

Report of the Committee for Archaeology 1996-7



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Report of the Committee for Archaeology

1996-7

University of Oxford

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CHAIRMAN'S REPORT FOR THE YEAR 1996-97

This year's Final Honour School in Archaeology and Anthropology was the largest so far with 26 students graduating. The results were particularly impressive with seven candidates achieving a first class degree. Our external examiners, having completed their three-year term, submitted detailed reports leaving little doubt that they were impressed both by the rigour and comprehensiveness of the course and the quality of the students. Clearly the new degree has got off to an excellent start. December's interviews provided a further indication that we continue to attract interesting and highly able students.

Our postgraduate school is equally strong, attracting candidates from many parts of the world. The restructured course for the M.St./M.Phil., which rationalizes teaching and gives much greater flexibility to students both in the choice of subjects and examination methods, has been widely welcomed.

We announced in last year's report the good news that a post in *Aegean Prehistory* has been released. We have now advertised it and have already received an impressive field of applicants. It is hoped that the new lecturer will be in post for Michaelmas Term 1998.

Finally, it is a matter of some satisfaction to note that Archaeology at Oxford received a 5* rating in the 1996 Research Assessment Exercise. All those who contributed so thoughtfully and thoroughly to our submission are to be warmly thanked. Our submission was impressive and the result thoroughly deserved!

As a postscript we might mention that the University's Review of Archaeology is to take place next year under the chairmanship of Ralph Walker (Lit. Hum. Faculty). We wish the Review Committee good luck in its deliberations and hope that they may agree that Archaeology at Oxford deserves to be given a greater degree of organizational unity.

BARRY CUNLIFFE

THE UNIVERSITY'S ARCHAEOLOGICAL UNITS

Under the Committee for Archaeology

Institute of Archaeology

36 Beaumont Street, Oxford, OX1 2PG (01865) 278240; Fax (01865) 278254

- Professor B.W. Cunliffe, Professor of European Archaeology, Director of the Institute
- Professor R.R.R. Smith, Lincoln Professor of Classical Archaeology and Art
- Professor E.M. Steinby, Professor of the Archaeology of the Roman Empire
- Dr J.J. Coulton, Reader in Classical Archaeology
- Dr H. Hamerow, Lecturer in Medieval Archaeology
- Dr D.C. Kurtz, Lecturer in Classical Archaeology
- Dr J. Lloyd, Lecturer in Roman Archaeology
- Dr G. Lock, Lecturer in Archaeology
- Dr M. Mango, Lecturer in Byzantine Archaeology

Research Assistants

- Ms A. Claridge
- Mr R. Osgood

British Academy Research Fellows

- Dr J. Bardill
- Dr N. Spencer

Research Associates

- Dr M. Ballance
- Dr M. Henig
- Dr D. Miles
- Dr K. Painter
- Miss G. Seidmann
- Dr R. Thomas
- Dr J. Toms

Research Staff

- Ms E. Cameron (Conservation)
- Dr P. de Jersey (Celtic Coin Index)
- Ms V. Fell (Conservation)
- Dr P.M. Kenrick (Corpus of Arretine pottery stamps)

1996-7 was a comparatively quiet year at the Institute compared to the frenetic activity caused by almost continuous building and renovation work undertaken in previous years. However discussions with the University surveyor and the architect of the new Sackler Library, about the new archaeological store and layout area to be made available to the Institute are a reminder of the disruption which will be caused to our working lives in the coming years while the Library is being constructed.

In the photographic department Sue Hurst resigned for family reasons and was replaced by Alison Coveley who arrived in April. Another welcome addition to our staff was Mike Stevens who provides IT support for the Institute and a number of other nearby departments.

The Institute's computing facilities continue to grow. Each year a minimum of £5,000 is spent on upgrading and this year we benefited from a generous SUN Academic Equipment grant which will greatly increase our GIS capability. The arrival of the new equipment has thrown into stark relief problems of space within the Institute but plans are in hand to alleviate the problem until such time as new space becomes available as the result of the Sackler Library development.

The research programmes carried out by Institute staff continue to attract a high level of outside funding enabling us to maintain fieldwork in Britain, France and Spain and to continue our two major interactive archiving programmes: the Celtic Coin Index and the *Corpus Vasorum Arretinorum*.

The Beazley Archive

Ashmolean Museum, Cast Gallery (01865) 278083

Archivist - Dr Donna Kurtz (Wolfson College)

Established services include

- (1) extensive use on site of the photographic collection by members of the University and visiting foreign scholars
- (2) ordering of new photographs from more than 100 collections worldwide
- (3) mounting of roughly 2,000 new prints per year
- (4) further development of the text database on Athenian pottery and enhancement with images; since January 1993 more than 16,500 have been scanned
- (5) interrogation of this database (57,000 records) on site by Archive staff for members of the university and foreign scholars and
- (6) networked for interactive access at remote sites in North America, Europe, Australia, New Zealand and Japan
- (7) continuing development of on line multimedia version of pottery database with protected images

The results of the EU RAMA project, which ended in 1995, were transferred to a not-for-profit company (MUSEA), legally registered in the United Kingdom in June 1996, under the direction of the University's solicitors. MUSEA, directed by the Beazley Archive, has been participating in two EU projects (end summer 1998): SICMA aims to develop the RAMA software for Internet and to establish a satellite connection between a western museum server and one in Russia; MENHIR aims to establish a web site for the distribution and sale of protected museum images. The latter has been affected adversely by the Ashmolean Museum's subsequent signing of a contract with the Bridgeman Art Library. A model licencing agreement for MUSEA has been drafted by solicitors to the University for the purpose of protecting the interests of the content providers.

The Beazley Archive's contribution to another earlier EU project, LACE, which also ended in 1995 - a multi-media educational programme about the university's collection of plaster casts from the antique displayed in the Ashmolean Museum's Cast Gallery - is being developed for in-house use, online access and CD-ROM.

New grants from the EU's ERASMUS program were awarded for student exchanges

with the University of Thessaloniki and the University of Catania.

An application has been made to the EU's Raphael Program to direct a consortium of archaeological museums on the theme of Greek Burial Customs.

Outside EU Research and Development projects the Beazley Archive is continuing to provide the Trendall Archive in Australia with copies of its computer programs and to plan video-conference seminars with the University of Pennsylvania in Philadelphia. The Archive is advising *Lexicon Iconographicum Mythologiae Classicae* on computerization of its archives and considering a project proposal with IBM on watermarks for copyright protection of digital images.

With the assistance of the University's Telecommunications Manager and Educational Technology Resources video-conferences were held with Philadelphia and Berlin in the series of four lectures on Electronic Resources for the Study of Classical Archaeology and Art given for the Faculty of Literae Humaniores which awarded it a half-time RS1A technical support post from summer 1998.

Research Sponsors: British Academy; Lincoln College, Oxford; Delegation Generale XIII, Brussels.

Research Laboratory for Archaeology and the History of Art

6 Keble Road, Oxford, OX1 3QJ (01865) 515211; Fax (01865) 273932

Professor M.S. Tite, Director, Edward Hall Professor of Archaeological Science

Professor R.E.M. Hedges, Deputy Director, Lecturer in Archaeological Science

Research Assistants

Dr A. Allsop

Mr C. Doherty

Miss S. Hall

Dr Jiang Zhi-Xing

Dr G.J. van Klinken

Mrs D. Stoneham

Research Assistants

Dr S. Patel

Dr P. Pettitt

Dr C. Ramsey

Dr A. Smith

Mr C. Salter

The Research Laboratory has continued to undertake research in radiocarbon dating, luminescence dating, biomolecular archaeology and ceramic, vitreous materials and pigment studies.

The output of the Radiocarbon Accelerator Unit has been maintained at more than 1,500 dates per year, in spite of the accelerator being out of action for several months. Notable dating projects include dating Pleistocene material from cave sites in Gibraltar, human remains from the Mesolithic through to the Anglo-Saxon period, and food remains from Iron Age ceramics. A start has been made on developing a new approach to the uranium series dating of bone.

The thermoluminescence authenticity service has been closed down but the luminescence dating service has continued to provide dates for ceramics and sediments

from England, Africa and South America. A start has been made towards developing methods for the luminescence dating of archaeometallurgical slags.

Stable carbon and nitrogen measurements have continued to be used to investigate ancient diet, principally during the Neolithic period. In addition studies have begun on the isotopic compositions of tissues from modern populations under controlled diets, to provide fundamental insights into reconstructing ancient diet. Analysis of mtDNA from LBK people has suggested that they have more Near Eastern affinities than people from the rest of Europe. Work has continued on the investigation of the diagenetic alteration of bone under different environmental conditions and on the characterisation of collagen in painting media and in bone using immunoassay techniques,

A major project to investigate the use of rice husks as temper in pottery from Sarawak (2000 BC to 1500 AD) has been started with the intention of obtaining data on the pattern of early rice cultivation in the area. Work has continued on chemical analysis of Byzantine pottery in order to distinguish the products of the different production centres; on the investigation of the technology for faience and glass production at Amarna, Egypt; and on the examination of the pigments, binding media and plaster ground associated with Hellenistic wall paintings from the eastern Mediterranean.

Isotrace Laboratory (RLAHA)

Nuclear Physics Building, Keble Road, Oxford, OX1 3RH (01865) 273444, 273489; Fax: (01865) 273418; Email: Gale@ph.ox.ac.uk; Stosgale@ph.ox.ac.uk

Dr N.H. Gale, Director, University Professor of Archaeological Science

Dr Z.A. Stos-Gale, INSTAP Research Fellow, University Research Lecturer

Research Technician:

Nick Annetts

Research Student:

Maria Kafaya (Ph.D., University of Birmingham)

Research Assistant:

Dr R. Clayton, Leverhulme Trust

Research Associate (part-time):

Dr D. Evely

Research Sponsors

Institute for Aegean Prehistory, New York

The Leverhulme Trust

The Leventis Foundation

In the academic year 1996-7 the Isotrace Laboratory equipment and clean chemistry laboratories ran smoothly and we were able to continue to analyse on average 40-80 samples a month for their lead isotope composition. We still have over two thousands of unpublished lead isotope data of ores and Bronze Age artefacts from the Mediterranean; regular publication of the ore analyses has been taking place in the journal *Archaeometry*. A generous and timely grant from the Institute of Aegean Prehistory (INSTAP) allowed the maintenance of the minimum staffing level necessary for carrying out research in the Laboratory. A grant from the Leverhulme Trust allowed a new project to be initiated on the as yet unsolved question of the sources of tin for the Bronze Age Mediterranean world. A modest grant from the Leventis Foundation allowed partial continuation of work in Cyprus. The major emphases of our work last year were on:

(a) Reliable lead isotope analyses of many ores and copper slags from various sites in the Mediterranean to build up a data base for the field in general and particular projects of our own, and further to clarify the methodology of lead isotope provenance studies.

(b) A great many new analyses of a wide selection of ores from Cyprus, leading to an essential review of the lead isotope characteristics of what may be one of the most important prehistoric copper sources in the Eastern Mediterranean.

(c) Clearing the backlog of analyses of Aegean metal artefacts.

(d) Continuation of the long-term programme of lead isotope and chemical analyses of samples of all oxhide ingots and bronze artefacts from the Cape Gelidonya and Uluburun Shipwrecks, collected in August-September 1995 and completed in 1997. All tin ingots from both shipwrecks have also now been sampled.

(e) Publication of the accurate analyses of minerals from various ore deposits for the benefit of the academic community.

(f) Continuation of the long-term programme of publication, with appropriate Aegean archaeologists where possible, of the lead isotope and chemical data of Aegean metal artefacts obtained in our laboratory.

Publications of data for ore deposits:

Accurate lead isotope data from the Isotrace Laboratory are currently being published in successive volumes of *Archaeometry*. In the past year the Laboratory has published three such lists; one was for British ore deposits, the second an initial data base for Aegean ores and the third gave over 200 new data for Cypriot ores.

Publication of lead isotope data for Aegean Bronze Age metals:

To speed up the publication of the data, and to provide a direct archaeological input into the relevant papers, we are collaborating on a day-to-day basis with two archaeologists:

1. Publication of data for metals from Peloponnesian sites (total number of artefacts for consideration is in the region of 900, from sites such as Lerna, Nichoria, etc.) will form part of the Ph.D. thesis of Maria Kayafa (University of Birmingham), who is jointly supervised by Ken Wardle (Birmingham) and Sophie Stos-Gale. Several joint papers based on this data have been written, of which the first two are on Nichoria (submitted to *Opuscula Atheniensis*) and on Lerna + Lithares + Tsoungiza (submitted to the

2. Preliminary preparation for publication of nearly 300 artefacts from Late Minoan Crete (lead isotope and chemical analyses for all) has been undertaken jointly by Sophie Stos-Gale and Doniert Evely, who is financed on a part time basis from our small amount of lead isotope service work.

New developments:

developments of new methods to extract traces of lead, for mass spectrometry, from difficult matrices

development of new methods to explore the isotopic analysis of the elements tin and copper, to assess possible new methods of provenancing metals.

analysis of tin isotopes in tin ingots and bronzes,

analysis of lead isotopes in tin ingots and artefacts.

assessment of a new technique for the thermal ionisation mass spectrometry of lead which allows accurate analyses of very much smaller amounts of lead.

Results of research on methodology:

1. A thorough study was carried out of possible variations in the isotopic composition of lead which might have been caused by metallurgical processes; if such exist, they would be of grave concern for the basis of lead isotope provenancing. It was proved that such variations do not exist to the precision attainable (better than $\pm 0.1\%$) by existing methods of mass spectrometry. Any variations which may exist on a finer scale are therefore unimportant for lead isotope provenancing.

2. Work was carried out in 1995-6 with a Part 2 chemistry student on developing successfully a thermal ionisation mass spectrometric method for detecting small variations in the isotopic composition of copper in copper ore minerals and archaeological artefacts, with possible applications to provenance studies. It was proved that such small variations do occur in certain minerals, and that some artefacts (e.g. those analysed oxhide ingots from Hagia Triadha, Crete) also display non-normal copper isotopic compositions. These results were recently confirmed in 1997 using the very recently developed technique of Inductively Coupled Plasma Mass Spectrometry using magnetic sector mass dispersion and multicollection of the isotopes. This work was presented at the conference 'Metals in Antiquity' held in Harvard in September 1997, and is now being prepared for publication.

3. A method was devised for the mass spectrometric determination of the isotopic composition of tin metal and applied to tin ingots excavated from underwater off the coast of Israel and to 17th century AD tin ingots made from tin ores from the Erzgebirge in Saxony and Czechoslovakia, and to tin extracted from a range of Bronze Age bronze artefacts from the Mediterranean region. It was shown that the large variations in tin isotopic composition predicted, by the Bradford archaeometallurgy group, to result from processes such as remelting bronzes do not exist.

