

Editorial

This is the first part of volume 8, nominally for 1990; much of 8(2) has already been put together and all being well it will follow in weeks rather than months. Please don't let this stop you sending copy—it would be splendid if we could publish volume 9 (for 1991) *this year, too!*

It may be worth remarking that some back numbers of *Circaea* are in critically short supply, and we currently have no plans to reprint them because of cost. Those that are especially short are 2(2)–3(3) inclusive, for all of which there are less than 10 copies in stock. Buy now to avoid disappointment! (Details of prices are given on the inside front cover.)

We have been toying with the idea of producing an index to *Circaea*; have any readers any thoughts on the subject of its desirability and the level at which indexing should be carried out?

Book Reviews

K. A. Boyle (1990). *Upper Palaeolithic faunas from South-West France. A zoogeographic perspective.* Oxford: British Archaeological Reports, International Series 557. ISBN 0 86054 704 3. 283 pages+bibliography and appendices. £27.00.

The *BAR* series has been a useful source of the information otherwise buried in all those theses that must pile up somewhere in university and departmental libraries. It represents a laudable attempt to match the system in many European countries, where theses are produced in multiple copies, precisely so that their contents can reach a wider audience.

On the negative side, the average archaeological thesis needs a good deal of cosmetic work before it can be allowed out in public. Simply reformatting it into camera-ready copy rarely produces something fit for consumption by humans (as distinct from external examiners). We all know, don't we, of the need to mention every trivial piece of work in the field and the resultant tendency to produce a thesis twice as long as it need be. We also know that a thesis rarely stands scrutiny as a piece of polished writing. Yet many of the *BAR* volumes tend to suffer from these problems in their translation into book form, and Boyle's is no exception. This is not entirely the fault of the author, since the volumes are edited.

The volume is not cheap. For that price, I do not really want to have to wade through or to ignore chunks of information on the history of work in the chosen region (Chapter 2), Perigordian cultural chronology, or the physical geology (Chapter 3), included because the examiners of the original thesis would have required it. (Does anyone ever really want to know when the bedrock of the region in question formed?) All of these details could be presented more concisely, with references to the necessary sources. Chapter 5, a review of previous ideas on seasonality, repeats quite a lot of what was said in Chapter 2 on the general outline of earlier work. Yes, Bouchud's arguments on year-round presence of reindeer are specious. A lot of people know that.

The presentation of the first five chapters is not helped by the fact that the English is often clumsy, and by Boyle's somewhat irritating use of the present tense when discussing the literature.

Chapters 6 to 9 present an analysis of the assemblages in relation to chronological patterning, associations between species, zoogeography and butchery and carcase management, using data taken largely from the literature. Much of the information employed is usefully presented in tabular form in Appendix I. Boyle discusses the methodology in Chapter 1, where she admits that the form in which the data are available does pose problems for the analyst. It is difficult to gauge from this discussion just how much material she has seen at first hand, and therefore to assess her ability to interpret the literature. But she argues in that chapter that the most appropriate method for quantifying assemblages is to use the number of identified specimens per taxon, or N.I.S.P. (would N.I.S.P. or N.I.S.T. not be more logical?), and here she seems to have fallen into the trap of dressing up necessity as a virtue. If N.I.S.P. figures are the only data available, and if you can address issues that are robust to that fact, then go ahead and use them. But I really cannot be impressed by arguments (p. 7) that we should use them because there will be little discrepancy in N.I.S.P. counts by different analysts (so what?) or that use of such figures offers the advantage of a larger assemblage from each site. This despite having just listed five problems using such counts, including (number 3) the question of the extent of fragmentation. It is in relation to this point, in particular, that the question of hands-on experience starts to assume importance: how else does one realise, for example, that

reindeer metapodia often remain identifiable even when highly fragmented into many countable pieces, while those of other artiodactyls of similar overall size may not. I may have missed it, but I saw no discussion of such points. Then to be told (p. 8) that detailed attention has primarily been given only to assemblages totalling at least 100 identifiable specimens does not inspire confidence, author's caveats notwithstanding.

