# Book Reviews

**Himalayan Bronzes: Technology, style and choices** by Chandra L Reedy. *University of Delaware Press, Newark and Associated University Presses, London, 1997. 341pp, 310x235mm, 430 plates, index. ISBN 0-87413-570-2. £75-00.*

This book presents the multi-disciplinary study of 340 copper alloy sculptures from the Himalayan regions of Afghanistan, northern Pakistan, Kashmir, Himachel Pradesh, Nepal and Tibet. The statues, which are from museums and private collections in the USA and Britain, represent deities and spiritual leaders of the Hindu, Buddhist and Bon-Pö religions. They date between the 1st and 19th centuries AD, with the majority belonging to the medieval period.

The multi-disciplinary approach of this study combines methods and techniques of analysis from art history, geology, chemistry, statistics, archaeology and ethnography, with the aim of determining the provenance, or at least grouping, these art objects. The author discusses the lack of feasibility of provenancing metals purely by their chemical composition: the problems inherent in identifying the characteristics of an ore source which was exploited in the medieval period, and the introduction of completely new characteristics with recycling, smelting and alloying. Likewise, the art historical approach does not provide the answers because the objects have no archaeological context and the stylistic conservatism of cult statues places limitations on differentiating groups. She argues that, because of traditional divisions amongst researchers into specialist fields of science, archaeology or art history, only part of the evidence is usually considered. 'A combined analysis of both technological and visual style should be a powerful tool in art historical work. Broadening our definition of style to include all aspects of form, materials, and production improves our ability to more fully analyze and understand works of art.'

The core of the book is the catalogue description of each statue, with photographs (some rather dark), grouping the pieces to geographical zones using the results of this analytical study. However, the larger part of the book is taken up in discussion of the factors used in the assessment of technological and visual style, and of their statistical treatment.

A section on casting includes observations on present-day casting techniques in the Himalayan regions, the use of armatures and chaplets, and repairs made at the time of manufacture to cover casting flaws. Many of the statues are decorated to a greater or lesser extent with gilding, inlays of semi-precious stones, metal, glass and a 'tarry black' material (not identified), and pigments applied to hair and face. Some also have a hollow compartment in the back for relics.

The chapter on metals reviews earlier analytical work and outlines the method of sampling and analysis, by inductively coupled plasma emission spectrometry (ICPES), used in this project. A section on metals and alloying includes a discussion of 39 of the statues which have (accidental) iron contents of 1% or more. The interpretation of the presence of magnetite ($Fe_3O_4$) at grain boundaries as being evidence for a relatively low smelting temperature, rather than the corrosion of the iron-rich phase in the alloy is misunderstood. Copper ore sources available to Himalayan craftsmen are given extensive coverage, though, perhaps surprisingly, the metal-rich district of Yunnan in western China was not considered, in spite of links with Tibet.

The casting cores were examined in thin section to identify the minerals and analysed by neutron activation (NAA). The usefulness of this in the overall assessment of the statues was limited by the fact that only a small subset of them had any core material present and accessible. The casting and decorating techniques, together with the elemental composition of the metals proved to be the most important datasets in grouping the statues.

The conclusions of the work hinge on the statistical treatment of the results by Terry Reedy. A stepwise discriminant analysis, using only statues from recognised (on visual style) regional groups, tested the hypothesis that there should be differences between those groups in their casting and decorating techniques, metal composition and clay core composition. Those differences were then used to construct mathematical functions for classifying stylistically uncertain objects, and also to determine if all of the statues originally believed to be of known groups really did fit with the other objects in their group. He found that the ability to discriminate between the 'known' groups of statues was greatly improved by combining datasets rather than looking at one type of data in isolation. Therefore this combined approach was adopted in identifying eight regional groups and allocating unknowns to these groups.

This book is clearly the culmination of many years of work, drawing together statues which are scattered among collections on both sides of the Atlantic. The subject,

Himalayan bronzes, is a specialist one, but the multi-disciplinary approach, combining technological and visual style, has much wider applications. It has obvious advantages over the more traditional approach to studying museum objects and can be profitably applied to other groups of objects, both metal and non-metal. Chandra Reedy's book is an excellent model of how this can be done.

Susan La Niece

**Bronze Age copper mining in Britain and Ireland by William O'Brien.** *Shire Publications (Shire Archaeology 71), Princes Risborough, 1996. 64pp, 210x150mm, 43 figs, index. ISBN 0 7478 0321 8. £3-95 (pb).*

This book provides a useful and, in general, quite accurate introduction to its subject. It is readable and well illustrated, pitched at a level which should appeal both to a knowledgeable public as well as the non-specialist archaeologist. The format and layout of the book is good, beginning with chapters on Distribution, History of Research, and Technology, followed by individual chapters providing more detailed descriptions of the mines themselves.

The author is well known for his work in this field and is recognised as one of the leading authorities on this subject. That this book was published as part of the popular Shire Archaeology series answers the author's wish that its subject may capture a more prominent place within the mainstream of Bronze Age studies. This does not alter the fact that there is still widespread ignorance of early mining amongst prehistorians. Possibly this book will become the standard accessible reference in the short term, even though it was probably only ever meant for a popular and general rather than an academic readership.

As a concise reference book however, one should to be aware of its shortcomings. Whilst omissions can, within reason, be justified on account of its necessarily abbreviated form, inaccuracies cannot, and the book has its fair share of these. These appear mostly in the chapters on the Welsh sites, and one is left with the impression that the author is unfamiliar with some of the mines described, such as that of Copa Hill, Cwmystwyth. In this and other instances the information provided is surprisingly out of date, yet it could have been corrected in advance of publication. Even though acknowledgement of permission to reproduce illustrations has been given, they are in several cases incorrectly credited (figs 31 and 32 of Cwmystwyth were drawn by Brenda Craddock, whilst fig 35, a section of the Great Orme workings, should have been credited to David Jenkins). It is a pity that help was not sought from others working in the field as it could have much improved the book.

There are also a number of inconsistencies or errors which require correction. On p.8 the two mining sites south of the Dyfi Estuary (Wales) which have recently been dated to the Early Bronze Age are Llancynfelin on Borth Bog and Nantyrarian near Goginan. On Copa Hill, Cwmystwyth (p.23) no bone tools have been found, although antler picks and hammers have recently been uncovered, along with the remains of a basket and possible withy rope (p.24). The wooden drainage launder mentioned on pp.27 and 44 was not located within the mine gallery but instead in a rock cut entrance at the front of the opencast. The infill of this opencast is almost wholly natural, the spoil rich in lead ore referred to (p.42 & 45) being confined to the entrance cutting sediments and the tips outside the mine.

The final chapters, 11 and 12, 'Sites and Museums to visit' and 'Further Reading' form a good follow up to the book, and are standard to the Shire series. However, I was a little surprised to note the inclusion of R Shepherd's *Ancient Mining* (a rather poor book on the subject, and factually incorrect on most of the British sites), yet the omission of Paul Craddock's *Early Metal Mining and Production* which should have been current reading at the time this book went to press.

A final note on the binding of the book. Both my copies are beginning to exfoliate and I have hardly used them. Maybe other readers have noticed the same problem? This is something that the publishers should take note of and try to improve in future.

One should not let the obvious criticisms of this publication detract from its overall value. I would strongly urge anyone who wanted to get a very basic understanding of the subject to go out and buy this book. It is quick to read and assimilate, and easy to reference for future purposes — and of course one cannot complain at the price. Most importantly, it will probably have a greater long term effect than any other book/paper published on this subject in terms of widely disseminating information, a fact which may well have beneficial consequences for future research.

Simon Timberlake