4. Methods were devised for the extraction of minute traces of lead from tin ores and from ancient tin ingots and for its subsequent thermal ionisation mass spectrometry. Preliminary work on tin ingots from the Bronze Age Uluburun shipwreck show close clusterings into two groups of lead isotope compositions which may eventually lead to identification of the tin sources then exploited. This is being explored with Dr R. Clayton under the aegis of a grant from the Leverhulme Trust.

Fieldwork and Museum work:

July 1997 - preliminary exploratory work for the eventual collection and survey of slag sites and small ore occurrences in the West Troodos (Cyprus) - with Dr G. Maliotis of the Hellenic Mining Corporation

September 1997 - completion, in Bodrum, Turkey, of the collection of artefacts and ingots from the shipwrecks of Cape Gelidonya and Uluburun.

October 1997 - collection of cassiterite and other tin minerals from the Truro Museum and the Camborne School of Mines.

Major projects in progress include:

(1) a project with the Institute of Nautical Archaeology, Texas (G. Bass and C. Pulak) on the metals found on the two Bronze Age shipwrecks 'Cape Gelidonya' and 'Uluburun', which is included in a larger project to study the Bronze Age trade in copper oxhide ingots throughout the Mediterranean.

(2) a joint project between the Bulgarian Academy of Sciences and the British Academy on Eneolithic and Bronze Age metallurgy in Bulgaria.

(3) a joint project with E. Galili and other archaeologists of the Israel Antiquities Authority on Bronze Age tin, lead and copper ingots from shipwrecks off the Israeli coast.

(4) a joint project has been agreed with the excavators (Professors Hayat and Armagan Erkanal, Ankara) on the abundant metal finds from their recent excavations of three Bronze Age sites on the Aegean coast of Turkey, especially Liman Tepe and Bakla Tepe where, apart from other periods, EBII Kastri group features are prominent, which links in with our work in the Cyclades, Thermi, Poliochni and Troy.

(5) a joint project has been agreed with Professor Turan Efe, Istanbul, on the many metal finds from his sites in the region of Eskisehir.

(6) a joint project has been agreed with Dr Toula Marketou on the metals from her Bronze Age sites in Rhodes and Kos.

Under other departments

Environmental Archaeology Unit (University Museum of Natural History)

Parks Road, Oxford, OX1 3PW (01865) 272983; fax (01865) 272970

Dr M.A. Robinson, Director (HBMC), University Research Lecturer

Mrs G.V. Campbell (HBMC)

Miss R. Pelling (OAU)

A major study was undertaken on plant and invertebrate remains from a late Bronze Age settlement on a former island in the Thames at Wallingford. Work is continuing on analysis of biological remains from the Thames floodplain at Yarnton, particular attention being paid to the origin of Oxey Mead, one of the botanical type-sites of mesotrophic alluvial floodmeadow (traditionally managed, species-rich riverside hay meadow). Good progress has been made on the analysis of samples from the Danebury Environs Project for charred plant remains. A review has been started of archaeoentomological research in Southern England.

The Oxford Archaeological Unit is now funding the employment of a research assistant to work on material from their excavations. Initial projects include the Swindon to Gloucester Road scheme and the Maidenhead to Windsor Flood Relief Channel. Developer-funded work has begun on charred plant remains from Kent, a part of the country which has previously received little attention.

A second season of fieldwork was undertaken at Pompeii and an undergraduate from Oxford was taken to assist. Follow-up laboratory analysis was done on the samples back at Oxford.

Eight Anthropology and Archaeology undergraduates were employed for a total of 22 weeks as vacation workers. Dr Robinson gave a paper on the environmental archaeology of an Iron Age site at Naqueville on the Normandy coast to a conference at Rennes.

Archaeometallurgy (Department of Materials)

Parks Road, Oxford, OX1 3PH, (01865) 273728/273779; Fax. (01865) 273794

Dr J.P. Northover (Research Fellow)

C.J. Salter (Research Fellow)

Dr B.J. Gilmour (Academic Visitor)

Archaeometallurgical research is based jointly in the Department of Materials where the Material Science Based Archaeology Group has its home, and in the Research Laboratory for Archaeology where the Cameca SEMPROBE is located. There is also a strong link with the Scanning Proton Microprobe group, now also part of the Department of Materials. The research is concerned with the investigation of all aspects of the metallurgical process, from smelting to metal finishing, and from the first use of alloys in the 5th/4th millennia BC to the Industrial Revolution. The themes of the research can be broadly labelled as archaeological and metallurgical. In archaeology the research derives from post-excavation and museum-based projects involving the characterisation of the products and residues of past metallurgical processes. The results are used to explore the place of metals in ancient economies and societies, how they were made, used, traded and recycled, how their properties were understood, and what processes were associated with their deposition and survival in the archaeological record.

The most extensive project relating to ancient bronze has been developed with the National Museums of Scotland arising out of the analysis of the St Andrews hoard. To put this hoard into a much wider regional context a rolling programme of analysis of the Scottish Late Bronze Age in general has been established which ultimately lead to a comprehensive re-evaluation of the metalwork of that period. On a much smaller scale a complete analysis of the Bronze Age metalwork of the Isle of Man has been completed. Our international links continue to prosper with the Universities of Vienna and Zürich on the early Iron Age in the Alps. Analysis of Zug-Sumpf is now complete and work will start in the coming year on the publication of the bronze from this important site. Further exploration of the Bronze Age in Syria has focused on objects from current excavations at Tell Brak (Cambridge University) and Tell Beydar (Catholic University of Leuven). A new link has been established with the National Museum in Slovenia. First steps into a planned expansion into industrial archaeology have taken place with a project on the metallurgy of artillery with the Royal Armouries and the Royal Artillery Museum). Cooperation is also being established with the National Railway Museum.

Now that a robust macro- and micro-typology for iron slag has been established there is a steady supply of work relating to post-excavation assessments for a wide variety of sites from the Iron Age onwards. The successful experimental programme of iron smelting with the Snowdonia National Park is fundamental to this but the sheer bulk of the material is an increasing problem. With the Department of Eastern Art at the Ashmolean Museum important results on Islamic steel are being developed with a new insight into the scope of the technology.

The two D.Phil. projects, on gilding and crucibles, have been completed, and a new project will be established on developing the scanning proton probe for non-destructive bronze analysis will start in 1997-8.

Scanning Proton Microprobe Unit (Department of Materials)

Dr G. Grime (Research Fellow)

From August 1997 this unit is now part of the Department of Materials and a close link has been formed between it and the Materials Science-based Archaeology Group. Two aims are to develop the external beam line for non-destructive or near non-destructive analysis of large artefacts, and to use the scanning and mapping facilities on the microbeam line as a metallographic tool. The former has been particularly successful in dealing with complex objects such as a medieval reliquary cross, while the latter has been applied to material difficult to tackle in other ways such as the examination of tin coating applied to some Mycenaean pottery. Results from a single post-excavation analysis of an emerald ring have shown that the in-situ characterisation of gems in ancient jewellery is a highly promising application for the instrument.

The Donald Baden-Powell Quaternary Research Centre (Pitt Rivers Museum)

60 Banbury Road, Oxford, OX2 6PN (01865) 274722

Dr D.A. Roe (University Lecturer in Prehistoric Archaeology)

The Centre was as busy as ever, although during the course of this year it has had to adapt to a somewhat changed way of life, following the retirement of Mr John Morris, its caretaker-cleaner and, indeed, its total staff. What one might loosely call broader

strategic considerations have dictated that he be replaced by a gallery attendant in the Pitt Rivers Museum's Balfour Building, which is adjacent to the Centre but also two locked doors away. It has been agreed that the Balfour Building staff should take over the cleaning duties, and answer the Centre's door whenever free to do so, so not all is lost, but it is a greatly inferior arrangement to having someone actually on the premises.

Unfortunately, the changes have also involved the Centre's Fax machine being moved to the Museum gallery, thereby becoming unreachable after 4.30 p.m. and, with the students' pay-telephone currently barred from outgoing long-distance calls, we sometimes feel a little cut-off from the outside world. These various small local difficulties seem worth recording as a sign of the times: perhaps our annual reports, read as a series, may one day make a thesis topic for a student in some University where scholarship and research continue to be encouraged. Meanwhile, we are not too enfeebled to thank John Morris for all his efforts over the past few years, and to wish him well in his retirement.

Visitors who came to the Centre this academic year for substantial periods of time included Professor Michael Walker and Mr Isaac Serrano, from Murcia University, Spain, and Dr John B. Campbell from James Cook University, Queensland, Australia, joined for a while by his colleague from James Cook University, Dr Alan Watchman. Amongst the long list of those making shorter visits, it was a particular honour and pleasure to welcome Professor Phillip Tobias from Johannesburg, Professor J. Desmond Clark from Berkeley, California, Professor Anthony Marks from Dallas, Texas, Dr Lars Larsson from Lund, Sweden, Dr Nikolas Praslov from St Petersburg and Dr Wang Youping from Beijing. Amongst our own graduate students, Mrs Julie Scott-Jackson successfully completed her D.Phil thesis, and will be staying on next year as a Research Fellow, thanks to a generous gift to the University from CSA to support her work. Dr Ruth Charles, postdoctoral researcher at the Centre, completes this year her tenure of the Randall Maclver Studentship at the Queen's College, and leaves us to take up a Research Fellowship at the University of Newcastle-upon-Tyne.

The two long-running major research projects associated with the Centre both continued throughout the year, with considerable success: the 'ARC Oxford Mammoths Project', involving excavations at Stanton Harcourt directed by Dr K. Scott and Mrs C. Buckingham, and work on the Prehistoric Archaeology of the Balearic Islands, directed by Dr W.H. Waldren. These are both referred to elsewhere in *Archaeology in Oxford 1996-7*, and the publications arising out of them are also listed.

Through the kindness of the Friends of the Pitt Rivers Museum, it has been possible to get some very useful and long-needed work done on the reordering and cataloguing of the books and reprints in the Centre's Library. Dr John Crammer, Mrs Joy Crammer and Mrs Jane Christie-Miller have been coming in to do this work. They have already spent a large number of hours on it, starting with Donald Baden-Powell's own reprint collection, and will certainly be continuing the task well into next academic year, if not indeed for ever: we are extremely grateful to them, and hope they enjoy being part of the currently slightly beleaguered but defiantly happy and productive community at 60 Banbury Road.

Department of Antiquities (Ashmolean Museum)

Beaumont Street, Oxford, OX1 2PH (01865) 278020/278023

- Dr P.R.S. Moorey, Keeper (Near East and Cyprus; Acting Director 1997-8)
- Mr M.J. Vickers, Senior Assistant Keeper (Cretan, Greek, Etruscan, Roman and Byzantine) and Reader in Classical Archaeology
- Dr A.G. Sherratt, Senior Assistant Keeper (European Prehistory) and Reader in European Prehistory
- Mr A. MacGregor, Senior Assistant Keeper (Dark Ages, Medieval and Early Modern)
- Dr H. Whitehouse, Assistant Keeper (Egyptology)
- Mr M. Norman, Chief Conservator

The Sunken Court Development Project was completed in September 1997. It provides the Department with modern storerooms at basement level and a new study gallery primarily for the reserve Greek Vase collection adjacent to the present Beazley Gallery. It was generously donated by Dr and Mrs Dietrich von Bothmer after whom it is named. The Petrie Gallery, containing the Museum's renowned Egyptian Predynastic collections, was refurbished in 1996-7 following the need to move the Min statues from Koptos into this Gallery. They had been displaced by the Forecourt Development Project from the Griffith Gallery. Mr Christopher Kirby, as Sackler Research Assistant in Egyptology, supervised the work throughout under Dr Helen Whitehouse's general supervision. Dr Susan Sherratt was appointed to undertake a major project on the Arthur Evans Archives supported by the Getty.

Heberden Coin Room (Ashmolean Museum)

Beaumont Street, Oxford, OX1 2PH (01865) 278058

- Professor D.M. Metcalf, Keeper (Byzantine and Early Medieval)
- Mr N.J. Mayhew, Senior Assistant Keeper (Medieval and Modern Coins, and Medals) and Reader in Numismatics
- Dr C.J. Howgego, Assistant Keeper (Roman)
- Dr W.L. Treadwell, Assistant Keeper (part-time) (Islamic)
- Mr H.S. Kim, Assistant Keeper (Greek)
- Dr C.E. King, Research Assistant (Roman and Celtic)
- Dr P. Nightingale, Research Assistant (Leverhulme Trust grant)
- Mr S. Album, Sackler Fellow (Islamic)
- Mr V. Heuchert, HRB/Funding Councils' Institutional Fellow (Roman provincial coinage project)

The Coin Room, which is one of the leading international centres of research in numismatics and monetary history, houses a systematic collection of about a third of a million coins, medals, and tokens. The staff are involved in teaching at both undergraduate and graduate levels.

Cast Gallery (Ashmolean Museum)

Beaumont Street, Oxford, OX1 2PH (01865) 278079

Professor R.R.R. Smith (Curator)

A new computer was purchased with the help of the museum at the beginning of the year, to pursue work on a database of the casts held in the Cast Gallery and in its stores. The Beazley catalogue of the casts has been successfully input and two thirds of

the photographic record has been scanned. With the help of the museum and a grant from SEMS, purpose-built racking was set up for casts held in the Old Power Station at Osney. All have now been photographed and recorded. A lifting beam was fitted in the conservation laboratory and a number of heavier casts have now been treated safely. A condition assessment of the gem collection in its new study room was also carried out and the catalogue updated with the help of Scott Marchand (student MA Museum Studies St Andrews). The Gallery Conservator, Daniel Bone, visited collections in Europe to look at the conservation and display of plaster sculpture with funding from a Gabo Trust scholarship.

The following pieces in the collection were moulded and cast at the gallery: four Henning miniature reliefs of the Parthenon and Bassae friezes; two miniature Raphael cartoons; an early nineteenth century edition of gems of the twelve emperors and a theatre mask from Aphrodisias. Moulds were also made of two heads, Livia Drusilia [1941.808] and Hermes [1974.438] with the Department of Antiquities. Casts from the Parthenon frieze [AO87a, AO87b] were lent to the Department of Western Art's Canova exhibition and Chantrey's bust of Wellington from Western Art was cleaned by the Gallery for the same display.

The mezzanine of the Gallery, in addition to storing casts and larger gem cabinets, has been successfully adapted for use as a study area for small classes with a slide screen and blinds. The Gallery continued to hold life drawing classes through the year organised by Sarah Reason.