The N.I.S.P. figures are used in Chapters 6, 7 and 8. In Chapter 9, on butchery and carcase management, the method of quantification is modified to produce fractional minimum numbers of individuals (fM.N.I.s), which are then graphed against modified general utility indices derived from Binford's work. I think that extra discussion could usefully have been given to the methodology adopted in Chapter 9, using the space created by cutting down some of the earlier chapters. I think this could be the most valuable part of the volume, if one can maintain confidence in the figures (Boyle shows no sign of realising that M.N.I. figures are estimates rather than counts), but I think that most readers will need more guidance. (How many of us at five minutes' notice could give a coherent account of Binford's derivation of these figures, even [especially?] if armed with his book?) I also think that Boyle may have underestimated the part played by large carnivores (relatively abundant spotted hyenas and wolves and the odd lion) in forming her 'natural' deposit at Jaurens.

I am less convinced that the results on faunal associations presented in Chapter 7 really necessitated the amount of analysis expended on them, and whether we need P.C.A. to tell us that fairly self-evident associations of species may be seen in assemblages. And I am really not at all convinced that the analyses presented in Chapter 8 offer us much zoogeographic insight. If we are going to use data based on fragment counts from archaeological deposits to tackle problems of biogeography then we need to address larger-scale questions that are likely to be less sensitive to passing through a cultural mincer. Chapter 6, on the chronological patterning of the assemblages, offers some parallels between environmental changes and the grosser shifts in relative abundances, but here again the problems of confidence in the figures intrudes, and one must wonder whether anything significant in being revealed.

In all, an interesting idea, to take a wider view of the large body of osteological data now available from south-western France, is

marred by the method adopted (which involves an over-reliance on the published data), by the resultant restriction on quantification techniques, and by a failure to restructure the work for publication.

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Greig, James (1989) *Handbooks for Archaeologists No. 4. Archaeobotany*. European Science Foundation. Strasbourg. 93pp. Available free on request*.

This is the fourth in an already very useful series of handbooks produced by the European Science Foundation to 'promote co-operation between archaeology and the natural sciences'. The author, realising the rate of development of archaeobotany over the past decade, aims to 'present the outlines of the subject as it is now as helpfully as possible for both professional and amateur archaeologists, as well as students'.

The six main chapters of the handbook cover: (1) an introduction, with a useful outline of the history of the subject; (2) principles and procedures, which attempts to explain general botanical principles, taxonomy, plant ecology and the preservation of fossils, all in twelve pages; (3) sampling techniques; (4) laboratory methods for extraction and processing of plant remains; (5) identification; and (6) interpretation of the results. Each chapter discusses charred, waterlogged and pollen remains. There is plenty of useful, detailed information covering the whole range of the subject.

The section on taxonomy could, perhaps have been improved. Assuming the archaeological readers are unfamiliar with plant names and the fact that they need to understand botanical reports (particularly the species lists, pollen diagrams and interpretation) it is very important that they should be familiar with, for example: what a family, genus and species actually represents; what we really mean by 'cf.' or 'indet.'; what the limitations of pollen 'types' are; and the significance of the different 'seed' parts. A brief guide to the correct procedure for printing Latin plant names would also have been helpful. A reference or two to introductory plant taxonomy and ecology textbooks might have been sensible, particularly for the student

readers. Why is there no explanation of Compositae Liguliflorae (Cichorioideae), which is mentioned twice in the text, occurs so often in pollen lists, but what does it mean in terms of interpretation?

Chapter 8, in two short paragraphs, discusses the importance of co-operation between archaeologists, historians and archaeobotanists. A useful point made is that even if there is forward planning with the 'environmentalist' before excavation and a good research strategy, unless there is suitable preservation of plant remains, nothing can be achieved.

The final chapter consists of a list summarizing the authors' view of the major 'rules' in archaeobotany. I would suggest on the first point that archaeological knowledge for archaeobotanists is not just "very useful" but absolutely essential, particularly for the interpretation of results. We cannot expect archaeologists to be broad-minded if we are not likewise.

The handbook is well illustrated with 'archaeobotanist-in-action' photographs. There is also a good balance of pictures of plants and plant remains. It may have been useful to use some diagrams to explain certain topics within the text which are written in a rather long-winded way (for example, the explanation of the relationship between archaeobotany and other sciences on p. 3). A copy of one each of the standard recording site and laboratory forms might have been helpful as a guide to the categories generally recorded (but, as every laboratory has its own version, choosing the best might have been difficult!). The six-and-a-half pages of references, which provide an invaluable bibliography for beginners in the subject, cover the major papers in the European archaeobotanical literature.

