating the two traditions. Significantly, in the north there was no development of the long sword, whereas these appear in the south towards the end of the 2nd century BC. The contexts of the weapons from the two traditions are also very different, with 78 of the 171 (45%) southern ones coming from rivers compared with only one (2%) from the north. Half of those from the north (21 of 43) are from graves, compared with only 6% of those from the south.

A generous portion of the book (50 pages) is devoted to scientific and technical examinations, presented as appendices, by past and present staff of the British Museum. There is a substantial appendix on the metallographic examination of eleven swords by Janet Lang. These

are the same ones that were previously presented at a conference in Belfast (Lang 1987), but now re-analysed to present fuller metallurgical interpretations and more illustrations including electron micrographs. There are also quantitative analyses of the inclusions and the body metal. For eight swords, multiple analyses of 16 elements were measured by SEM-EDXA. Most of the eleven swords provide evidence that they were welded from several pieces of iron, either as 'edge to edge' or as 'surface to surface' constructions. Included in the latter type is the 1st century AD sword from Melsonby that seems to have a more complex structure and may even be an example of proto pattern welding. Several of the swords were hardened at their surfaces—through working of the blades as they cooled in their final heating cycles, by carburisation in some of the later swords, and by quenching and tempering in a 2nd century BC sword from Grimthorpe. A number of these swords have been analysed in various ways by other workers—not all published, but noted in the main catalogue entries.

Other scientific analyses presented in the appendices include analysis of the foils that cover two stamps on the Isleworth sword, analysed by XRF and shown to be brass—the earliest incidence of brass in Britain (Craddock and Cowell, see also *HMS News* 54, 3–4, and elsewhere). A bronze scabbard from a sword from Orton Meadows was examined in various ways including XRF and metallography (Lang). The Asby Scar sword and scabbard was analysed for composition of the bronze fittings by XRF and ICP-AES, the composition of two enamels by XRF, wood identifications, and a bitumen adhesive (Hook, Stapleton, Cartwright and Stacey). Other appendices include a technical description and discussion of enamelled items (Rigby), and a report on conservation (Hockey and Dove).

This is a very different type of study from Pleiner's (1993) book on Celtic swords from Europe which concentrates on the technological aspects of ferrous sword manufacture and includes summaries of his own and others' metallographic analyses of swords, including those of Lang (1987). Stead's volume covers mainly stylistic aspects of swords and their scabbards made in all materials, as well as analysing technology, context and distributions. It is liberally illustrated although it is a shame that there

are no colour photographs, in particular of the enamelled embellishments that we have seen published elsewhere. I would also have liked more photographs showing decorations for which the Iron Age is so well known, as well as more X-ray images. Presumably, all these would have added substantially to the production costs, and the price is already high for the average student of Iron Age studies, although not at all high for the overall quality and content of this publication.

A fair part this book is available elsewhere, either published within site or finds reports, or as technical studies, but this volume brings together all the data, updated, well integrated, and with a good index. It will be the primary reference book of Iron Age British swords and scabbards for very many years to come.

Vanessa Fell

References

- Lang J 1987, 'The Technology of Celtic Iron Swords', in B G Scott and H Cleere (eds), *The Crafts of the Blacksmith* (Belfast), 61–72.
 Piggott S 1950, 'Swords and Scabbards of the British Early Iron Age', *Proceedings Prehistoric Society* 16, 1–28.
 Pleiner R 1993, *The Celtic Sword* (Oxford).

Native evidence for non-ferrous metalworking in early historic Ireland by Michelle Comber. *British Archaeological Reports (International Series 1296)*, Oxford, 2004, A4, viii+233pp, 187 figs, 10 tables, ISBN 1 84171 380 5, £45 p/b.

This publication originated as an MA thesis, submitted to the Archaeology Department at National University of Ireland, Galway. The introduction sets out the intentions of the research: 'to explore all aspects of native non-ferrous metalworking in Early Historic Ireland, from the initial procurement of raw material through mining to the production of metal by smelting and alloying, to the final fabrication of artefacts by casting and decoration.' It looks at the processes, debris and structures which provide evidence for the production of finished metal objects in the 5th–12th centuries AD—objects which are far better known and more fully researched.