Maritime Archaeological Research (MARE) (Non-departmental)

Mensun Bound (Director)

February and March 1997 were spent carrying out underwater surveys off the Uruguayan side of the River Plate in collaboration with the Uruguayan Department of Heritage, the University of Montevideo and the Uruguayan Navy. The main focus of the work was Lord Nelson's *Agamemnon*, a ship which fought in the Battle of the Saints, both battles of Copenhagen and was in Nelson's column at Trafalgar. The *Agamemnon* had been under Nelson's command during the Mediterranean campaign prior to his promotion to admiral. One iron cannon was recovered, the only known gun in existence from Trafalgar. A survey was also conducted on a Spanish troopship (*Salvador*) of the Napoleonic era. At the request of the Uruguayan authorities a survey was carried out on the World War II German 'pocket' battleship *Graf Spee*; this resulted in the recovery of one of its 150mm guns which is now on public display in Montevideo.

In August MARE directed a deep-water survey on a 17th century porcelain wreck off Cu Lao Cham, Vietnam. The work, which was conducted with mixed-gas, used professional divers and a diving-spread brought in from Singapore. The project was in collaboration with the Vietnamese archaeological authorities and Vietnamese and Malaysian underwater engineering companies.

A three-part TV series on the work of MARE was made for the American Discovery/Learning Channel. Papers were given at conferences in Italy and USA.

General activities

Seminars, Lectures and Conferences

Sponsored by the Committee or by members of staff, in addition to the normal lecture programme.

German for Archaeologists (Miss G. Seidmann)
One week's intensive course

Hillfort Study Group (G. Lock, Chairman)
Day Conference

Undergraduate Annual Fieldwork Mini-Conference (Hilary Term)

Ancient Architecture Discussion Group J.J. Coulton
Seminars throughout the year

Medieval Archaeology Seminars

- Tyler Bell: A Roman Signal Station at Whitby
- Jean Cook: Anglo-Saxon Buckets
- Bob Cowie: Middle Saxon London
- Julian Munby: Medieval Technology & Carpentry. The Waggon and the Origins of the Coach
- Gill Hey: An Early Medieval Landscape at Yarnton

Oxford Archaeological GIS Discussion Group G. Lock
Regular meetings, commencing in Hilary Term

Roman Republican Workshop (in conjunction with the Ancient Architecture Discussion Group)
A lecture by E. Papi, *In conspectu totius urbis* Republican houses on the Palatine

Lectures organized by GAO and the Committee for Archaeology

- D. Bailey (Cardiff University): James Bond and the reality of Bulgarian archaeology
- Rob Foley (University of Cambridge): Evolutionary Geography of Human Evolution
- Gill Hey (Oxford Archaeological Unit): The Yarnton-Cassington Project: investigations of a Neolithic to Medieval landscape in the Upper Thames valley
- A. Reynolds (UCL): Anglo-Saxon Execution Cemeteries: Their Origins, Development and Ideology

Institute Lunchtime Seminars (R. Osgood)
Lectures were given by

- Amanda Claridge: Castelporziano: playing with the boars
- Philip de Jersey: Excavations at Lihou Priory, Guernsey
- Chris Finn: A little souvenir: the tale of the Marquess and the Mycenaean columns
- Philip Kenrick: Italian Sigillata pottery or Marcus Perennius meets his database
- John Lloyd: The Euesperides Project
- Gary Lock: Peru
- Richard Osgood: Not the Seven Pillars of Wisdom; some sites of Jordan
- Nigel Spencer: The Madra Çay Delta near Altinova in Northwest Turkey

- Andy Wilson: Fezzan Project 1997: Fieldwork in the Libyan Sahara

Other Lectures

- Tamsey Andrews (Harvard): The Bronzes of Geometric Olympia: Bronze Casting in Greece, Italy and the Hallstatt Area
- Nicolle Hirschfeld (University of Texas at Austin): Ways of exchange in the Late Bronze Age East Mediterranean: the evidence of pot marks
- Amos Kloner (Bar Ilan University and Israel Antiquities Authority): Recent Excavations at Roman Bet Guvrin (Eleutheropolis)
- Krzysztof Nowicki (Institute of Archaeology and Ethnology, Warsaw): The Cretan Dark Age: changes in everyday life and economy
- Roger Thomas (English Heritage): Worlds Apart? Archaeology and Archaeological Heritage Management in Britain Today

Seminar in Ancient Numismatics (C.J. Howgego and H.S. Kim)

- Harold B. Mattingly 'Pergamum under the Attalids and the Beginnings of the Cistophoroi'
- Kerstin Höghammar 'Expansion, War and Koan coinage c. 200 BC'

Publishing Activities

Journals

- *Anglo-Saxon Studies* (Institute)
- *Archaeometry* (Research Laboratory)
- *Archaeological Computing Newsletter* (Institute)
- *Oxford Journal of Archaeology* (Institute for Blackwells)
- *Journal of the History of Collections* (Ashmolean Museum)

Monographs

Oxford University Committee for Archaeology Monographs

- 42 *The Archaeology of Cathedrals*
T. Tatton Brown and J. Munby (eds.)
- 43 *Guernsey: An Island Community of the Atlantic Iron Age*
B. Burns, B. Cunliffe and H. Sebire
- 44 *Egyptian and Egyptianizing Scarabs*
A.F. Gorton
- 45 *Armorica and Britain. Cross Channel relationships in the late first millennium BC*
B. W. Cunliffe and P. E. de Jersey

REPORTS FROM PERMANENT ACADEMIC STAFF

Prehistory

Dr C. Gosden, Pitt Rivers Museum, 64 Banbury Road, OX2 6PN.

He lectured in undergraduate and M.St. courses on The Nature of Archaeological Enquiry, Regional Studies in Material Culture, People Environment and Culture. For

Hilary and Trinity terms he was on sabbatical and held a Fellowship in the Research School of Pacific and Asian Studies at the Australian National University. Here he finished writing up fieldwork in both New Britain Province of Papua New Guinea, and wrote most of a book on Archaeology and Anthropology, in addition to writing up fieldwork in Turkmenistan. He also edited a volume from the World Archaeology Conference 1994 entitled 'Subsistence and Social Change'. He is also coordinating the cataloguing of archaeological holdings in the Pitt Rivers Museum from Europe, concentrating on the Cypriot material. He started a Leverhulme-funded project on material culture and colonialism in Papua New Guinea and visited collections of material from Papua New Guinea in the Field Museum in Chicago. He was external examiner at the Institute of Archaeology in London. He sat on the editorial boards of World Archaeology, Archaeology in Oceania and the Cambridge University Press World Archaeology series.

Current research interests are:

Archaeological approaches to time, the archaeology of landscape, archaeology and colonialism, the links between archaeology, history and anthropology in the Pacific.

Specific research projects include:

- The Archaeology of West New Britain, Papua New Guinea
- The origins of agriculture in Turkmenistan
- Hillforts of the Ridgeway Project
- Colonialism and material culture in Papua New Guinea

Derek Roe continued as University Lecturer in Prehistoric Archaeology and Hon. Director of the Donald Baden-Powell Quaternary Research Centre, which is a part of the Pitt-Rivers Museum. He also held the post, for a second and final year, of Director of Graduate Studies for the Committee for Archaeology, and Chairman of its Graduate Studies Committee. In July 1997 he was awarded the title of Professor of Palaeolithic Archaeology by the University's Distinctions Committee.

He gave his usual courses on Palaeolithic Archaeology and associated topics for graduates taking M.St and M.Phil. courses in European and World Archaeology, and for undergraduates taking certain Final Honours School options, in both Archaeology & Anthropology, and Geography. He also gave several special lectures and classes for first and second year undergraduates in Archaeology and Anthropology, and provided a number of lecture-demonstrations on the subject of Palaeolithic artefacts for parties of visiting students. He continued to supervise three doctoral research students, one of whom (Mrs Julie Scott-Jackson) successfully completed her D.Phil. thesis during the year. He acted as an Assessor for the Final Honours School in Archaeology and Anthropology, and examined a doctoral thesis for the University of Pune, India. He remained a member of five Editorial or Editorial Advisory Boards of international Journals, and continued to serve on the Archaeology & Numismatics Advisory Committee of the National Museums & Galleries of Wales, and on the Scientific Advisory Panel of the Irene Levi-Sala CARE Foundation (the purpose of which is to assist research on, or relevant to, the Early Prehistoric Archaeology of Israel). He continued research on various aspects of the British Palaeolithic, one being his advisory role for the National Museums and Galleries of Wales' research project on the Early Stone Age of Wales, in which the latest site to be studied is Paviland Cave (Gower

Peninsula). He has also made a study of the stone artefacts from the important Middle Pleistocene site at Dix Pit, Stanton Harcourt, Oxfordshire, which is being excavated by Dr Katharine Scott and Mrs Christine Buckingham; this year has seen publication of the first substantial interim report on the geology, faunal remains and artefacts there. He spent some weeks during the summer assisting in the final editing for publication of a major research report on the stone artefacts from the Palaeolithic floors at Kalambo Falls, Zambia - which he actually completed and submitted many years ago for inclusion in volume 3 of the *Kalambo Falls* monograph series. It looks as if this volume really will go to press in the foreseeable future.

P.J. Mitchell University Lecturer in African prehistory and Curator of African archaeology, Pitt Rivers Museum

He lectured for the undergraduate degree in Archaeology and Anthropology and coordinated the Honour Moderations course *Introduction to World Archaeology*, as well as serving as an examiner for Mods, Chairman of Examiners for the M.St. in Anthropological Archaeology and organiser of the second Archaeology and Anthropology Open Day. He also served as Secretary and then Chairman of the Sub-faculty of Archaeology, Secretary of the Standing Committee for Archaeology and Anthropology, Secretary of the Management Committee of the School of Anthropology and Museum Ethnography and Safety Officer of the Pitt Rivers Museum. He examined a M.Sc. thesis on behalf of the University of Cape Town. He continued to write up fieldwork from previous seasons' excavations and field survey in Lesotho and again visited South Africa to consult with colleagues there. Though not carrying out fieldwork himself this year, he again made arrangements for Oxford undergraduates to work on projects in South Africa. He completed work on a catalogue of the southern African Stone Age archaeological collections of the British Museum and continued to serve as Secretary to the Commission on Archaeology and Human Palaeoecology of the International Quaternary Association (INQUA).

Current research interests are:

The relations between cultural and environmental change among hunter-gatherer societies, the evolution of the cultural systems of southern African hunter-gatherers and the study of prehistoric exchange networks.

Specific projects include:

- Hunter-gatherer landscapes of the Lesotho highlands
- Later Stone Age archaeology of the Phuthiatsana Basin, Lesotho

European

Barry Cunliffe Professor of European Archaeology

Two fieldwork-based programmes were undertaken this year. In July work continued at the promontory fort of Le Yaudet (Côtes-d'Armor), Brittany exposing an area occupied from the Late Iron Age to the late medieval period. This was followed in August by the excavation of a Roman villa on Houghton Down in Hampshire as the first stage of the *Danebury Environs Roman* programme. One of our earlier projects, the *Guadajoz Project*, was completed with the submission of the final report to the Junta de Andalucía. Publication is pending. Work proceeds on the preparation for publication of the eight

excavations, undertaken as part of the earlier *Danebury Environs Project*.

Visits have been made to archaeological sites in Brittany, Galicia, Ireland and around the Black Sea.

Professional activities outside the University include Governorship of the Museum of London, membership of the Ancient Monuments Advisory Committee of English Heritage, membership of the Discovery Programme Council (in Ireland), general editorship of *Internet Archaeology* and membership of the Scientific Archaeology Strategy group of NERC.

Current research interests are:

Social and economic change in the first millennium BC in Europe. The present emphasis is on Atlantic trading systems, cultural interactions and state formation in southern Iberia and social hierarchies in central southern Britain.

Specific research projects include:

- The Danebury Environs Roman Project
- The Le Yaudet Project, Brittany
- The Wessex Hillforts Project

Dr A.G. Sherratt Reader in European Prehistory and Senior Assistant Keeper in the Ashmolean Museum

Andrew Sherratt was awarded Dfl 150,000 from the Erasmus Prize awarded to the world historian Professor W.H. McNeill, to be used in promoting a comprehensive view of human history from prehistoric times down to recent times. In addition to lecturing, teaching and examining in Oxford, he acted as Faculty Opponent in the University of Lund (where he also lectured) and lectured to the Society of Antiquaries of Scotland in Edinburgh and gave a plenary lecture to the Anglo-American conference of Historians in London. He arranged a memorial meeting for Professor Stuart Piggott, FBA, held in St John's College. He gave a paper (together with Dr E.S. Sherratt) to an international conference in Cincinnati on 'The Aegean and the Orient in the 2nd millennium BC.'

Current research interests are:

Early farming and the transition to urbanism; the intellectual history of archaeology; cultural transmission and long-distance exchange routes; shamanism and psychotropic substances; megalithic monuments in Brittany; eastern and east-central Europe; global change.

Helena Hamerow University Lecturer in Medieval Archaeology

Has taught topics on early Anglo-Saxon England early Medieval Europe, 400-900 at undergraduate and postgraduate level and supervised six research students as well as two M.St. candidates.

Research in 1996-7 included the completion of two articles, one on 'Rural centres, trade and production in England and the Continent, c. 400-900' for the Proceedings of the Arbeitsgemeinschaft für Sachsenforschung, the other on 'Anglo-Saxon Timber

Buildings, The Continental Connection', to appear in a *Festschrift* in 1998. The volume, *Migrations and Invasions in Archaeological Explanation: Long-term Perspectives* (jointly edited with John Chapman) appeared in 1997 and work continues on a book on rural communities in early medieval Europe. Also completed are several entries for Blackwell's *Companion to Anglo-Saxon England*. She is also preparing the chapter on 'The earliest Anglo-Saxon kingdoms' for the new *Cambridge Medieval History* and undertaking an analysis of the timber buildings at the Anglo-Saxon high-status settlement/minster at Flixborough on behalf of English Heritage.

External to this university, she continues to serve on the Academic Committee and Council of the Oxford Archaeological Unit and to act as Reviews Editor for the Royal Archaeological Institute. She joined the Council of the Medieval Pottery Research Group and acted as an External Examiner for the Masters Degree in Medieval Studies for the University of York.

A.G. MacGregor Senior Assistant Keeper in the Department of Antiquities, Ashmolean Museum

Continued to serve as Director of the Society of Antiquaries and as co-editor of the *Journal of the History of Collections*. He lectured to an international symposium on 'Les Ecuries Royales des XVI-XVIII siècles' at Versailles and to a workshop on the history of museum and gallery display at the Scuola Normale Superiore at Pisa. A catalogue of the Ashmolean's continental Migration Period collections was brought to completion and published, and a more popular guidebook to the medieval collections (with M. Hook) also appeared under his name in the course of the year. From May to October he was on sabbatical leave, working on a book on the history of museums.