A list of the names and addresses of the laboratories and individuals who offer an archaeobotanical service to archaeologists should have been included, particularly as this was one of the objectives of this handbook series (see Goormaghtigh in the preface to No. 2). This would have been a good opportunity to provide a glossary of terms, perhaps with German/Dutch/French/Italian translations?.

In summary, despite the few shortcomings I have mentioned, this is an invaluable guide to the subject. It should be essential reading for archaeologists and students alike. It might also be a useful reminder to established workers that we have a long way to go before our methods and techniques are suitably

standardized, for example, with regard to the comparison of data from different sites.

[* Copies of all four handbooks in this series may be obtained, free of charge, by writing to: The European Science Foundation, Standing Committee for the Humanities, 1 quai Lezay-Marnesia, F 67000 Strasbourg. Sadly, this botanical book is the last in the series.]

Reviewer: **Philippa Tomlinson**
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Conference Report

Archaeological integration: Association for Environmental Archaeology, Autumn Conference, Cambridge, September 1990

This conference was organized by Drs Peter Rowley-Conwy and Rosemary Luff, and attended by about 75 people altogether. The theme was the contribution of environmental archaeology to the interpretation of sites, and the integration of all aspects of archaeology. With these goals in mind, papers were divided among four sessions: (i) successful case-studies and methods; (ii) the specialist as project director; (iii) integrated studies; and (iv) integration: current achievements and problems. The conference structure was good and in general the papers were of a high standard, but the audience was often insipid. The proceedings are to be published.

The first session was opened, unconventionally for an environmentally-based group, by a ceramicist. Problems of data collection which so often plague the environmental archaeologist are common to other specialisms. Chris Going graphically described how things can go drastically wrong when the specialist is not involved from the start. He contrasted this with successful examples of communication and pooling of ideas: numismatists, ceramicists, vulcanologists, seismologists and historians working together were able to fix the time of the destruction of Chorion, Cyprus, to within twenty minutes. The theme of co-ordination and communication was constantly repeated throughout the two days, both as an approach which yields far more detailed results, and for the unfortunates among us, as a desperate hope for an ideal archaeological world.

From there we were taken to the daunting total organic preservation at Qasr Ibrim,

Egypt. Peter Rowly-Conwy showed that artefacts assumed to relate to occupation, as on any 'normal' site with little organic preservation, may actually be later abandonment debris. This surely has very important implications for interpretation. To a very different climate, next: Paul Buckland talked about Bessastadir, Iceland, and the various classes of artefact that have suggested differential status and activity areas. (He talked briefly first on the evidence for body paint on Lindow Man.) Beautiful landscape shots of the Outer Hebrides were included in Alix Powers' slides, illustrating her study of phytoliths, ancient and modern, to learn about ecological areas used by past inhabitants. We also had a look at some bone assemblages from Neolithic and Bronze Age sites on Down Farm, England (Tony Legge) and what happens to fish bones when they get digested (Andrew Jones). The morning session ended with Nick Winder demonstrating the database he has developed to record animal bones efficiently (Faunal Remains Database—FRUD). It looked good to me. Could anyone do the same thing for seeds, insects, shells, soils, pollen and everything else?

The afternoon session featured 'the specialist as site director'. We heard Geoff Bailey talking about Klithi in Greece; Mark Robinson describing excavations at Mingies Ditch by the River Windrush; Frank Green and Kris Lockyear discussing an urban site in Romsey; Jim Innes' pilot study to locate wetland sites by non-destructive means; and further geographic variation with Umesh Chattopadhyaya, who took us to the earliest known sites in the Ganges Valley and Vindhya in India. Bob Wilson also gave a paper on spatial patterning of bones and artefacts in the Upper Thames Valley.