There is a short chapter on the literary evidence for metalworkers and metalworking that is contained in contemporary laws and other sources. However, because the purpose of these documents was literary or historical rather than technical, they contain relatively little hard evidence and although some descriptions can be confirmed by the archaeological evidence, many more questions remain unanswered and unanswerable.

There follows a chapter on the technology of non-ferrous metals, as might be expected in a thesis of this type. This is a reasonably competent precis of older standard texts, though the author's lack of general scientific or technical knowledge is shown up by occasional oversimplifications and misunderstandings. It is not period-specific nor does it draw solely on Irish evidence, but there are attempts to relate the text to the finds that are described later. The range of archaeological evidence for non-ferrous metalworking is then considered, with sections on crucibles, heating trays, moulds of stone and clay, lead models, motif pieces, raw materials, waste and tools.

This is followed by a discussion of the types of settlements where non-ferrous metalworking was carried out, with a useful map showing 42 excavated sites. However, eight of the sites do not appear in Appendix II (a summary of relevant sites), and 17 of the 52 sites in the Appendix are not marked on the map. Generally the evidence for non-ferrous metalworking is more abundant on larger sites which are seen as having higher status. The metalworking structures from some of the sites are described, with the individual excavators' interpretations accepted without question.

Then follows the core of the thesis, a 're-evaluation of the relevant evidence' from Lagore Crannóg. This site is identified as a royal seat from the 7th–10th centuries and had been the subject of antiquarian investigations from the 19th century until its total excavation in the 1930s. The finds that were studied (and catalogued and illustrated in the 85 pages of Appendix III) came from these various interventions. Unfortunately, what we are presented with on p.73ff is a summary of the previous work and not a re-evaluation. For example, the vitrified added outer clay layers on some of the crucibles are described as 'grey porous slag from the furnace' and the vitrified exterior surface of other crucibles is said, quoting Warner, to be 'due to the heat-induced migration of silicates from within the crucible fabric' rather than due to the fluxing of the outer surface by the ash from the fuel in the hearth or furnace. Old analyses had identified copper and iron sulphides within some crucibles and these had been interpreted as evidence of the use of chalcopryite ores. This is repeated without question, though the real reason for the presence of sulphides on these finds is their burial environment—waterlogged, peaty deposits where sulphate-reducing bacteria would have led to the precipitation of sulphides on any traces of metal trapped on the vitrified surface of the crucibles (as is common on the crucibles from Viking Dublin) whether the metal being melted was a copper alloy or

silver. The old idea that small, flat-bottomed crucibles with internal vitreous deposits were stands for the other crucibles is perpetuated. I find this implausible as analyses of visually similar finds from other sites indicates they were used in refining precious metals; the circular impressions noted on the Lagore examples are where the prills of precious metal solidified. The possible furnace lining is correctly identified, but the reason for the orange colour of these fired clay fragments is not their 'intense exposure to heat' but their heating in an oxidising (rather than reducing) atmosphere.

These examples demonstrate a fundamental weakness of this book. It shows no real understanding of metalworking processes or of the continuity and conservatism of craftsmanship through the ages. This latter point has led to a questionable decision, to exclude metalworking from Viking sites—although it falls within the date range covered—on the basis that it is 'imported', and thus not representative of Irish craftsmanship. On a pragmatic basis this is perhaps understandable, as at the time this thesis was being written there were no detailed publications that could be quoted. However, it is likely that many of the craftsmen working in the Viking settlements were native Irish—indeed most of the crucibles from Viking Dublin are very similar to those from Lagore—though some metal objects produced were of previously unfamiliar types and may have been decorated in novel styles.

On the plus side, this book is a useful compilation of information published over a considerable period of time in a wide variety of journals, though at the same time it is a lost opportunity: this compilation could have been extended into a real re-assessment of the material, questioning the original interpretations and using modern scientific techniques to verify or refute the identification of finds and hence processes. Perhaps that would have been beyond the scope of an MA thesis—but it seems strange to formally publish what is in effect an incomplete piece of research.