Roman

E.M. Steinby Professor of the Archaeology of the Roman Empire

The *Lexicon Topographicum Urbis Romae* vol. III was published and vol. IV is being edited. The papers of a seminar organized in 1994 in Rome were edited and published (*Ianiculum - Gianicolo*). Research on the Via Triumphalis necropolis in Rome was taken up during a sabbatical spent in Rome. A month's working session in Oxford was organized for five Finnish postgraduates doing research on building activity in Republican Rome. Lectures were given at the British Archaeological Association, at the British Epigraphy Society and for the British School at Rome postgraduate course.

Current research interests are:

The topography of ancient Rome; the necropolis of the Via Triumphalis in Rome; politics and ideology in the building history of republican Rome; the excavations at Lacus Iuturnae, Rome; Roman brickstamps and building industry.

J.A. Lloyd University Lecturer in Roman Archaeology

Fieldwork continued in the Sangro valley, Italy in August/September. He continued to serve on the Council of the Society For Libyan Studies and as its Head of Mission. He gave invited lectures at Leicester University and at Boiano, Italy (Premio E.T. Salmon) and attended and gave papers at conferences in Rome and London.

Current research interests are:

Town and country in the central Mediterranean lands (particularly Italy, Libya and Greece).

Specific projects include:

- The Sangro Valley Project (Italy)
- Euesperides Excavations (Libya)

R.R.R. Smith Lincoln Professor of Classical Archaeology and Art

Professor Smith lectured for the University on Greek sculpture, Greek and Roman wallpainting, and Greek and Roman art (an Introduction), gave graduate classes on Hellenistic and Roman sculpture, and organised a seminar for graduates and faculty on 'The Greek East in Second Century AD: Art, Literature, and Politics', with E.L. Bowie and S.R.F. Price (HT). He examined in Mods and Greats, and was the Chairman of Examiners for the M.St. and M.Phil. degrees in Classical Archaeology. He gave papers at conferences in Ankara, Nottingham, New York (AIA); invited lectures in Munich (University), London (Romans Society, Courtauld Institute, Friends of Alexandria Library), Rome (German Archaeological Institute); and seminar papers in Oxford (Ancient History seminar, Byzantine Studies seminar). He also gave fund-raising lectures in London, Paris, Izmir, New York. He was a consultant for a BBC Timewatch program on Cleopatra, and is acting as a consultant for the Oxford *Illustrated History of Western Art*. In the summer he directed a seventh season of archaeological research and excavation at Aphrodisias in Caria (SW Turkey).

Current research interests are:

Greek and Roman portrait sculpture, the art and archaeology of Asia Minor in the Hellenistic and Roman periods

Specific projects include:

- Aphrodisias Excavations

Dr J.J. Coulton, Reader in Classical Archaeology

Dr Coulton was granted sabbatical leave for the academic year 1996-7. The main purpose of this was to work on the final publication of the Balboura Survey project, and this was carried out partly at Oxford, partly at the British Institute of Archaeology at Ankara, where the facilities proved admirable for the purpose, and partly in Athens, using the library of the British School of Archaeology there. Most of the fundamentals and much of the draft text are now complete. However, during October 1996 he also directed excavations at Phylla (Euboea) in co-operation with the Ephor of Antiquities, Dr E. Sakellarakis, and devoted some time to study of the results and making arrangements for further work at the site. He also visited ancient sites in the region of Athens and in northwest Greece.

Current research interests:

- Greek and Greco-Roman architecture

- Archaeology and history of Lycia
- Greek fortification

Specific projects include:

- The Balboura Survey
- The Phylla Fort Project
- The Euhesperides excavation

D.C. Kurtz, Reader in Archaeology and Beazley Archivist

Lectured, tutored, and supervised for the Faculty of Literae Humaniores. Directed Beazley Archive (Sections 2 and 4). Attended EU meetings in Florence, Brussels, and Paris, academic conferences in Basle and London. Continued research on History of the Cast Collection.

Dr M. Mango Lecturer in Byzantine Archaeology and Art

Dr Mango taught for the M.Phil. and M.St. degrees for the Committee for Archaeology and the Committee for Byzantine Studies, lectured for the History Faculty, and co-convened two termly seminars. With Dr. J. Bardill, she was co-director of a course on the Archaeology of the Byzantine City for the Department for Continuing Education at Oxford, at which she gave two lectures. She also gave papers at the Byzantine Studies and After Rome seminars. She acted as Chairman of Examiners for the M.St. in Byzantine Studies and as an Assessor for the M.Phil. in Classical Archaeology at Oxford. She was invited to lecture at Kings College London, to act as a discussant for a paper given at a workshop at SOAS in London, and to serve as an examiner of a doctoral thesis for the Institut d'Art et d'Archéologie in Paris. She also served as Secretary of the Oxford Amorium Advisory Committee for the British Institute of Archaeology at Ankara. She continued to cover UK publications on Byzantine archaeology and art for *Byzantinische Zeitschrift* and was invited to join the Board of Directors of the American Associates of the Saint Catherine Foundation, Inc. in New York.

Current research interests are:

Urbanism in the eastern provinces of the Empire, Byzantine trade, late antique secular architecture and art.

Specific projects include:

Catalogue of late antique and Byzantine objects in the Ashmolean; Computerisation of the Tchalenko Archive

Michael Vickers Reader in Classical Archaeology, Senior Assistant Keeper, Ashmolean Museum

Curated the Ashmolean's Greek and Roman collections and served as Acting Keeper of Antiquities from 1 September 1996 to 31 March 1997. Served as Convenor of the Classics Sub-Group of the Sub-faculty of Archaeology. Gave the keynote address at the Roman Lifestyles seminar at the University of Pennsylvania Museum, and read papers at the Eighth Vani Symposium, Republic of Georgia, the Annual Meeting of the

American Ceramic Society, Cincinnati, the Liverpool University Black Sea Symposium, and the Annual Meeting of the Israel Society for the Promotion of Classical Studies. He lectured at George Washington University, and to the Philadelphia Chapter of the Archaeological Institute of America, the Friends of the Tampa Art Museum, the Friends of the Northampton Museums and Art Gallery, and the Bristol Branch of the Anglo-Hellenic Society. He was the host for a visitor from Georgia under the British Academy/Foreign and Commonwealth Office Fellowship Scheme for Younger Scholars from the Former Soviet Union. He visited museums and archaeological sites in Georgia under the British Academy/Georgian Academy of Sciences Exchange scheme. He was elected a member of the Scientific Committee of the Monumenta Antiqua Orae Septentrionalis Ponti Euxini, Warsaw, and a founding member of the Holy Land International Committee, Tbilisi.

Current research interests include:

Ancient material values and metrology. The publication of finds from the Ashmolean Expedition to Cyrenaica's excavation at Euesperides, Benghazi in 1952-54. Political imagery in Greek art and literature. The archaeology and monuments of Georgia.

Egyptian and Near Eastern

P.R.S. Moorey Keeper of the Department of Antiquities, Ashmolean Museum

He has continued to teach and lecture for the Committee for Archaeology following two terms (Michaelmas and Hilary) on sabbatical leave, during which he spent a month lecturing in various Australian Universities as McNicoll Memorial Lecturer. He has supervised for the Faculty of Oriental Studies and continues to serve as President of the British School of Archaeology in Jerusalem.

Current research interests are:

Catalogue of the Ancient Near Eastern Terracottas in the Ashmolean Museum; early state formation in Egypt and Mesopotamia; history of archaeology in the Near East

H.V. Whitehouse Assistant Keeper in the Department of Antiquities, Ashmolean Museum

She delivered papers at the conference 'Life on the Fringe in Roman Egypt' (Netherlands Institute, Cairo), and the British Museum Egyptian colloquium, 'Current Research in British

Museums', lectured to the Friends of the Petrie Museum and the Young Friends of the Ashmolean, and completed her term as Editor-in-Chief of *Journal of Egyptian Archaeology*.

Current research interests are:

Drawing and painting in Roman Egypt; seventeenth-century drawings after the antique; the post-pharaonic reception of Egyptian antiquities

Specific projects include:

Publication of the catalogue *The Paper Museum of Cassiano dal Pozzo, Al: Drawings of Ancient Paintings and Mosaics*; recording and publication of Roman paintings on the site of Kellis (Dakhleh Oasis, Egypt)

Numismatics

D.M. Metcalf Keeper, Heberden Coin Room, Ashmolean Museum

Taught two students for masters' degrees in Byzantine Studies, and one in medieval Norwegian numismatics. He continued to serve as President of the Royal Numismatic Society and President of the UK Numismatic Trust. He visited Cyprus in the spring to pursue his researches on Lusignan coinage, and lectured in the Netherlands in June and July.

Current research interests are:

The coinage of the Sueves in NW Iberia; late Anglo-Saxon monetary circulation; the Lusignan dynasty in 13th-century Cyprus; Anglo-Saxon sceattas.

N.J. Mayhew Senior Assistant Keeper and Reader in Numismatics. Heberden Coin Room, Ashmolean Museum.

Is on sabbatical leave 1.7.97 to 31.3.98. Over the year he gave a number of classes for the Modern History Faculty and continued to serve on the Advisory Committee of the Department of Archaeology and Numismatics at the National Museum of Wales, and to supervise the Leverhulme Research Project on Debt in medieval England. He visited the Hunterian Museum in Glasgow to study the numismatic exhibition there, enabling him to compare the displays with other new coin galleries in London and Lübeck. He worked in the Bibliothèque Nationale and the Bibliothèque Sainte Geneviève in Paris in May, with the help of a grant from the Sir John Hicks Fund. In August he lectured on money at a conference in Bristol on 'Medieval Futures'. In September he spoke at the XIIth International Numismatic Congress in Berlin on West European Feudal Coinages.

Current research interests are:

Medieval credit; English monetary history, with special reference to its influence on prices; mint organisation; feudal coinages in Europe. The history of sterling.

C.J. Howgego Assistant Keeper, Heberden Coin Room, Ashmolean Museum;
University Lecturer in Roman Numismatics

Gave twenty lectures, supervised four D.Phil. students (one of whom successfully submitted), and acted as an Assessor for the M.Phil. in Greek and Roman History. He lectured to parties of students from Reading University and the Open University, and gave papers at the Norwegian Numismatic Society, Oslo University, and Keele University. He was awarded the Lhotka Memorial Prize by the Royal Numismatic Society, and the Bjørnstad Medal by the Norwegian Numismatic Society.

Current research interests are:

Coinage and history (especially, at the moment, cultural history); Roman provincial coinage

W.L. Treadwell Assistant Keeper (part-time), Heberden Coin Room, Ashmolean Museum

Gave 24 lectures on Islamic monetary history to students in the M.St./M.Phil. in Islamic Art and Archaeology. He supervised one D.Phil. student, and gave tutorials to Arabic undergraduates on early Islamic history. He visited Tübingen University in March to work in the Forschungsstelle für islamische Numismatik.

Current research interests are:

Bukharkhuda coinage; coinage of Iraq and Iran during the Buyid period, the Islamic mint of Marv.

H.S. Kim Assistant Keeper, Heberden Coin Room, University Lecturer in Greek Numismatics

Gave sixteen lectures on Greek coins and taught one candidate for the M.Phil. in Classical Archaeology. He lectured in the NADFAS Foundation course series, and spoke to the University Archaeology Society, the Hellenic Numismatic Society (Athens, Greece), and the University Numismatic Society. He offered classes on Greek coins to the Friends of the Ashmolean and to several groups of ancient history students from St John's College. He gave papers at the Centre for the Study of Ancient Documents, Oxford and at a conference on Greek economic history at Darwin College, Cambridge. As part of his current research, he made study visits to the American Numismatic society, the Numismatic Museum in Athens, and the Bibliothèque Royale Albert in Brussels.

Current research interests are:

The development and spread of early Greek coinage; metallurgical applications to numismatics

C.E. King Research Assistant, Heberden Coin Room, Ashmolean Museum

Lectured jointly with Dr C. Howgego to a party of Open University students in July. She supervised a D.Phil. student and gave informal tuition on late Roman coins to a number of graduate students. Supervised one D.Phil. student and lectured to students of the Open University. She completed her book on metal analyses of Roman coins which will be published in the British Museum Occasional Papers series. She began a period of seven months leave on 1 June. She has been awarded a travel grant to visit Vienna by Somerville College.

Current research interests are:

Roman numismatics from 3rd-5th centuries AD with specific programmes on revision of *Roman Imperial Coinage* Vol. V, pt. (AD 253-268); catalogue of Roman quinarii; catalogue and analysis of a 3rd century AD antoninianus hoard (Dorchester, Dorset, c. 10,000 coins), and a late Roman hoard from N. Africa (with A. Cepas); catalogue of the coins of Valerian and Gallienus and family in the Gneccchi Collection in the Museo Nazionale, Rome

N.H. Gale, MA, D.Sc., Director of the Isotrace Laboratory, University Professor of Archaeological Science

The Isotrace Laboratory in Oxford is the only existing centre equipped with the most up-to-date high quality facilities for Thermal Ionisation Mass Spectrometry applied solely and specifically to archaeological and related materials. The laboratory has set up methods and techniques for analysing lead, copper, strontium, neodymium, uranium and thorium isotopes in metals, minerals and rocks used as raw materials in antiquity. A special concern of the Isotrace Laboratory lies in the analyses, for provenance studies, of milligram samples of silver and copper based metals, pigments used in paintings, glasses and glazes for their lead isotope compositions. The extensive comparative data base acquired over the last twenty years allows good assessments to be made of the origin of raw materials used for the production of these materials.

A major interest of the Director of the Laboratory in the last year was a study of possibilities of using measurements of the isotopic composition of tin and isotope compositions of lead present in tin and cassiterite. A new, much improved, low blank method was invented for the extraction of lead from difficult matrices; the method is quicker and less demanding than previous known methods, and at last solves the problem of extracting small amounts of lead from tin ingots for reliable isotopic analysis.

An important, unsolved, problem of Bronze Age Mediterranean archaeology is the source or sources of tin used to make tin bronze. Thus far science has been powerless to solve this problem. Using the new analytical method mentioned above, a start has been made on a possible approach by comparative analyses of the lead isotope composition of the traces of lead in tin ingots from the Uluburun wreck and from underwater excavations off the coast of Israel, with that in cassiterite samples from the principle relevant tin deposits. Coupled with this has been the development of a method of measuring tin isotopic compositions themselves. Application of this technique has demonstrated that large fractionation of the isotopic composition of tin does not exist in the studied tin metal and tin bronze artefacts from the prehistoric Mediterranean region.

