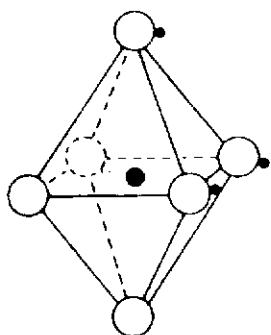


and maximum moisture are simultaneous (pp. 46 and 55). Page 41 informs us that 'Deposition is most often caused by wind, termed aeolian (or aeolian) action'. Headers and their contents are confusing and inconsistent (e.g. a plague of grasshoppers is described under 'Floods'; 'Elevation and Food Sources' is followed by 'Plant and Animal Resources', though one would expect plants and animals to be food sources).

The Queen City of the Plains is poorly served by this tribute, although Denver residents and DU alumni may find the book of interest. Lack of attention to editorial detail, however, makes this volume a difficult read. Perhaps a second edition will provide a useful and readable volume.

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JULIAN HENDERSON. *The science and archaeology of materials: an investigation of inorganic materials*. xvii+334 pages, 165 figures, 5 tables. 2000. London: Routledge; 0-415-19933-6 hardback £62.50, US\$100 & Can\$150, 0-415-19934-4 paperback £19.99, US\$32.95 & Can\$49.95.



This is in many ways a surprisingly good book — although it does have its faults too. I say surprising because so many other works on archaeological science tend to have significant problems — usually being either too technical (and even boring) and/or not doing a good job at integrating methods with meaningful archaeological applications and more than superficial interpretation. Henderson's volume does a wonderful job introducing the main analytical techniques used in the analysis of glass, ceramics, metals, and stone, and what we can learn from them, by using a number of examples and case studies. Henderson emphasizes a holistic approach throughout, using the physical sciences to reconstruct the life cycle or *chaîne opératoire* of the materials studied and to interpret them within the economic, sociopolitical and ideological structures in which their production, distribution and use is embedded. The *Science and archaeology of materials* is well organized, well written and well illustrated; it can be used as a textbook for a course on archaeological materials for upper-level undergraduates and graduate students, and as a reference work by professionals.

In the introduction, Henderson outlines his purpose with this book, which is to move beyond sim-

ple functional interpretations of materials to assessing the human behaviours which regulate their use. This signals in large part the maturation of the discipline of archaeological science from one often based on loose collaborations between archaeologists and physical scientists to one emphasizing research projects in which the design, execution and interpretation — and even the investigators — are multidisciplinary.

The second chapter, on analytical techniques, confines itself to those methods used on inorganic materials, and is not meant to be a comprehensive source on this subject. It covers well the main elemental techniques, as well as X-ray diffraction, thin section petrography and lead isotope analysis; curiously absent is metallography.

The heart of the volume, though, is the four chapters on glass, ceramics, metals and stone, each with subsections describing the acquisition and processing of raw materials, the manufacture of artefacts and several examples and case studies. The chapter on glass, for example, devotes 28 pages (with 24 illustrations) to defining it as a material; discussing the alkali, silica, lead and calcium raw materials and the colourants used in ancient times (e.g. cobalt blue); and describing the glassmaking process including furnaces and glassworking. Another 48 pages are devoted to case studies including the origins of Mediterranean or Mesopotamian glass; and Roman, Medieval, Islamic and 17th-century European glass. Each case study integrates a different type of scientific investigation (glass workshop excavations, furnace technology, compositional analysis of vessels) with relevant information about glassmaking techniques, and the socioeconomic organization of production and trade. The case studies are presented in sufficient detail for the reader really to grasp both the archaeological problem and how scientific analysis has contributed to resolving it. The bibliography for the glass chapter runs to seven pages.

The chapter on ceramics similarly defines clays and their properties, amply illustrates the formation of pots, covers tempers and glazes and treats firing kilns and conditions at length. The case studies chosen include Iron Age pottery production in Britain, Chinese celadons (stonewares) and Ottoman fritware. In the next chapter, the origins and properties of each metal are briefly presented, followed by more considerable attention to mining, furnaces and smelting, and alloys of iron and copper. The examples include early copper production at Wadi Feinan in Jordan, and in Thailand; Iron Age Britain; chemical and isotopic analysis of British bronzes; and the use of New World gold and silver in European coinage. This is the only case study, however, in the volume which ventures outside the Old World.