Most people, both presenting and commenting, took exception to reference to 'the excavator' and 'the specialist', as this implies specialists are not archaeologists, and that the two roles are completely separate. Several speakers agreed that, having first studied environmental artefacts, they were more aware than many site directors about proper recovery, study of environmental remains and natural (as opposed to human-created) deposits, as well as about the co-ordination of all sources of data afterwards. Geoff Bailey encouraged constant trial of excavations techniques to develop the strategy best suited to each site. A willingness to learn from techniques which were not entirely successful, in order to improve future excavations, was advocated by several speakers. This is a good attitude, it seems to me.

Sunday morning and the third session started rather early for some, with James Rackham on the problems encountered when trying to integrate different types of archaeological data. He brought up the topic of developer-funding, an issue which is causing particularly grave concern amongst archaeologists working in England (of which more below). The emphasis, repeatedly throughout the day, was the necessity for including environmental work as an integral part of any excavation, from the very first planning and costing stages.

The remainder of the morning was taken up with site case-studies where integration is actively and successfully pursued: Amarna, Egypt (Rosie Luff—animal remains; Delwen Samuel—bread and beer project); Tofts Ness, Sanday, Orkney (Steve Dockrill—director; Ian Simpson *in absentia*—soils; Annie Milles—snails; Janet Ambers—carbon isotope analysis; Julie Bond and G. Davis—plant and animal remains); and Abu Salabikh, Iraq (Nicholas Postgate—director; Wendy Matthews—soil micromorphology; Keith Dobney—animal remains).

In the final session, various excavators and specialists were asked to discuss current achievements and problems of integration. Achievements were little examined: the focus was on problems, which it was very necessary to deal with, I suppose, but depressing. Two points emerged most strongly

First of all, environmental archaeologists working in Britain are on the defensive. Again and again, people spoke of their work being considered peripheral, not part of the general research strategy, an afterthought, or being paid lip service, with nothing behind the fine words. Some made outright denials of specialization. There are many archaeological administrators and even, still, directors of sites who undervalue the environmental contribution. However, this conference can leave no doubt that people who specialize in *whatever* branch of archaeology, produce more interesting and meaningful results if they can: (i) be actively involved from the beginning and spend at least part of the time on-site (not necessarily digging); (ii) be personally familiar with where their material comes from; (iii) know how it relates to stratigraphy, architecture, and other classes of artefact; and (iv) share and co-ordinate their findings with other members of the team.

The second point which arose from the final session, and particularly in general discussion, was the perennial problem of funding.

Everyone feels underfunded. Part of the inferior status some participants experienced came from this. Indeed, intense discussion was stimulated by the changes in funding now being implemented. In England, English Heritage has been largely responsible for funding excavation, but the government wants rescue archaeology to be entirely funded by developers. As Phil Dixon pointed out, this means that budgets *must* include environmental work as an integral part of excavation, and that there will be an end to extra dollops of money after digging is over and the samples have piled up. Is this not a challenge, *and* an opportunity? A big concern was the lack of obligation for developers to get excavations published.

I personally was disappointed in the final discussion. From the first it was directed to the subject of funding (with nearly total focus on the situation for archaeology in England). The conference theme, integration, was completely lost. Many of the case-studies and examples were inspiring. A discussion of them and how to encourage integration as a standard archaeological goal, would have been positive, instructive, and stimulating. Instead, although much discussed and certainly an important issue, no one seemed to have anything new to say on funding problems. A few ideas on concrete action were voiced. Had a resolve to pursue them by committee or other mechanism resulted, perhaps this airing would have had some use. As it was, the discussion eventually petered out, the participants rapidly dispersed, and I wended my way home with a distinct feeling of discouragement. Not the best way to end a conference celebrating the successes of the profession.

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Summaries of papers presented at AEA Spring Meeting, Oxford, 25th March 1991

A mess of pottage; food processing or detoxification of Old World pulses—Ann Butler, Institute of Archaeology, University College London, 31–4 Gordon Square, London WC1H 0PY, U.K.

Wild legumes characteristically accumulate a number of toxic secondary metabolites in the

seeds, which act as deterrents to predators (Harborne 1988). Consequently, although rich in nutrients, legume seeds in the past may have been unsuitable as staple food resources for humans. However, as part of a broad-based feeding regime, small-scale consumption may have been tolerated (Stahl 1984).