A major recent instrumental breakthrough has been the development of a new class of Inductively Coupled Plasma Source mass spectrometers (ICPMS). These instruments replace the older quadrupole mass analysis by magnetic sector mass analysis and are equipped with multiple ion beam collectors, the ICP source does not exhibit the time dependent isotopic fractionation which limits thermal ionisation mass spectrometry. These new instruments are thereby able to achieve or surpass the precision and accuracy achievable by TIMS, at the same time they are able to analyse a much wider range of elements more rapidly. Another preoccupation of the Director has been to investigate the use of such a machine to confirm the earlier TIMS data for copper isotope variations. This has completely confirmed the TIMS data, but to a higher degree of accuracy and in an order of magnitude less time. The time is now ripe to employ this technique in the exciting new fields of application to archaeological provenance work of variations in the isotopic compositions of copper and tin, building on the basis of the pioneer work of the Isotrace Laboratory. Many other applications of these new instruments to archaeology are possible, not only in metals provenancing but in the study of ancient diets etc.

Conferences at which invited papers were presented by N.H. Gale:

British delegate to the International Symposium 'Troy and its Treasures', Pushkin Museum, Moscow, November 1996.

International Symposium 'Metals in Antiquity', Harvard University, September 1997

International Symposium 'The Aegean in the Neolithic, Chalcolithic and Early Bronze Age', Urla, Turkey, November 1997.

R.E.M. Hedges Professor of Archaeology, Director of the Radiocarbon Accelerator Unit

In addition to regular teaching duties, Professor R.E.M. Hedges continued to direct the Radiocarbon Accelerator Unit, and to direct the research of various groups involved with ancient diet (from stable isotope analysis), ancient DNA, and the alteration of bone and proteins over archaeological time. For two terms of the year he was Acting Director of the Research Laboratory for Archaeology, and Acting Editor for Archaeometry.

He presented papers at the following conferences:

Ancient Biomolecules (Cambridge) - organized by NERC

Colloque d'Archaeometrie 97 (Rennes, Brittany)

16th International Radiocarbon Conference (Groningen)

5th Advanced Seminar on Palaeodiet (Valbonne)

He visited some cave art sites (Aguada culture) in Argentina for sampling of the pigments, in November 1996, and in September 1997 visited palaeolithic cave sites on Gibraltar for assessment and sampling for radiocarbon dating.

G.R. Lock University Lecturer in Archaeology (Computing and statistical methods)

His time is divided equally between the Institute of Archaeology and directing the archaeology programme in the Department for Continuing Education. He teaches on the undergraduate degree course, supervises research students and gives general courses on using computers in archaeology. Current research interests include approaches to landscape archaeology and how the use of GIS technology can fit with current landscape theory. Fieldwork based on the hillforts of the Ridgeway in Oxfordshire (with Dr C. Gosden) and on Monte Pallano in Abruzzo, central Italy (with Dr J. Lloyd), provide the practical basis for the GIS research. Other work this year has included postexcavation on material from Uffington Castle, King's Low and Queen's Low and speaking on this work at the Theoretical Archaeology Group Conference, a Prehistoric Society research weekend, a research seminar at Leicester University and to the Friends of Oxfordshire County Museum.

Dr Lock edits the *Archaeological Computing Newsletter*, is secretary of the Hillfort Study Group, sits on the Council for British Archaeology Education Committee, the Technical Panel of *Internet Archaeology* and the Management Committee of the Archaeology Data Service. Within the University he is Chairman of the Committee for Archaeology IT subcommittee.

J.P. Northover (Department of Materials)

As a research fellow in the Department is responsible for the Materials Science-Based Archaeology Group and for archaeological collaboration with the Scanning Proton Microprobe Unit in the Department. Principal activities are post-excavation and museum-based studies of non-ferrous and precious metal artefacts with a wide range of collaborators, supervision of research students (in Oxford and at the Universities of Sheffield and Poitiers), and his own research interests in developing metallography as a tool for understanding the whole life history of a metal artefact. Also concerned with using the archaeological record to illuminate current problems in physical metallurgy.

Z.A. Stos-Gale MA, D.Phil. 1996-7. INSTAP Research Fellow; University Research Lecturer

Major activities in this period were to oversee the day-to-day activities of the Laboratory, to continue supervision of a research student from Birmingham, and to work on the interpretation of lead isotope analyses of Bronze Age artefacts from Crete and Peloponnesian sites, in preparation for publication of these large projects, carried out under the aegis of the five year British Academy grant. She also undertook paid service work to augment the finances of the Laboratory, and undertook the completion of bodies of ore lead isotope analyses in preparation for regular publication in *Archaeometry*.

Teaching

She gave regular tutorials, for various colleges, in archaeological science for undergraduates in the Oxford archaeology/anthropology course.

Conferences

Two papers at the International Conference on Supply and Circulation of Metals in Bronze Age Europe, Birmingham, June 1997:

- (1) The origins of bronze artefacts and copper ingots from the Bronze Age shipwreck at Cape Gelidonya.
- (2) A review of lead isotope metal provenance studies.

A joint paper was read by Maria Kafaya at the same conference, on the origin of the metals excavated at the Bronze Age sites of Lerna, Tsoungiza and Lithares.

M.S. Tite Edward Hall Professor of Archaeological Science, Director of Research Laboratory for Archaeology and the History of Art

Served as Chairman of the Committee for Archaeology in Michaelmas Term and lectured for the undergraduate degree course. Research projects in luminescence dating and ceramics, early vitreous materials and pigment studies with four D.Phil. research students being supervised in these areas. Sabbatical in Hilary and Trinity Terms spent at Department of Anthropology, University of Arizona (5 months) and Conservation Analytical Laboratory, Smithsonian Institution (4 months). During this period, review papers on lead glazes in antiquity and on the scientific examination of archaeological ceramics prepared, together with research papers on the production of vitreous

materials in Egypt. Also, participated in the following conferences and meetings: Prehistory and History of Glass Production Symposium (Cincinnati), Synchrotron X-rays and Archaeology Workshop (Argonne National Laboratory), Metals in Antiquity Symposium (Boston).

Conservation

E.A. Cameron Conservator, Institute of Archaeology

She is occupied by two categories of work, conservation and technology studies. Small finds excavated or undergoing research by members of the Institute's academic staff are processed through the conservation laboratory. She runs an annual short course entitled *Conservation for Archaeologists* on behalf of the Department for Continuing Education (OUDCE) for students of the Diploma in Field Archaeology. Technology studies, previously fed by material from Saxon cemeteries, were replaced this year by a study of Anglo-Scandinavian leather scabbards from Coppergate, York. Committee meetings of the Archaeological Leather Group (ALG) were attended and the ALG newsletter sent out biannually from the Institute. Two seminars on *Ancient Metallurgy* were given to students of the Diploma in Applied Archaeology (OUDCE).

M. Norman Chief Conservator in the Department of Antiquities, Ashmolean Museum

Following completion of the Ashmolean building projects, he is involved in the relocation of objects from temporary to permanent custom built storage or display. He has initiated a programme of pollution monitoring in the museum as a whole and developed guidelines governing the use of materials for display and storage cases as part of his continuing research into the effects of atmospheric pollution upon museum collections. He has also introduced a telemetric environment general conservation. He remains a member of the Standards and Qualifications Committee of the Museums Training Institute. He has lectured on 'Conservation and Technology' as part of the University's PGCE Course and gave two sessions for the Education Department on the role of conservators within the department. He has also lectured to the United Kingdom Institute for Conservation on 'Egyptian and Roman Wall Painting Fragments in the Department of Antiquities' and contributed to a day seminar for the Institute of Art and Law entitled 'Art on the Move'.

RESEARCH PROJECTS IN PROGRESS

Summary Accounts of Projects

Scientific investigations

Holocene hydrology and the alluviation of the Upper/Middle Thames, Ouse and Nene Valleys

Dr M.A. Robinson

Radiocarbon dates have been obtained on some low-lying floodplain deposits in the Upper Thames Valley at Yarnton. They have pushed back the date for the onset of a rising water table into the middle Bronze Age but the date of the earliest overbank sedimentation remains firmly in the middle Iron Age. The origin of alluvial hay meadows is also being investigated.

Sponsors: English Heritage

Waterlogged plant and invertebrate remains from Neolithic to Bronze Age sites in Southern and Eastern England

Dr M.A. Robinson

Organic sequences are being analysed from palaeochannels at Dorney, on the Middle Thames. They span most of the Neolithic and Bronze Age. It is hoped that they can be related to the use of some of the structures on the site which included a middle Bronze Age timber bridge.

Sponsor: Oxford Archaeological Unit

The environmental archaeology of the Raunds area of the Nene Valley

Mrs G.V. Campbell and Dr M.A. Robinson

Work on the Stanwick Roman Villa will be resumed once the archaeological phasing of the site has been completed. The medieval parts of the project are now progressing towards publication.

Sponsor: English Heritage

Charred plant remains from the Danebury Environs Project

Mrs G.V. Campbell

Analyses have been completed for several of the sites and distinct patterns are beginning to emerge. There now appears to have been a transition from harvesting cereals by uprooting them in the early Iron Age to cutting them in the middle Iron Age. Various weeds usually thought of as Roman introductions were found on late Iron Age sites.

Sponsor: English Heritage

Plant and invertebrate remains from the Project Archéologique de Nacqueville, Normandie

Dr M.A. Robinson

Further analysis has been undertaken of waterlogged deposits from this Iron Age site on the Normandy coast. The results are beginning to give evidence for the spread of pest species which reached Britain as a result of trade, for example seeds were identified of some of the alien crop weeds which reached the Danebury area in the late Iron Age.

Macroscopic plant and invertebrate remains from the University of Reading/British School at Rome excavations in Pompeii

Dr M.A. Robinson

A second season of work was undertaken at Pompeii. Many cremations were sampled. Some proved to be sacrifices characterised by heads and feet of cockerels, stone pine

cones and figs. Others were perhaps 'cornucopia offerings' of, for example, a small bunch of grapes and an ear of wheat. Calcium phosphate-mineralised remains were also investigated from latrines.

Sponsor: British Academy

Eneolithic and Bronze Age metallurgy in Bulgaria

N.H. Gale and Z.A. Stos-Gale. Associated scholars and archaeological scientists: Ana Raduncheva, Ivan Ivanov, P. Lilov and Ivan Panayotov

On the present evidence the Balkan metallurgy presents the earliest attempts of European people at smelting of copper minerals. The metallurgical developments in this part of Europe started much earlier than in Greece and developed chiefly for copper and gold, with total omission of lead/silver. Some 20 years ago Chernykh published a substantial study of the Eneolithic and Bronze Age metallurgy of the regions bordering in the north and west with the Black Sea. Much of his conclusions were based on the survey of ancient mines and chemical analyses of ore samples and artefacts. Lead isotope analyses provide a new tool for re-examining his conclusions. We have continued lead isotope and trace elemental analyses of the copper artefacts from the Varna Cemetery, the Dolnoslav site and other Eneolithic and Bronze Age sites in Bulgaria (in total there are over 300 samples), combined with analyses of ores from the deposits surveyed by Chernykh and others known to the geologists. Another aspect of this study is concerned with the examination of possible movement of metal between Greece, Anatolia and the Balkans.

An extended paper has now been written with our Bulgarian colleagues on the Eneolithic aspects of this work; it is currently in press in Bulgaria.

Sponsors: The British Academy and the Bulgarian Academy of Sciences

Tin and copper isotope anomalies in archaeology

N.H. Gale, Z.A. Stos-Gale, N. Annetts

Methods were devised for the relatively precise measurements of the isotopic compositions of tin and copper, and appropriate methods were developed for the separation of these elements in a state of high purity from archaeological objects and metal ores. The existence of isotopic anomalies in copper from certain minerals and ores was demonstrated, and may lead to a new provenancing technique, ancillary to and complementing the use of the lead isotope method. For tin the first interest was to investigate whether the large fractionations of isotopic composition, predicted by the Bradford Ancient Metallurgy Research Group to be produced by remelting of bronzes, exist or not. Fractionation at the predicted level was not found.

Sources of Ancient tin

N.H. Gale, Z.A. Stos-Gale, R. Clayton, N. Annetts

A long standing, unsolved, problem for Mediterranean, European and Middle Eastern archaeology has been the precise sources of, and trade in, tin in the prehistoric world. We have begun to try to investigate this using a three-pronged attack, investigating trace

element compositions together with tin and lead isotope variations in tin ores and ancient tin metal artefacts, such as the tin ingots found on the Uluburun shipwreck and excavated off the coast of Israel. The initial results are promising.

Dating - Radiocarbon Accelerator Unit

Professor R.E.M. Hedges, Dr P.B. Pettitt, Dr C.B. Ramsey, Dr G.J. van Klinken, A. Pike

The Radiocarbon Accelerator Unit was out of action during the latter part of 1996 while repairs were made to the accelerator tubes. It is now fully operational again, and is working at a commercially viable level. Projects from the last year include the dating of Pleistocene fauna and archaeological material from cave sites in Gibraltar; human remains covering the Anglo-Saxon cemetery at Bampton, Oxon, the Bronze Age at Kitley Cave, Devon, the Neolithic long barrow of Parc le Brios Cwym, and Mesolithic cemeteries in Brittany. Other types of material include food remains from iron Age ceramics, to provide a ceramic chronology for the Hebrides, and a study of colonization by herpetofauna (such as frogs and newts) following the last glaciation.

Alastair Pike has spent the last year investigating the chemistry of uranium uptake in bone, in order to understand how measurements, made at the Open University, on the daughter products of uranium taken up by bone, can be used to provide more reliable dates in the 10 ka to 300 ka time scale.

Diagenesis

Professor R.E.M. Hedges, G. Hodgins, C. Nielsen-Marsh

Christina Nielsen-Marsh finished her work to study the theoretical background to water movement in soil and bone, and its effects on changing bone porosities. This has been extensively supplemented by studies of buried bones from several sites. A number of important overall trends have emerged, which will be the subject of several papers in the near future. Results were presented at the Archaeometry Conference in Durham.

Greg Hodgins, studying the characterization of collagen in painting media as well as in bone, has developed a specific (for species) immunoassay which is applicable to archaeological material, and results were presented at Durham.

Diet

Professor R.E.M. Hedges, Dr T. O'Connell, Dr G.J. van Klinken, M. Richards and S. Webb

Dr Tamsin O'Connell received a Wellcome Fellowship to enable her to continue studies of isotopic composition of tissues (such as hair) from modern populations under controlled diets, to provide fundamental insights into reconstructing ancient diet. This work has been complemented by Mike Richards' studies on the stable isotope compositions of mainly Neolithic human populations, which are showing intriguing differences between different burial sites. Sarah Webb has submitted her thesis on the relationship between stable isotope composition and diet in insects. Her work this year included a study to be published in *J. Arch. Science*, of archaeological flies recovered from mediaeval latrines.