I was more disappointed, though, with the chapter on stone, which is just 22 pages in length. Half

is devoted to European or Near Eastern obsidian, while flint and steatite are covered only briefly prior to short case studies on the Stonehenge bluestones and British Neolithic stone axes. For obsidian, a number of recent studies are discussed in detail, but the illustrations used for chemical characterization, distribution and fall-off patterns are more than 25 years old. Not included in the chapter was any mention of marble and limestone, for which provenance studies have been the subject of considerable research.

Finally, in a brief concluding chapter, Henderson reiterates the importance of successful communication and holistic archaeological science; this should always be our goal. I think the volume, however, would be more attractive as a course text if the case studies were geographically balanced, and if the stone chapter was of proportionate length. This volume nevertheless illustrates well the techniques of both archaeology and science and how they can produce powerful results when integrated in a research project with clear-headed science and with clear objectives.

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BRIAN FAGAN. *Grahame Clark: an intellectual biography of an archaeologist*. xix+304 pages, 42 figures. 2001. Boulder (CO): Westview; 0-8133-3602-3 hardback US\$26 & CAN\$39.50.

Although Brian Fagan is one of the most experienced of writers on archaeology, it must have taken considerable courage to compile a biography of Sir Grahame Clark. Clark is not an easy subject. He did not retain an archive of correspondence, although he was a faithful correspondent. His reputation as an austere and remote figure cloistered in the Fens was not undeserved. Nor did his chosen early field of study conform to the popular image of the great archaeologist: he did not open royal graves at Ur, nor explore the great cities of the Indus, but rather chose to pursue the North European Mesolithic. His most celebrated excavation took place at Star Carr, a small Mesolithic encampment in Yorkshire. However, Grahame Clark was one of a small group of archaeologists who shaped the discipline during the second half of the last century, and whose career touched the peaks of personal achievement: Disney Professor at Cambridge, Master of Peterhouse, influential Fellow of the British Academy, Erasmus prizewinner, an archaeological knight and acclaimed author. It must always be remembered that much that is today taken for granted by prehistorians was pioneered by Grahame Clark: the importance of eco-

nomics data, the vital conjunction of prehistory with ethnography, and the worldwide implications of the radiocarbon dating revolution.

What motivated a man who, few would deny, pursued his interest in archaeology with a chilling zeal? The book is sprinkled with a series of photographs and the first is particularly revealing. It shows Clark as a 15-year-old schoolboy at Marlborough. His father had died three years previously, and he was educated in an exclusive private school set in the rich archaeological terrain of Wiltshire. He is immaculately dressed, without a hair out of place, and he looks at the lens with self-confident hauteur, but also a hint of shyness. Already, he was pacing the downs collecting prehistoric flints, and writing articles for the school magazine. This image of a single-minded, probably lonely pursuit of prehistory continued little changed for 70 years. He led a privileged life, at home in the rarefied atmosphere of the college combination room, the Master's lodge, and first-class carriage to London academies.

Everyone who met and knew Grahame Clark will have anecdotes to relate, a selection of which are to be found in the autobiography of his ebullient successor as Disney Professor, Glyn Daniel. Brian Fagan could easily have been led down the treacherous path of accumulating these to spice his biography. This he avoids, choosing instead to concentrate on Clark's academic career, charting the development of his interests and contribution to the expansion and enhancement of prehistoric archaeology. This resolve is made clear in the book's sub-title, 'an Intellectual Biography of an Archaeologist'. We find that his career fell into four basic stages.

Before the Second World War, he dedicated himself to the northwest European Mesolithic. By combining typological and distributional approaches, he laid the foundations for an appreciation of this period that went beyond the traditional collection of flints for their own sake. Already, however, he was weaving a broader pattern, as seen in *Archaeology and society*. First published in 1939, it not only emphasized the importance of anthropology to archaeologists, but also anticipated his later major works of synthesis.

In 1939, Clark was teaching in the Cambridge Department and, with many other archaeologists, was seconded into military intelligence in order to interpret air photographs. As excavation virtually ceased, he continued his research interests by working on aspects of prehistoric economies based on textual and ethnographic sources. This led to the publication of *Prehistoric Europe, the economic basis*. It was during the austere post-war years, and with a shoestring budget, that his work on the Mesolithic culminated in the excavation of the waterlogged site of Star Carr in Yorkshire and its rapid publication.

In 1952, as he was writing the report on Star Carr, he was elected into the Disney Chair of Archaeol-