The large-seeded cultivated grain legumes (pulses) indigenous to temperate regions of Western Asia, North Africa and Mediterranean Europe are mainly members of the tribes Viciae and Cicereae, which include *Pisum sativum* L. (pea), *Lens culinaris* Medic. (lentil), *Vicia faba* L. (broad bean) and *Cicer arietinum* L. (chickpea). Although most are considered harmless today, their low toxicity may be largely the result of selective breeding. Historical documentation records a previous need for detoxification prior to consumption of even such innocuous pulses as the pea (Drummond and Wilbraham 1939).

The toxicity of the wild legumes and early pulse cultigens might explain in part the paucity of pulses relative to cereals amongst the remains of charred plant material from certain early agrarian contexts. Processing of legumes to reduce toxicity will have become a necessity when a generalised feeding strategy was replaced by the more specialised diet that resulted from cultivation, and prior to the development of toxin-low cultigens. Some common food-processing methods may represent ancient detoxification strategies. However, the antiquity of the development and use of such traditional techniques as dehulling, soaking, heating, fermentation and sprouting is unknown.

Archaeological evidence of the past processing of food legumes is hard to find; one example is the possible leaching of *Lathyrus sativus* seeds at the Bronze Age site of Servia, an interpretation suggested by their distribution (Hubbard 1979).

The analysis of plant food residues on ceramic sherds has provided some clues to cooking techniques (Hastorf and De Niro 1985); chemical analyses by such methods as infra-red spectroscopy, already successfully applied in the identification of charred ancient seeds (McClaren *et al.* in press) may provide in the future more direct evidence of the chemical properties of past legume food resources, and augment our understanding of ancient diets.

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House Gardens in Sipsongpanna, China—Charlotte Herxheimer, Institute of Archaeology, University College London, 31-4 Gordon Square, London WC1H 0PY, U.K.

Ethnoarchaeological fieldwork was carried out amongst the Dai people of Sipsongpanna, South West China to investigate house gardens and their role in the traditional subsistence system. House gardens have long been postulated as likely arenas for early plant domestication, but have never previously been the object of archaeological study.

The nature of house gardens and the range of natural resources available to the Dai was described. House gardens closely mimic a forest structure with many plant layers and a vast range of crops, both cultivated and 'weeds', providing fruit, vegetables, stimulants, herbs, medicines, fibres, dyes, poisons, etc. Gardeners continue to experiment with crops through transplanting of plants from the wild and exchange of plants/seeds over long distances.

The possibility of recovering archaeological house garden remains was investigated. The archaeological potential of these gardens has

not so far been realised, partly because of a lack of understanding of the taphonomy of remains. Observations were made on the extent of contact with fire of utilised and discarded plant parts. Samples were taken for flotation from ground beneath houses and from gardens where ash had been used as a fertiliser, so that the nature of deposition of the plant remains can be investigated. With a better understanding of the taphonomy of remains preserved in house garden deposits a major, yet until now archaeologically invisible, component of traditional subsistence can potentially be identified.

The conclusions of this study will be relevant for South East Asia in particular and the tropics in general. It is also suggested that the problems involved in the recovery of evidence from tropical house gardens may not be so dissimilar to those of studies of early temperate horticulture.

Acorns in South East Turkey—Sarah Mason, Institute of Archaeology, University College London, 31-4 Gordon Square, London WC1H 0PY, U.K.

One topic receiving increasing attention within archaeobotany is the role of wild plant resources within predominantly agricultural societies. There has been little consideration of the possible role of acorns (fruits of *Quercus* spp.) in this context, but they should be of particular interest to archaeologists because they are potentially a staple food. Good archaeological evidence for acorn use is poor, but this may be partly for taphonomic reasons. Acorns are often thought of, at best, as a marginal resource; but amongst people in many parts of the world, including those practising agriculture, they have been an esteemed wild food. An abundant and readily-available wild resource of this kind might enable people to weather years of poor agricultural harvest when they would not otherwise be able to do so.

The talk described a visit to parts of South East Turkey in October 1990 undertaken with Mark Nesbitt, then archaeobotanist at the British Institute of Archaeology in Ankara, to look at oaks and to investigate any evidence of acorn use.