DNA

Professor R.E.M. Hedges, Dr M.R. Richards, Dr B.C. Sykes

A small grant enabled work to be continued this year on tracing the origins of LBK peoples by analyzing mtDNA recovered from their bones. Only the best preserved material has yielded authentic DNA, and so far the results are too few to do more than suggest that people from these LBK sites indeed have more Middle Eastern affinities than is believed to be the case for the rest of Europe. Work is continuing with a further, small Research Grant.

Materials analysis - ceramics, vitreous materials and pigments

Professor M.S. Tite, C. Doherty, C. Salter, H. Hatcher, A. Shortland, I. Kakoulli

Technological and provenance studies of ancient ceramics have continued using, as appropriate, a combination of analytical scanning electron microscopy, thin section optical petrology and inductively-coupled plasma spectrometry. A major project, undertaken in collaboration with the University of Leicester, has been the examination of pottery from a range of sites in Sarawak, spanning the period 2000 BC to 1500 AD, in order to identify the presence of rice husks added as temper, and thus obtain data on the pattern of early rice cultivation in the area. The chemical analysis by ICPS of some 500 sherds of Byzantine pottery (c 1000-1300 AD) from Greece, Cyprus, Turkey and Israel has now been completed. The results indicate that the products of the different pottery production centres can be distinguished on the basis of their chemical compositions and, therefore, the next stage of the project will be to try to establish the production centres from which pottery assemblages on occupation sites originated. Other current ceramic projects include the petrographic analysis of 1st millennium BC pottery from Colombia, and a technological study of Late Bronze Age white slip ware from Cyprus.

The analysis of the industrial debris (frits, faience and glass fragments, fused clays and ceramic containers) from recent excavations of the faience and glass production area at Amarna, Egypt has been extended to include faience and glass samples from museum collections of material from the excavations at Amarna, undertaken by Petrie. The results suggest that, during the 18th dynasty in Egypt, together with the introduction of glass production, a new type of vitreous faience was developed. Experiments to replicate this vitreous faience in the laboratory have been initiated.

The scientific analysis of the pigments, binding media and plaster ground associated with Hellenistic wall-paintings, has been extended to include samples from wall-paintings in Egypt and Israel. Thus, a representative database of the different pigment types and painting techniques being employed in the eastern Mediterranean during the Hellenistic period is being established.

Luminescence dating

Professor M.S. Tite, Dr A.L. Allsop, D. Stoneham, S. Hall, L. Shepherd, G. Adamiec, A. Gautier

The major development during the past year has been the closing down of the thermoluminescence (TL) authenticity service. However, the luminescence dating

service has continued with dates being provided for ceramics from Tunbridge Wells (Neolithic-Bronze Age), Peru (500-1000 AD) and Ghana (16th-19th century AD) and for sediments from Avington, near Newbury (11000-3000 BC) and Heathrow (Neolithic-Bronze Age).

The projects to investigate the feasibility of optical dating of fired materials and the use of TL methods for radiation accident dosimetry measurements have continued. In addition, a new project to develop the methodology for the luminescence dating archaeometallurgical slags has been started. The potential importance of the method is that the nature of slag deposits are frequently such that they are impossible to date on the basis of their archaeological context.

Leather scabbards from Anglo-Scandinavian York

E.A. Cameron

Remains of 150 sheaths and scabbards from Early Medieval York, to be recorded and published by the York Archaeological Trust in *Leather and leatherworking in AngloScandinavian and medieval York*.

Sponsor: English Heritage

Non-ferrous and precious metallurgy in the European Iron Age

Dr J.P. Northover, P. Nagy (Abteilung Ur-und Frühgeschichte, Universität Zürich),
Dr C. Zingerle (Institute für Ur-und Frühgeschichte, Universität Wien)

The study of copper-based and precious metal alloys from excavations and hoards of the pre-Roman Iron Age is leading for the first time to an understanding how these metals were made and traded in a period when iron had become the dominant utilitarian metal. Material is now available to illustrate how production on individual sites was organised and what techniques were used together. Attention is also focussed on cemeteries to look for associations between gender and status of individuals and the technical quality of artefacts buried with them.

Application of microprobe and metallographic techniques to numismatic problems

Dr J.P. Northover, Dr D.M. Metcalf, Dr C.E. King, Dr L. Treadwell

The Cameca SEMPROBE is used to study the copper-, silver- and gold-based alloys used for a variety of coinages. Current projects involve Roman base-silver coinages of the later 3rd century AD, the silver and base-metal coinages of medieval England, the coinage of the pre-Roman Iron Age, Indo-Greek and Islamic coinages. Very large databases of analyses have been and are being assembled in all these areas and attention is now directed to new methods for interrogating these.

Early metallurgy in the Upper Euphrates Basin

Dr J.P. Northover, Dr K. Prag (University of Manchester), Dr G. Philip (University of Durham)

Microanalysis and metallography have been used to characterise the metalwork from a

number of major excavations in the Upper Euphrates basin. The sites straddle political and economic boundaries of the 3rd millennium BC during the period in which bronze became the main utilitarian metal. The results have given us a new understanding of the way in which bronze became part of the metal economy and have also focussed our attention on the great importance of recycling in these early cities.

Crucible residues

Dr J.P. Northover, J. Whewell, Dr J. Bayley (English Heritage)

New methodologies are being developed for the analysis of crucible fragments recovered from excavations of all periods to improve the identification of the processes for which they were used. Smelting, refining, melting, alloying and plating of copper, tin, zinc, lead, silver and gold alloys could all be carried out at the crucible scale and the project is designed to determine the operating conditions in each case. (In collaboration with English Heritage.)

Metallurgy of the Danish Bronze and Iron Ages

Dr J.P. Northover, D. Liversage (National Museum, Copenhagen), H. Vandkilde (Aarhus University)

A systematic survey of the Danish bronze and pre-Roman Iron Ages integrating analysis and metallography. Principal objectives are the relationship between composition and microstructure, and the metallography of axe cutting-edges before and after use.

Effects of cremation on copper alloys

Dr J.P. Northover

The effects of high temperatures on copper alloys in oxidising, neutral and reducing atmospheres is being studied by optical metallography and by experimental replication. The results are used to determine the placement of grave goods in cremation pyres to assist in interpreting the burial rites.

Precipitation of copper in silver alloys

Dr J.P. Northover, A. Dye

The discontinuous precipitation of copper at grain boundaries from supersaturated solid solution at room temperature in wrought and annealed silver alloys with 2-10% copper has been advanced as an indication of age. This project will make the first transmission electron microscope studies of the morphology and structure of the precipitates, determine the length, if any, of an incubation period, and find the conditions under which precipitation changes from discontinuous to continuous. The possibility of accelerating the discontinuous precipitation by annealing at intermediate temperatures will also be explored.

Application of the scanning proton microprobe to the analysis of ancient bronze

Dr J.P. Northover, Dr G.W. Grime, M.H. Abraham

The requirements of museum collections have stimulated this project in non-destructive and minimally destructive analysis of ancient bronze. The aim is to use a laser to mill sub-millimetre diameter windows in the patina on selected bronzes and then use the SPM to analyse the metal as it is exposed, with the X-ray mapping facility employed to make basic metallographic observations. An experimental programme will develop the best mode of operation and assess the quality of the analyses in comparison with sample-based analysis.

Study of the products of the experimental reproduction of the process ironworking at Bryn Y Castell and Crawellt Sites, Gwynedd

C.J. Salter, P. Crew (Snowdonia National Park)

A series of iron smelting and smithing experiments has been carried out to reproduce the metal and other iron-working debris from these important Iron Age sites. Presently, this material is being studied, an attempt to fully understand the chemistry, microstructure and mechanical properties of the different types of iron and steel produced.

Investigation of the relationship between slag inclusion compositions and welding practice.

C.J. Salter, Dr B.J.J. Gilmour

A study of the changes in slag inclusion and metal compositions that occur during the forge-welding of iron. In particular those changes seen in phosphoritic/non-phosphoritic composite iron artefacts.

Anglo-Saxon Ferrous Technology

C.J. Salter, G. Hey (Oxford Archaeological Unit), Dr B.J.J. Gilmour, K. Penn (Norfolk Archaeology), T. Malim (Cambridgeshire Archaeology)

A systematic survey of the ferrous artefacts from a number of East Anglian and Midland sites is being carried out to determine range and distribution of various Anglo-Saxon black-smithing skills and technologies.

Excavations

Danebury Environs Roman Programme

Professor B. Cunliffe, R. Osgood and Julie Hamilton

A three-year programme to study Roman rural settlement in the Danebury region of western Hampshire began in 1997. The work involves field survey, documentary research and excavation. Its principal focus is on the question of continuity and land holding from the Late Iron Age to the Roman period and on the development of rural economy. In the summer of 1997 an excavation was undertaken at the Roman villa on Houghton Down.

Sponsors: Hampshire County Council through the Danebury Trust, the Society of Antiquaries, the Roman Society, the Haverfield Bequest and the John Lewis Partnership

Le Yaudet (Atlantic trade in the first millennium BC)

Professor B. Cunliffe, R. Osgood, Dr P. de Jersey and Dr P. Galliou (Centre de Recherche Bretonne et Celtique, University of Brest)

The proximity of Le Yaudet on the north coast of Brittany, near Lannion, has been chosen as the site of a long-term excavation designed primarily to examine the Iron Age and Roman culture of northern Brittany and its wider maritime context. The sixth season of excavations took place in July producing evidence of occupation spanning the period from the Iron Age to high medieval times. Most notable was evidence of agricultural activity in the centuries immediately following the end of the Roman era.

Sponsors: The British Academy, Direction des Antiquités de Bretagne and the Département des Côtes-d'Armor

Aphrodisias Excavations

Professor R.R.R. Smith, Professor C. Ratté (New York)

The current research project at Aphrodisias in Caria (SW Turkey) began in 1991 and aims (1) to record, document, and publish the earlier excavations carried out between 1961 and 1990, and (2) at the same time to pursue archaeological investigation of the city's urban plan, street system, and infrastructure. In the campaign of 1997 (July-August), excavations were carried out in the northern part of the site which confirmed the orthogonal street plan detected by a geophysical survey of this area in 1995 and 1996. A new geophysical (electronic resistivity) survey of the southern part of the site was also begun in which the same grid plan showed up strongly, revealing the same clear street pattern over a dense residential area. Limited excavation and thorough documentation were also pursued in the Sebasteion and the Temple of Aphrodite. Individual research projects continued the recording, studying, and writing up of the various categories and complexes of marble sculpture from the site. Conservation work included the restoration and display in the Aphrodisias Museum of a series of twelve fine marble portraits - busts and heads, ranging in date from the first to the sixth century AD - that had been discovered in earlier seasons but never put on public exhibition.

Sponsors: New York University (Institute of Fine Arts and the Faculty of Arts and Sciences), with financial support from the National Endowment for the Humanities, Washington DC, the Friends of Aphrodisias in Istanbul, Izmir, London, and Paris, and other private donors

Excavations and survey Bolshoi Balkhan Mountains, Turkmenistan

Dr C. Gosden

In March and April three cave sites were excavated in the Bolshoi Balkhan Mountains in order to attempt to find sequences from both the Neolithic and Palaeolithic periods. It is hoped that such sequences would throw light on the origins of agriculture in central Asia and fine-grained recovery techniques were used to gain large samples of bones and seed materials for analysis. Also, a considerable amount of geomorphological work was carried out, as the sites were on the edge of the Caspian and the estuary of the Uzboi River until the early Holocene. Much work has been carried out to attempt to reconstruct

the environment of the area at that time.

Sponsors: British Academy, University of Oxford

Vicus Augustanus (Castelporziano), Italy

Amanda Claridge

A small Roman urban centre on the coast near Rome, no other site of its type has yet been the focus of detailed archaeological study. Old, unpublished excavations at the turn of the century exposed part of a forum and three insulae, whose upstanding structural remains were fully recorded and analysed in 1983-92. To complement that picture, two new excavations are in progress, aimed at producing detailed evidence for the full sequence of occupation on the site and a representative sample of the contents of its ancient rubbish dumps. Two sessions of finds' study and a third season of excavations took place during 1996-7.

Sponsors: Craven Trust (Oxford); Society for the Promotion of Roman Studies; British School at Rome; Tenuta Presidenziale di Castelporziano; Vicus Augustanus Trust Fund

The Hillforts of the Ridgeway Project

Dr G. Lock and Dr C. Gosden

Excavations within Segsbury Camp hillfort. A training excavation for Archaeology and Anthropology undergraduates, OUDCE Summer School students and volunteers.

Sponsors: Oxford University

The Madra Çay Delta Archaeological Project (Northwestern Turkey)

Dr Nigel Spencer, Dr Kyriacos Lambrianides (University College London), in collaboration with Professor İlhan Kayan (Ege University Izmir), Dr Ted Lagro (Director, Dutch Institute of History and Archaeology, Istanbul) and Mr Ben Cookson (Bilkent University Ankara, Dutch Institute of History and Archaeology, Istanbul)

The four-year collaborative venture is conducting inter-disciplinary geomorphological, archaeological and anthropological research into the coastal district of north western Turkey opposite the east coast of the north east Aegean island of Lesbos. This region has rarely been the object of detailed research, and modern political geography has led to studies of the region being carried out in almost total isolation from the north eastern Aegean islands even though the two spheres are an important part of the same study area and were linked intimately from prehistory to the present century. The current inter-disciplinary project in the area therefore tackles an important (but hitherto neglected) aspect of the region's archaeology, namely the diachronic relationship of the coast of Anatolia to the island of Lesbos opposite from the Neolithic period through the Bronze and Iron Ages to the Medieval and Early Modern era. In 1995 detailed geomorphological studies were conducted which clarified the past sea-level changes during the Holocene, focusing especially upon the relationship of sea-level change to the Early Bronze Age settlement in the region. In 1996 intensive archaeological surface survey was added to more geomorphological research, with the former being conducted at sites in the delta the occupation of which ranged from Early Bronze Age to Late Byzantine and Ottoman.

The 1997 season, just completed, also saw the introduction of archaeological excavation in addition to geomorphological sondages in two prehistoric tells. Survey work was conducted at other sites in the delta and detailed architectural studies were carried out in Ayvalik and Altinova of the standing architecture of the Ottoman period.

Sponsors: The Wainright Fund (Oxford), The Craven Committee (Oxford), The Meyerstein Fund (Oxford), The British Academy (London), The British Institute of Archaeology (London/Ankara), The Leverhulme Trust (London), The Institute for Aegean Prehistory (Oxford)

Excavations at Stanton Harcourt

Dr Katherine Scott and Christine Buckingham

Excavations were undertaken throughout the spring and summer in the Middle Pleistocene Channel deposits at Stanton Harcourt. Several more artefacts were found (raising the total from 18 to 24) and animal and plant remains continued to be abundant. The total number of large vertebrate remains is now approaching 1,000 and some important discoveries were made. These include the semi-articulated hindquarters of an elephant and a magnificent lion jaw.