Justine Bayley

La Métallurgie du Maine: de l'âge du fer au milieu du XXe siècle by Jean-François Belhoste, Jean-Philippe Bouvet, Dominique Éraud, Diane de Maynard and Évelyne Robineau. *Inventaire général: Éditions du Patrimoine, Paris, 2003. 416pp + CD, 210 x 270mm, numerous figures. ISBN 2858227497, 54 Euro p/b.*

The latest of the Inventaire's regional studies of the history and archaeology of the French iron industry

maintains the standard of scholarly excellence and fine production which we have come to expect from the editor-in-chief, Jean-François Belhoste. The Maine region lies to the south of Normandy, and stretches west from Le Mans, on the river Sarthe. It possesses deposits of iron ore in the Ordovician, Cretaceous and Tertiary formations which outcrop between Le Mans and Mayenne. The rolling countryside, much of it still sparsely settled, has always been wooded, providing the fuel for smelting from the Iron Age onwards.

The Iron Age, Roman and early medieval exploitation of the Maine ores is covered in a section within the first chapter which, although of only 14 pages, is of interest due to the information about early iron smelting gained from rescue excavations, notably on the line of the A28 motorway. These, and the furnaces which they exposed, are well illustrated, and present a significant addition to knowledge. It is now clear that there was a local source for the iron objects found on settlement sites, notably at the Roman town of Jublains, near Mayenne, where the finds are displayed in a fine modern museum. Maine iron production in the middle ages has left little trace, physical or documentary, despite the emergence of monastic estates possessing substantial woodlands. However, in the 16th century the position changed. Blast furnaces and finery forges were built from the 1520s onwards along the upper reaches of the Sarthe, spreading over the rest of the region by the end of the century as landowners found an outlet for the products of woods which had hitherto been under-exploited. The Duc de Guise owned the Forest of Mayenne, and built the ironworks at Chailland, an example followed by many others, both resident and absentee. By the middle of the 18th century the Maine ironworks had largely come into the hands of iron-masters, who controlled charcoal supplies, and direct landowner involvement had become rare. In the 19th century the building of railways brought supplies of coal to the more highly-capitalised ironworks, and concentration on the rail lines took place in the middle of the century. Despite this, most could not compete with the large-scale operations of eastern France, and those which survived into the 20th century did so due to specialisation in engineering products and items such as stoves and radiators, assembled from castings produced in their foundries.

The book is superbly illustrated with a wealth of maps, some compiled for this volume and others from archives, and views, contemporary and modern. Many of the sites illustrated are in woodland, and were a challenge to the Inventaire's photographers. There is however, one regret, which applies not just to this volume but to the

whole series. As a guide to the field archaeology of the iron industry of the region, the text falls short. In the attached CD there are historical outlines of each iron-works, and as summaries of the archive sources these are admirable, if not easy of access, but the topographical and archaeological information is minimal. Generally, this is limited to a sentence, not even separated as a paragraph. In cases where standing buildings survive, a photograph is included, but usually too small to be useful. The usual French reluctance to use grid co-ordinates makes location of sites as difficult as with the rest of the series. On the positive side, an extensive summary in English is provided.

David Crossley

A Georgian Gent & Co. The Life and Times of Charles Roe by Dorothy Bentley Smith. *Landmark Publishing, Ashbourne, 2005. 250x180mm, 655pp, many figs, index. ISBN 1-84306-175-9, £25-00 h/b.*

This book follows the family, business and social connections of Charles Roe of Macclesfield and his son, William. The story covers not only their lives and considerable business interests, but also the company they kept. They crossed the paths of many famous men, including Handel, Josiah Wedgwood and Dr Johnson.

The period covered by the main narrative is from around 1715 to 1827. It covers important events not only in Manchester, Liverpool, Chester and the Northwest and, through the trade of silk and copper, Wicklow and Dublin in Ireland, Islay in Scotland, Swansea and North Wales, Cornwall, and London.

