

work yet to be done and how there is much more to do on the geomorphology and hydrology of the caves, in particular.

It is to her credit that she is able to show the way for our further understanding of this fascinating cave area. Both she and the New Mexico Bureau of Mines and Mineral Resources are to be thanked for such a readable and wonderful account of one of the world's greatest cave areas.

BALAAM, N. D., LEVITAN, B., and STRAKER, V. (eds.) *Studies in palaeoeconomy and environment in South West England*. Oxford, B.A.R. British Series 181, 1987. vii, 264pp. ISBN 0 86054 501 6. Price £18, post free.

(reviewed by K. Crabtree)

As the editors record, the original papers were presented at a symposium held in Bristol on 9th February 1985. This in turn was a follow-up of a meeting held four years previously and organized by Martin Bell and Ian Simmons. The brief of the original symposium was to look at the state of environmental archaeology as applied to South-West England and, although that symposium was not published, we have an excellent review of the state of knowledge in the south-west as a result of the HBMC Environmental Archaeology Regional Report edited by H. Keeley (1984) in which Martin Bell gives a report up until 1983. The present volume adds to and updates that review of Bell, and was organized by the incumbents of HBMC contracts in the University (V. Straker) and City Museum (B. Levitan) and a representative of the Central Excavation Unit (N. Balaam).

Some 25 contributors authored the 11 papers, with a prologue by Professor Charles Thomas in which he refers to the U.B.S.S. as 'that splendid body'. The papers have been fully revised since the original meeting and include material (especially radiocarbon dates) not available in February 1985. The volume is produced in the usual B.A.R. format, A4 camera ready copy, but as it was all done on a single word processor, it is all to a common high standard and text font.

As one might expect from such a volume, the papers vary considerably in length and approach. The volume is dominated by a hundred page paper based on the 1983/4 archaeological and palaeoenvironmental survey of the Westward Ho! site. This is a long-needed study as erosion is removing much of the evidence of the Mesolithic midden site on the foreshore and the original work by Churchill (1965) was in need of more detail and updating. This paper is multi-authored with specialist reports by various contributors as well as a synthesis provided by the principal authors led by N. D. Balaam. By careful review of the collections and reports on the site over the years, backed up by the new field evidence, the authors conclude that there are two occupation periods, the well-known Mesolithic one and a Romano-British one, both with peat and debris material. This discovery helps to remove some of the anomalies found in the records of earlier workers. The environmental information points to the Mesolithic midden being within dense fen carr with oaks and not in the inter-tidal zone as suggested by Churchill. The extent of the deposits is now much less than when first recorded in the nineteenth century and, as the site is only exposed for short periods usually in the spring at low tide, thorough excavation is almost impossible. Several questions still remain. The origin of the 'blue clay' is a major enigma. If marine or estuarine and pre 7,000 bp then it is too high

on the sea level curve; if glacial then it appears to lack glacial features. Contained material has probably been intruded but gives dates of around 8,000 bp. The earliest occupation date is not clear. The main midden is dated a little later, according to the latest radiocarbon dates, than reported by Jacobi, being within the first half of the fifth millennium bc. Stakes forced into the peat and clay dating to neolithic times are recorded but their purpose is not known. By analogy with other Bristol Channel sites, it is suggested that some may have been associated with fish traps. In all, an invaluable record supported by specialist reports on Soils (R. Macphail), Molluscs (M. Bell), Vertebrate remains (B. Levitan and A. Locker), Pollen (R. Scaife), Plant Macrofossils (D. Vaughan), Insects (M. Girling, M. Robinson and B. J. Wilkinson), Trichoptera (B. J. Wilkinson), Magnetic Measurements (A. E. U. David and A. J. Clark) and the Flints (A. E. U. David).