In March the excavations were visited by almost all the leading Quaternary specialists in Britain and a number from Europe as part of the annual QRA meeting. Among the dozens of visitors to the site during the course of the year, we have had many parties of geology and archaeology students, local environmental and history societies from Britain and Europe. We particularly welcomed a visit from Andrew Currant and Danielle Shreve of the Natural History Museum (London) who were impressed because the amount and quality of the material excavated now exceeds that from any site of this period in Britain.

The excavations formed the basis of many talks to local groups and also to schools during National Science week.

Son Mas and Ferrandell - Olèza, Mallorca

Dr William H. Waldren, Research Associate of the Pitt-Rivers Museum at the Donald Baden-Powell Quaternary Research Centre

He continued to direct excavations at the Prehistoric Sanctuary of Son Mas on Mallorca, Balearic Islands, for a ninth season, from March to August, 1997. Work concentrated on the site's older (Bell Beaker) levels, c. 2200-1300 cal. BC, and also on some of the younger levels dating from the Classical Period. 47 radiocarbon dates are now available from this site, demonstrating a long and continuous period of use of the sanctuary and its surrounding activity areas.

Following this, four weeks' work in August and September saw the beginning of serious excavations at a new site, Roques de Beduia, thought to be a *naveta* (boat-shaped structure). A radiocarbon date, from a sample obtained during the preliminary survey work at this site, suggests that it may have been abandoned c. 1200 cal. BC. During the summer 1997 excavations, radiocarbon samples were obtained from various stratified contexts for a further ten dates: these samples are currently being analyzed in Belgium.

A Channel Four 'Time Team' programme was filmed during a week in June, featuring

work at the Sanctuary site and the adjacent Chalcolithic Settlement of Son Oleza: it is scheduled for transmission on 2 February 1998.

Fieldwork

Sangro Valley Project, Italy

Dr J.A. Lloyd, Dr G. Lock, Dr N. Christie, Mr A. Wilson, Mr T. Bell

In collaboration with the Soprintendenza Archeologica dell'Abruzzo and Leicester University, a fourth season of fieldwork took place in August/September. The project is investigating settlement and economy in a region of south-central Italy extending from the high Apennines to the Adriatic sea. Excavations at Monte Pallano, a Samnite and Roman oppidum, identified a major public building, probably a temple, and a possible mausoleum. Investigation of the site's hinterland continued through judgmental survey, amongst much else establishing the location of the Benedictine monastery of S. Stefano in Lucana, a dependency of Farfa in the 9th century.

Sponsors: British School at Rome, Craven Fund, Oxford, Leicester University, Society of Antiquaries, London

The Balboura Survey, Turkey

Dr J.J. Coulton, Ms P. Armstrong, Ms A. MacDonald; Dr D.H. French (Waterford), Professor M. Kiel (University of Utrecht), Professor J.M. Wagstaff (University of Southampton)

The project concerned with the settlement history of a highland city and territory in SW Turkey, is close to final publication. Pottery study was completed, except for the small amount of pre-hellenistic material (scheduled for 1998); all site and transect plans were drawn out from raw data and sherd densities plotted on them; most catalogues were completed; and about three quarters of the text is drafted. Some contributions from co-authors are outstanding, and revision, editing and final preparation of illustrations is required.

Sponsors: British Academy; British Institute of Archaeology at Ankara

The Phylla Fort Project

Dr J.J. Coulton, Mr M.R. Popham; Dr E. Sakellarakis (formerly of Chalkis Ephoria), Dr I. Metzger (Chur Museum, Switzerland)

The project concerns an ancient fort in central Euboea (inland from Lefkandi). Partial excavation of Building 3 in October 1996 established its date in the years around 500 BC, and strengthened the view that it was a barracks building, uniquely regular for this period in Greece. A link with the Athenian cleruchy of 506-490 BC is likely, and useful information about garrison life was obtained. Material of the 8th century BC may be related with the traditions of an early 'Lelantine War' between Chalkis and Eretria. The pottery (mostly cups and cooking pots) was studied by Dr Metzger. A further season is intended, but will not be possible in 1998.

Sponsors: British School of Archaeology at Athens; Seven Pillars of Wisdom Trust

The Wessex Hillforts Programme

Professor B. Cunliffe, S. Trow and A. Payne

The survey of a sample of Iron Age hillforts in Wessex using magnetometry to identify internal below-ground features and to assess the density and type of occupation.

Sponsor: English Heritage.

Mazaka - Caesarea - Kayseri Survey (Turkey)

Dr Michael Ballance, Dr Derek Welsby (British Museum), Mrs Isabella Welsby-Sjöström

A three-week mainly architectural survey of the Hellenistic, Roman and Byzantine city and especially of its defences. In addition to the major Byzantine circuit in the plain, which included the site of the much smaller early Turkish city, we were able to trace about a kilometre of a previously unrecorded but even more extensive circuit, probably the one recorded on coins of AD 241, in the hills to the south. We also did what we could about a large but ruined late Roman bath-building, the scanty remains of a hippodrome and a possible theatre, and two well-preserved monumental tombs.

Earlier Palaeolithic Archaeology in Southeastern Spain

This year, Dr Roe led the British team in a joint Anglo-Spanish Palaeolithic research project, funded by the British Council in Madrid through its *Acciones Integradas* programme. The principal aim was to set up for the University of Murcia a microwear analysis facility, modelled on the one developed over the years in Oxford at the Donald Baden-Powell Quaternary Research Centre. The Spanish team, consisting of Professor M.J. Walker and Mr I. Serrano, visited Oxford for several weeks during Michaelmas Term, and the British team, Dr Roe and Mr J. Mitchell, went to Murcia during the Easter Vacation. The facility was set up successfully, and a programme of analysis of stone artefacts begun, which the Spanish team will continue. The opportunity was taken to obtain dating samples at two important Spanish Palaeolithic sites, Cabezo Gordo and Cueva Negra, and these have been passed for processing to the Research Laboratory for Archaeology and the History of Art. Dr Roe has continued his connection with the research effort at the important Spanish Early Palaeolithic site of Orce (Andalucía), this year in an advisory capacity: the field programme there remains in abeyance while the next phase is being planned.

Publication programmes

The Danebury Environs Project

Professor B. Cunliffe, L.Y. Brown, C. Poole and others

Publication of an eight-year programme of excavation and fieldwork undertaken on Iron Age sites in western Hampshire.

Sponsors: English Heritage and Hampshire County Council.

The Guadajoz Project (Andalucía)

Professor B. Cunliffe, Dr. M.-C. Fernandez Castro (Universidad Complutense, Madrid) and L.Y. Brown

Publication of an eight-year programme of excavation and fieldwork undertaken in the Guadajoz valley, in the province of Cordoba.

Later Stone Age archaeology of the Phuthiatsana Basin, Lesotho

Dr P.J. Mitchell

Publication and preparation of papers reporting the results of the stable carbon isotope analysis of terminal Pleistocene and Holocene faunal assemblages from excavated sites and their implications for reconstructing palaeoenvironments in the Caledon Valley of southern Africa.

Excavations and field-survey at Likoieng, Lesotho

Dr P.J. Mitchell

Analysis of artefact assemblages from the 1995 season at Likoieng is under way. A paper reporting preliminary results of stable carbon isotope analysis of soil samples from the area was presented at the Southern African Society for Quaternary Research meeting in Grahamstown, South Africa.

The Euesperides (Libya) Excavations

M.J. Vickers, D.W.J. Gill

The material from the Ashmolean Museum's unpublished 1952-1954 excavation at Euesperides, Cyrenaica is being prepared for publication. The Society for Libyan Studies has included a monograph in its publication programme.

Sponsors: the British Academy, Society of Antiquaries, Society for Libyan Studies

Roman gold

M.J. Vickers, M. Yu. Treister

The publication of extant Roman period gold vessels.

Sponsor: the Society of Antiquaries

Lexicon topographicum Urbis Romae

Professor E.M. Steinby, editor; dott. E. Papi, bibliography and assistant editor, Dr N. Pollard, assistant editor; dott. ssa M.R. Russo, illustrations

Volumes I-III have been published, most entries for volumes IV and V have been prepared for print or are already in proof. Volume IV should be published in the first half of 1998. The last volume (V) will comprise the entries from V to Z, 'Addenda e corrigenda', and indexes prepared by M. Buonocore.

La necropoli della Via Triumphalis, Roma

Professor E.M. Steinby, dott. ssa C. Coletti, Dr M. Carre, dott. ssa M.T. Cipriano

Publication of excavations made in 1956-58 by F. Magi, and a revision of the edition of the inscription published in 1973 by a team directed by V. Väänänen. About two thirds of the manuscript (600 pages) has been revised.

Sponsor: Regione Lazio, Italy

Lacus Iuturnae in the Forum Romanum, Rome

Excavations were undertaken in 1982-85 in collaboration with the Soprintendenza Archaeologica di Roma. In 1988 the first volume, on sources and material from earlier excavations was published; preliminary reports on the excavations have been published in periodicals and Sammelchriften. For the final excavation report, A. Claridge compiled a list of findings per strata. Editing of the some 2,500 pages of manuscripts from 24 collaborators is going on.

Sponsors: Suomen Kulttuurirahasto (Foundation for Finnish Culture) and Suomen Akatemia (The Finnish Academy)

Politics and ideology in the building history of Republican Rome

Professor E.M. Steinby, team of 10 Finnish graduates

The project generates from the courses in Roman topography held in 1993-94 for Finnish university students in classics, history and archaeology. The essays written during their three months stay in Rome are being developed into a publication. In August 1997 five members of the team spent a month in Oxford working on their manuscripts. The publication is scheduled for late 1998 - early 1999.

Sponsor: Suomen Akatemia (The Finnish Academy)

Corpus Inscriptionum Latinarum XV.1, new edition

Professor E.M. Steinby

A long term project that goes back to the publication of the brickstamps from Ostia (1977-79) and many minor collections in Rome, and the new Indexes to *CIL XV.1*. Material is being collected and comments added to single stamps.

The Matrice (Italy) Excavations

J.A. Lloyd, D.W. Rathbone, P.C. Roberts and others

Completion of the study and final publication of the Samnite and Roman villa and associated finds, excavated 1980-86.

The Berenice (Libya) Excavations

J.A. Lloyd, D. Michaelides, A.J. Price, E.M. Pye and J. Reynolds

Editing for publication of Vol. IV.1 (Mosaic and Marble Floors, by D. Michaelides);

completion of study and final publication (Vol. IV.2) of the wall paintings, marble, small finds, graffiti and glass from the Hellenistic-early Islamic city, excavated 1971-76.

Sponsor: Society For Libyan Studies.

King's Low and Queen's Low excavations

Dr G. Lock and Dr R. Spicer (Staffordshire University)

The study and final publication of the six years of excavations at this pair of round barrows.

Sponsors: Stoke-on-Trent Museum Archaeological Society and the City Museum, Hanley, Stoke-on-Trent

Catalogue of the Late Antique and Byzantine Objects in the Ashmolean Museum, Oxford

Dr M. Mango, C. Mortimer, J. Henderson, P. Northover

Photography, drawing and scientific analyses of material for volumes 1 (Metalware and Lead Seals) and 2 (Jewellery and Gems) completed. Work continues on individual entries.

Sponsor: Getty Grant Program

The Church of St Polyeuktos in Constantinople

Jonathan Bardill

Preparation of a new study of the excavations at Saraçhane in Constantinople, concentrating on the architectural form of the sixth-century church and the religious and political context of its construction.

Sponsors: The British Academy

Feudal coinages of Western Europe

Mr N.J. Mayhew and Jack Williams (publication 1997-8)

Analysis of the metal content of Roman coins minted between AD 253 and 274

Dr C.E. King, Dr J.P. Northover (Science of Materials), L. Cope and T. Clay

Over 500 coins from AD 253 to 268 from all mints have been analysed by EPMA. These analyses will form the basis of a study of the alloy content of the antoninianus in the mid-3rd century in the context of debasements, reforms and retariffing of the coinage. Approximately 900 analyses of Roman coins made by L. Cope which concentrate on the 4th century AD have been added and all of the analysis results and discussion will be complete by the end of 1996 and be published as a British Museum Occasional paper.

(publication late 1997 or early 1998)

Roman Quinarii

Dr C.E. King

A type catalogue of quinarii minted under the Roman Republic and Empire is in process of compilation. Discussion will focus on when and where these pieces were minted, the reasons for their production and their relationship with other coins in the denominational system.

(publication 1999)

Late Anglo-Saxon coinage

Professor Metcalf is preparing an Atlas of Finds of Anglo-Saxon Coins (c. 973-1086)

The Silver Coinage of Cyprus, 1285-1382

(Corpus of Lusignan Coinage, vol. 2, edited by D.M. Metcalf and A.G. Pitsillides), Nicosia, 1996

'Viking-age numismatics, 2. Coinage in the Northern Lands in Merovingian and Carolingian times', *Numismatic Chronicle* 156 (1996), 399-428

'A new type of anonymous denier of Cyprus of the early thirteenth century' (with M. Jacobowitz), *ibid.*, 243-7.

The life and works of Edward Burch (1730-1814)

Towards a monograph

Gertrud Seidmann

The materials for a biography having been assembled, the main task remaining lies in tracing more of his original gems. In this there has been some progress this year. Correspondence with curators of National Trust houses, to be followed up by visits next year, seems promising.

Corpora, Archives and Computing Systems

Celtic Coin Index

Dr Philip de Jersey

The computerization of the Celtic Coin Index housed in the Institute of Archaeology has now been completed and work is in progress digitizing images so that the entire record can be made available on WWW.

Sponsor: Leverhulme Trust

Tchalenko and Creswell Archives

Professor J. Allan, Dr M. Mango, Dr J. Raby, Dr J. Moffett, Mr L. Burnard

The computerisation programme continues for both archives. The Research and Equipment Committee support is due to terminate by October 1997. The Creswell Archive has received additional funding from the British Academy for research assistance. The Meyerstein Fund gave a grant towards boxing the Tchalenko archive.

Entry of the data of the Creswell archive was completed by Christmas 1996. Work, by Dr B. Flood, T. Fitzherbert and D. Milson, then commenced on turning the database into an accessible research archive, concentrating on the technical, aspects of producing a CD ROM for sale. The latter will contain a selection of 6,524 photographs (made from a total of 8,008) with supporting text and will be available by mail order and in the Ashmolean shop. During the year 1996-7, work on the Tchalenko Archive has concentrated entirely on overcoming the technical problems of completing the software to access a variety of digitised material. This work, by D. Milson with C. Willetts, is due for completion in September 1997.