Two species predominate in the areas concerned, and both are used: *Quercus brantii* Lindley, with sweet acorns; and *Quercus infectoria* Olivier subsp. *boissieri* (Reuter) O. Schwarz, with bitter acorns. Bread-making

with acorns was apparently quite common there until perhaps 40 years ago. The main use of acorns now is as a snack food, and they are still apparently gathered in considerable quantities and stored for this use. Harvest, storage, processing, and modern usages were described, as was the management of oaks in the landscape.

Much of the information was obtained from chance encounters, emphasising the continuing importance of acorns (and oak trees) within what is essentially a modern, often high-technology, agrarian society. There are other areas of Turkey, adjacent countries, and other parts of the world where there may be similar use of acorns now, or in the recent past, and the speaker would welcome any information of a similar nature obtained by AEA members on their travels.

Cyprinid fish teeth: a systematic approach to identification—Brian Irving, Institute of Archaeology, University College London, 31–4 Gordon Square, London WC1H 0PY, U.K.

The pharyngeal or throat dentitions of cyprinid fishes have received very little study in terms of their morphology for systematic identification to species level. As part of a wider research brief, the author was faced with a large collection of both single pharyngeal teeth and pharyngeal bones complete with teeth from archaeological and palaeontological excavations.

The only previously published work on the morphology of the pharyngeal apparatus is that of Rutte (1962). Rutte covered every species of European cyprinid with regard to the general shape of the pharyngeal bone drawn as a silhouette, and a single tooth of each species drawn three-dimensionally. The paper was used as a base line for the present work. Secondly, because of the paucity of skeletal material in Britain, the author spent a month collecting live specimens from the Danube catchment in Bulgaria, and received specimens from the Natural History Museum in Sofia. The outcome is probably the most comprehensive comparative osteological collection of cyprinids in Britain.

Laboratory and microscope work followed in which the bones and teeth were drawn three-dimensionally and the most diagnostically useful teeth (in some cases numbering five individual teeth from each species) were photographed using a scanning electron microscope and drawn using a stereo

microscope with drawing tube (camera lucida). The outcome is a dichotomous key for the identification of the most diagnostic teeth and pharyngeal bones from all 26 European cyprinid species (Irving in prep.).

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A chemical method of identifying plant foods from coprolites—S. Wales, Department of Human Environment, Institute of Archaeology, University College London, 31–4 Gordon Square, London WC1H 0PY, U.K. and J. Evans, Environmental Sciences Division, Polytechnic of East London, Romford Road, Stratford, London E15 4LZ, U.K.

This paper dealt with current work to develop chemical methods of investigating coprolites in order to identify the plant component of diet. The aim was to identify plant foods that were not identifiable on morphological grounds, and so complement work on pollen and plant macrofossils.

Waxes were seen as being the most useful plant component for investigation because: (a) they have taxonomic potential; (b) they survive human digestion as demonstrated by the authors in a dietary study carried out with the Department of Food and Nutritional Sciences, Kings College London (Wales *et al.* in press); and (c) they survive well in archaeological contexts (e.g. Needham and Evans 1988).

The material to be investigated is first extracted sequentially with a variety of solvents in a soxhlet apparatus. This is a piece of apparatus which functions very like a coffee percolator. The method of extraction removes various chemical compounds without exposing the sample to extreme heat or necessarily damaging it. This means that samples of plant material can survive morphologically intact. The extracted material is then investigated by two principal methods: infra-red spectroscopy (IR) and chromatography, principally gas liquid chromatography (GLC).

The coprolites currently being investigated are well-preserved samples from Hinds Cave in Texas (Edwards 1990).

Before investigating the coprolites it was essential to establish that the suspected plant foods could be identified chemically. This has been demonstrated with a selection of modern samples of probable plant foods from Texas.

Investigation of the coprolites themselves involved the study of both the amorphous matrix and the visible plant fragments. It has been possible to suggest identifications for the plant fragments studied from the IR and GLC data. The identification has been supported by gas chromatography/mass spectroscopy (GCMS) carried out by the SERC Mass Spectroscopy Service at Swansea.

Work is continuing on the study of diet from these and other coprolites, as well as investigation into the confirmation of the faecal origin of coprolite fragments, and the identity of the donor species.

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