In the mid-18th century Charles Roe set the town of Macclesfield in Cheshire on the road to success with its silk industry, which eventually became second to none in the world. He diversified into copper smelting, vital for the British economy at that time, and became one of the greatest copper and brass producers of the period. His company was responsible for the discovery and exploitation of the deposits on Parys Mountain in Anglesey, which became the largest copper mines of their day.

This work rightly describes itself as a 'huge study', but this is a weakness as well as a strength. It is written in a readable style, but the frequent discourses and asides from the narrative can prove a distraction that the specialist reader will find irksome. No stone is left unturned; some of these asides seem to be completely extraneous. As a narrative introduction to the commerce and industry of the 18th century, the general reader will

find a great deal of useful information but the amount of detail included means that some persistence is required. The book seems neither to have the focus required by a scholarly work, nor the narrative pace that would suit the more casual reader.

On a practical note, the index is set in very small print, and with so little detail as to undermine its usefulness. The entry for 'London' shows well over one hundred undifferentiated entries. These cover more than one page in three of the text. Since the story is set in context by considering several generations, a genealogical tree would have been helpful in placing some of the family members. Overall the book will probably appeal most to those with an interest in the particular works owned and operated by Charles and William Roe, or the local history of the areas in which they operated.

Eddie Birch

The Birmingham Gun Trade by David Williams. *Tempus, Stroud, 2004, 191pp, 130 illustrations, ISBN 0-7524-3237-0, £17.99 p/b.*

This is an important and well-researched book, concerning one of Birmingham's traditional industries. It does not go into technical aspects of metallurgy, but its subject is the manufacture of goods that were largely made of metal. It begins by describing the production methods used for the 'Brown Bess' flintlock musket and other guns of the period. This was largely done by sub-contractors making components in small workshops, for manufacturers who supplied the Board of Ordnance and produced complete guns for export. The only mechanised part of this was the boring and grinding of the barrels. However, attention is drawn to the use of rolling mills for bending and welding barrel, an early 19th century innovation.

The author then considers the development of armory practice (as it was known in the USA) or the American system of manufacture. This involved a large degree of mechanisation of the production of other parts; the manufacturer was much less dependent on recruiting skilled labour. The greater precision in manufacture meant that less effort needed to be expended in filing parts down to make them fit. Parts were more easily interchangeable, which was also important as an artificer could produce one serviceable weapon from two broken ones with different defects.

The American system was introduced to England following the Great Exhibition of 1851, at which Samuel

Colt exhibited his revolvers. After this, American firms supplied milling, drilling and other machines to the government works at Enfield. Birmingham's response was the establishment of Birmingham Small Arms (BSA) in 1861: a factory built to make guns by machine. Other firms followed in their wake. Towards the end of the century the Birmingham gun trade contracted in the face of Belgian competition and the protectionist McKinley tariffs that limited exports to the USA. The trade became focused on sporting guns, but BSA branched out, producing cycles and machine tools. Other firms continued operating in the traditional gun-making quarter east of Snow Hill, but in decreasing numbers.

The developments in the gun trade had a wider economic significance. It was the first industry to develop machine tools, which led to increased precision in manufacture and enabled parts to be truly interchangeable. This in turn paved the way for Birmingham and Coventry to play a dominant role in the manufacture of bicycles,

motorcycles, and cars.

The present reviewer would have liked to see a little more on the 18th-century gun trade, and on the quite small number of firms that developed this characteristic Birmingham trade. Then Birmingham and Wednesbury were important areas for the production of barrels and locks but these components were (as the author indicates) assembled into complete firearms in London. A study of the boring mills of the Birmingham area is still needed. Another area which would have repaid investigation is the relationships between the Birmingham gun trade and the toy trade, which are likely to have used similar techniques for some operations; there was surely some convertibility of skills between them. Nevertheless, this is an important work on one of the characteristic industries of Birmingham, and strikes an appropriate balance between being academically rigorous and accessible to the general reader.

Peter King