Sponsors: Research and Equipment Committee, the British Academy, the Meyerstein Fund

Saraçhane Archive

Dr M. Mango

The field notes, drawings, photographic negatives, and other materials from the important excavation of the 6th-century church of St Polyeuctos at Saraçhane in Istanbul, belonging to Professor R.M. Harrison, the director of the excavations, and to Dr John Hayes, have been presented to the institute by Mrs Elisabeth Harrison and Dr Hayes. The 2 sets of material, relating to the excavation itself and to the pottery, have been inventoried by Mrs Harrison and Mrs Wendy Young and arranged for storage by Miss Fiona Nicks.

Sponsors: Committee for Byzantine Studies, Meyerstein Fund

Corpus Vasorum Arretinorum, 2nd Edition

Dr P.M. Kenrick

Preparation of a new computerised catalogue of makers' marks on Italian terra sigillata pottery of the C1 BC - C2 AD. The conversion of the project from a supplement to a full second edition having been approved, this year was spent on the revision and entry into the database of the information published in the first edition. This has proved more laborious than had been anticipated but is on schedule for completion in another year. A final year will then be devoted to over-all revision of the new catalogue and its preparation for publication in book form and on CD-ROM.

Further promising experiments were carried out on the format of the final product, concerned with providing a facility to generate distribution maps. At the end of the year the database contained 28,000 entries supported by some 38,000 bibliographic references.

Sponsors: Ceramica Stiftung (Basel); Dr A.M. McCann and Mr R. Taggart (New York)

Corpus of Constantinopolitan Brickstamps

Jonathan Bardill

The first major catalogue and chronological analysis of stamped bricks from Constantinople is almost complete. The material, which covers the period from the 4th to the 6th century AD, is proving important for refining our knowledge of the dating of Constantinopolitan buildings in this period.

Sponsors: The British Academy, The British Institute of Archaeology at Ankara, The Seven Pillars of Wisdom Trust

The 'Paper Museum' of Cassiano dal Pozzo

Amanda Claridge (Series Editor and contributor), Dr H. Whitehouse, D. Bailey (British Museum), Dr Ian Campbell (Herriot-Watt University) and others

A catalogue raisonné of an important seventeenth-century Roman collection of drawings of antiquities and architecture, the first volume was published in November 1996, the second went to press in January 1997.

Sponsors: Olivetti; British Academy; Accademia dei Lincei; Getty Grant Program; Monument Trust; Banca Nazionale del Lavoro

The Beazley Archive's Computer Projects

Dr D. Kurtz

The Research Projects of the Beazley Archive continue to diversify (Section 1). In addition to the database of Athenian black- and red-figure pottery, programmes have been developed on other aspects of classical art.

The pottery database has more than 57,000 records. All of Beazley's published catalogues have been recorded. Consulted on site and remotely by fax, electronic mail and direct interrogation, the database has also been used on line for demonstrations and classes. Scanning of images of Athenian pottery from the Archive's photographic collection, begun in January 1993, has now generated more than 16,500 images.

Formats for text and image transmission over Internet are being designed for remote exchange of documentation in RAMA/SICMA/MENHIR (Section 2). Different types of image protection software are being evaluated.

Research projects are directed by the Archivist, the pottery database by Dr Thomas Mannack, technical support is provided by Greg Parker, with assistance from Dr Jonathan Moffett (Ashmolean Museum), OUCS, and the University Telecommunication Manager. Imaging and program preparation are carried out by Veronique Davis, Ian Hiley, and Florence Maskell.

Roman Provincial Coinage in the Antonine Period

Dr C.J. Howgego (Project Director), Mr V. Heuchert

The aim is to produce a standard typology of the provincial coinage of the Roman Empire in the period AD 138-193, together with a commentary and introduction. The

catalogue will be based on the ten most important and accessible collections in the world (of which Oxford is one), and on all published material. This will be the first systematic treatment of the civic coinage at the height of the Roman empire, and will have great importance for the study of cultural, religious, political, economic, and administrative history at both a local and an imperial level.

Sponsors: British Academy's Humanities Research Board, Funding Councils, Research and Equipment Committee (University of Oxford)

The Sir Arthur Evans archive in the Ashmolean Museum

Dr S. Sherratt

A programme of listing, ordering, storing and, where necessary, duplication of the large and heterogeneous body of Evans archival material held by the Ashmolean. The eventual aim is to make particularly that part of the archive which relates to Evans' excavations at Knossos more readily and easily accessible to interested scholars.

Sponsor: The Getty Foundation

British Museum Southern Africa Stone collections

Dr P.J. Mitchell

Production of a comprehensive catalogue of the British Museum's southern African Stone Age collections for publication in the Museum's Occasional Papers in 1998. The catalogue will also include summary information on the southern African Stone Age holdings of other UK museums.

Medieval Credit in England (Heberden Coin Room, Ashmolean Museum)

Dr Pamela Nightingale

Dr Pamela Nightingale continued her work on medieval debt in the Public Record office. In the spring she was invited to lecture in the United States at the Centre for Medieval Studies at Penn State University on 'Money and the rise of the market economy'. She also gave a paper on the economy of medieval London to the Seminar on Medieval and Tudor London at the University of London.

Sponsor: Leverhulme Trust

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RESEARCH STUDENTS STUDYING ARCHAEOLOGY IN 1996-7

(at Trinity Term 1997)

M.Litt./D.Phil. candidates

Armpis, A. Eleni (St Peter's) D.Phil.

The organisation of the sanctuaries of Asklepios
Coulton J.J./Smith R.R.R. C.Arch 1992

Baboula, Evanthia (Lincoln) D.Phil.

Neo- and Post-palatial burial practices involving metal objects: a study of the microstructure and spatial arrangements and social dimensions of metalwork in Cretan graves
Sherratt E.S./Northover J.P. C.Arch 1995

Bagnall-Smith, Mrs Jean M.B. (St Cross) D.Phil.

Study of votive material from Temple Sites in Roman Britain
Henig M. C.Arch 1994

Baker, H.D. (Wolfson) D.Phil.

The Egibi family archive
Black J.A. Oriental Studies 1992

Bell, T.W. (Wolfson) D.Phil.

The Anglo-Saxon Re-use: Reinterpretation of Roman sites and structures
Blair W.J. C.Arch 1995

Borno, Ms H. (St Cross) D.Phil.

Early-mid Anglo-Saxon Settlement Sites in the Upper Thames Region
Lock G.R./Hamerow H.F. C.Arch 1994

Braghin, Cecilia (St Peter's) PRS

Archaeological Context of Eastern Zhou/Western Han Jades
Rawson J.M. C.Arch 1996

Brown, Terence J. (Queen's) D.Phil.

A comparative study of three Imperial Capitals: Trier, Milan and Ravenna
Ward-Perkins B.R. C.Arch 1995

Cahn, David (Wolfson) D.Phil.

Classical armour and its decoration in the Greek world
Boardman J. Lit. Hum. 1991

Calcagno, Claire (Merton) D.Phil.

Seafaring & trade in the central Mediterranean 1200 to 800 BC
Sherratt A./McGrail S. A & G 1991

Cameron, Ms Esther A. (St Cross) D.Phil.

The technology and development of Early Medieval sheaths and scabbards in
England AD 400-1100
Biddle M. C.Arch 1994

Christoforaki, Ioanna (Merton) D.Phil.

Patronage and donation in the churches of Rhodes from 1204-1522.
Mango C. Mod. Hist. 1992

Coolidge, Jennifer W. (University) PRS

Ceramics analysis at Jeitun, Turkmenistan
Gosden C.H. C.Arch 1996

Davies, Ms A.E. (St John's) D.Phil.

Public space in Roman towns through Epigraphy, Art and Architecture
Woolf G.D./Steinby E.M. C.Arch 1993

Davies, Mr G.N. (University) D.Phil.

Studies on the Social and Economic History of an Island Polis. Siphnos in Classical
Antiquity

Coulton J.J./Osborne R.G. C.Arch 1994

Day, Christopher A. (Keble) D.Phil.

Predicting Colluvial Deposits on the Berkshire Downs
Boardman J./Lock G.R. C.Arch 1995

Day, Deborah L. D.Phil.

From the Durotriges to Dorset
Henig M.E. C.Arch 1996

de Moor, Iziko (Lincoln) D.Phil.

The Griffin in the art of the Near East, Egypt and Greece down to c. 550 BC
Boardman J./Collon D.C. Lit. Hum. 1987

Dipla, Miss Anthi (Hertford) D.Phil.

Women in Greek Mythology: Changes in Iconography from the Archaic to Classical
period set against the possible social context
Kurtz D.C./Boardman J. C.Arch 1994

Ebbinghaus, Ms S. (Lincoln) D.Phil.

The horn-shaped Rhyton
Boardman J. C.Arch 1993

Economou, Miss M. Maria (Linacre) D.Phil.

Interactive multimedia in museums and archaeological displays
Moffett J. A & G 1992

Evans, Thomas L. (Linacre) PRS

Development of ethnicity in the Iron Age as reflected in 'Marnian' culture
Cunliffe B.W. C.Arch 1995

Finn, Christine A. (Queen's) D.Phil.

Fieldwork: Archaeology and the poetic past of W.B. Yeats and Seamus Heaney
O'Donoghue J.B. C.Arch 1995

Gautier, Annaig (Linacre) PRS

Thermoluminescence dating
Stoneham D./Salter C.J. C.Arch 1996

Gittos, Helen B. (Queen's) D.Phil.

The sacred landscapes of Anglo-Saxon England
Blair W.J. C.Arch 1995

Haarer, Mr Peter (Balliol) D.Phil.

Iron and iron working in archaic and classical Greece
Osborne R./Salter C. Lit. Hum. 1992

Henderson, Jon C. (Christ Church) PRS

European Archaeology: First Millennium BC
Cunliffe B.W. C.Arch 1995

Henry, Philippa A. (Wolfson) D.Phil.

The Changing Scale and Mode of Textile Production in Late Saxon England: Its
Relationship to Developments in Textile Production Technology and Changes in
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Hamerow H.F. C.Arch 1994

Heuchert, V. (Oriol) PRS

Roman provincial coinage of Asia in the Antonina period
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Hobley, Brian (Wolfson) PRS

Roman architecture and astrology
Steinby E.M./Coulton J. C.Arch 1994

Hodgins, G.W.L. (St Cross) D.Phil.

Developing methods for identifying medieval paints and glues in fine art
Hedges R.E.M. Phys. Sci 1994

Hodos, T. Tamar (Keble) D.Phil.

Craft relations in south eastern Sicily during the period of Greek colonisation
Boardman J./Lloyd J. Lit. Hum. 1992

Hueter, Gwyneth (Wolfson) D.Phil.

Late Babylonian dialect
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Landuyt, Frederique A.F. (Wolfson) PRS

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Lapourtas, A. (St Cross) D.Phil.

Sir Arthur Evans in the museum context: Keeper of the Ashmolean Museum, private collection and organiser
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A study of Lower Palaeolithic stone artefacts from selected sites in the Upper and Middle Thames Valley, with particular reference to the R.J. MacRae Collection
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Milson, David W. (Merton) D.Phil.

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Mitchell, John C. (St Catherine's) PRS

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The end of the Third Millennium in the Aegean. Social Change in Early Bronze Age 2
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Parani, Maria (Exeter) D.Phil.

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Burial practice and social organisation in late Chalcolithic Bulgaria
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The Jutes in Kent, 5th-7th centuries AD
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Stamatopoulou, Miss Maria (Somerville) D.Phil.

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Tselekas, P. (St Cross) D. Phil.

The coinage of Akanthus
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Tsingarida, Athena (Wolfson) D.Phil.

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Tzannes, Maria-Christina (Lincoln) D.Phil.

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Vanderstar, Pippa (Merton) D.Phil.

Hellenistic and Roman architecture of Cyprus
Coulton J. Lit. Hum. 1991

Vardaki, Evangelia (St Antony's) PRS

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Nixon L.F./Osborne R.G. C.Arch 1996

Villing, Alexandra C. (Lincoln) D.Phil.

The iconography of Athena on Attic vases from 440-370 BC
Boardman J. Lit. Hum. 1992

Wagner, Claudia (Merton) D.Phil.

Dedication practices on the Athenian Acropolis
Boardman J. Lit. Hum. 1990

Webb, Sarah (St Cross) PRS

Stable isotopes in animal tissues and their relation to diet
Hedges R.E.M. Phys. Sci 1994

Wiegel, Hildegard G.H. (Wolfson) D.Phil.

The influence of 'Greek' vases on Neo-Classical European ceramics in England,
France, Italy and Germany between 1760 and 1830
Kurtz D.C. C.Arch 1995

Wilson, Andrew I. (Magdalen) D.Phil.

Water usage and management in Roman North Africa: a social and technological
study
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Winzor, Christine (Merton) D.Phil.

The architectural patronage of the Attalids and Ptolemies
Coulton J. Lit. Hum. 1986

Yeroulanou, Marina (Lincoln) D.Phil.

The architecture of Greek treasuries: stylistic developments and the role of dedicating
states and workshops
Coulton J.J./Smith R.R.R. C.Arch 1996

Zimi, Helen (Somerville) D.Phil.

Silver plate from Macedonia, 4th to 2nd century BC
Boardman J. C.Arch 1993

M.Phil. candidates

Armstrong, Naja R. (Magdalen)

Classical Archaeology
Smith R.R.R. 1995

Laemmel, Sabine A. (Lincoln)

Classical
Sherratt E.S. 1996

Mavrika, Virginia (Lady Margaret Hall)

Classical
Smith R.R.R. 1996

Merrony, Mark W. (Wolfson)

Classical
The iconography of mosaic pavements in Late Antique Palestine
Mango M.C. 1996

Palmer, J. Benjamin, O. (Exeter)

European
Hamerow H.F. 1996

Plaitakis, Iris A. (Lincoln)

Classical
Kurtz D.C. 1996

Stone, Tobias (Queen's)

Classical
Mango M.C. 1996

M.St. candidates

Bell, Richard (Merton)

Archaeology
Popham M.R. 1990

Brown, Ian W. (Keble)

European
Cunliffe B.W. 1996

Chapman, Andrew R. (Christ Church)

Classical
Sherratt E.S. 1996

Chi, Jennifer Y. (Lincoln)

Classical
Smith R.R.R. 1996

Fawbert, Helen (Linacre)

European
Gosden C.H. 1996

Gunby, Juliet R. (St John's)

European
Cunliffe B.W. 1996

Marsh, Maria (Keble)

Archaeology 1993

Sheldon, Richard S. (Jesus)

Classical
Claridge A. 1996

Ward, Kathryn K. (Worcester)

Archaeology
Hamerow H.F. 1996