Of the remaining papers, several provide an overview of particular biological remains. Thus Martin Bell reviews recent Molluscan studies in the south-west, an area previously largely disregarded from a Molluscan view as it was thought as not having a suitable geology for much preservation. He adopts a temporal approach to complement his earlier site approach (Bell in Keeley, 1984). Jennie Coy reviews non-domestic faunal resources, complementing Levitan and Noddle's contributions on domestic fauna. She adopts a taxonomic approach and points out that on site sieving is producing increased numbers of fish bones indicating that fish were a more important resource than earlier work had suggested. Marine molluscs, she suggests, need careful consideration and the use of ethnographic parallels to interpret their occurrence in the deposits and possible exploitation. Barbara Noddle surveys the literature on mammalian remains from the Cotswolds and records size ranges and age ranges for many domesticates over different time periods, showing that the Roman occupation had a profoundly improving effect upon animal husbandry. Bruce Levitan takes up where Noddle leaves off and considers medieval animal husbandry. He looks at relative proportions of sheep, cattle and pigs in the bone assemblages plus deer and rabbit where they occurred. Charts of anatomical representation and then of butchery are also given. He ends with a methodological plea for more effort in concentrating limited resources into doing one or two sites in great detail and of relating the urban areas to their hinterland. Chris Gerrard follows up this point with a suggestion that Somerset in the Anglo-Saxon period might provide an opportunity to try to look at a regional picture with market towns and countryside.

The other group of papers we might term 'site specific' as they each report on work at a particular site, although they tend to develop some general points from that site. Dave Maguire looks at spatial variation in blanket peat initiation over a 200 m x 60 m section of Dartmoor. He demonstrates variation from 1070 bp to 4350 bp for initiation. He supports this with soil and vegetation analysis. Sheila Ross and Louise Heathwaite apply von Post humification and Troels-Smith descriptions to peat in West Sedgemoor. They also look at floristic and chemical analyses to try to establish the most suitable classification to a particular problem namely where amorphous peats occurred. Their paper provides a useful summary of field methods for peat description. Ian Simmons, Julia Rand and Keith Crabtree present a new radiocarbon dated pollen diagram from Dozmary Pool. This is intended to provide a detailed sequence through the Mesolithic period to try to relate vegetation changes in that period. Clearance and burning horizons were well displayed in the analyses but when the radiocarbon dates became available they suggested that the deposits at the site had been disturbed and that some of the major clearances indicated were probably post-Mesolithic.

Settlement sites are covered by Peter Leach with a paper on the hinterland of Ilchester. Emphasis is placed on the flood plain alluviation burying archaeological material from the Bronze Age onwards. This period of alluviation is related to the type of catchment basin and the periods of economic activity within the basin. Julie Jones and Nick Watson deal with an urban waterfront deposit at Redcliffe, Bristol. Over the past few years several such sites have become available for study as developers are taking over the old warehouses and buildings along the Bristol waterfront. Archaeologically the Redcliffe site shows the encroachment of the docksides in the 12th to 14th centuries AD, with new wharves being erected and household and industrial refuse being thrown in behind the wharves. It is largely this refuse which provides a record of the plant debris from food processing and from industrial processes (e.g. dyers' waste), horse manure and hay from flooring and animal feed, together with animal bones. The diatom analysis of the sediments shows that marine species dominate the sediments indicating that the conditions were tidal and estuarine. In the upper part signs of increased nitrogen pollution show up in the assemblage. The deposits help to show how the construction of the quays tended to alter the hydrological and depositional regime of the river. They also tell us much about the diet of the inhabitants of early medieval Bristol.

The volume therefore covers a wide range of environmental evidence in association with archaeological sites in the south-west. The review nature of several of the papers and the methodological nature of others makes it a valuable source book for reference. The detail of such papers as the one of the Bristol water front and on Westward Ho! is also invaluable. In spite of this being a symposium proceedings volume it is remarkable how the papers complement each other and give food for thought on future approaches to environmental problems. The methodology is applicable outside the south-west.

References

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