



MUSEUMS & GALLERIES
COMMISSION

Standards ^{1.}
in the
Museum
Care of Archaeological
Collections.
1992

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Archaeological Collections 1992

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Foreword

by Dr. Ian Longworth

Over the past forty years the amount and variety of archaeological material recovered and destined for museum collections has grown enormously. At times the quantity has seemed so great as to threaten to overload the entire system in terms of conservation, storage and expense of on-going curation. Yet in the right hands and used effectively this wealth of archaeological data can be seen as an invaluable and irreplaceable resource, for unlike much of the natural world from which it is possible to obtain repeat samples, archaeological material is strictly finite and the context from which it is drawn essentially unique.

A proportion of the new finds have come from chance discovery but the great majority have been recovered through painstaking excavation, techniques of which have over the years become ever more exacting. Not only have many more excavations been undertaken but the product of those excavations has itself greatly increased both in size and in diversity. As quantity and range have improved so has the potential for interpretation.

It is not difficult to appreciate how even the humblest artefact or sherd is capable of yielding some information - to confirm or fill out a distribution pattern, establish a period or suggest an activity. More complex objects often provide insights into early technology and manufacturing techniques and go on to evoke broader questions as to why time and energy have been so expended. Associated groups broaden the picture shedding light upon contemporary and specialised use. The chronological depth and contextual range of the site collection offers even greater scope for interpretation of social range and function. In recent years still broader tasks have begun to be tackled - the interplay of city and surrounding hinterland, of how entire landscapes have been altered and re-modelled over time by human activity or in the most remote periods of how the yearly cycle of movement of simple foraging groups can begin to be reconstructed. Such work depends upon the ordered survival of the primary data and serves to underline the crucial role played by the museum collection.

Archaeology is of course not a matter of categoric statement but of interpretation. Each generation, armed with new insights and new techniques, will open up ever more avenues of thought. It would be quite wrong to assume

that what is considered to be a valid judgement today will be viewed so kindly in the next decade, still less by the next generation. New discoveries, the re-excavation of known sites, new techniques and new approaches will combine to keep interpretation under constant review. The quality of these re-interpretations will however rest largely upon the quality of the evidence now preserved. Museums must equip themselves to meet this long-term need as much as the needs of the present generation.

The explosion of new data now to hand has inevitably led to problems in the post-excavation processing of this new-found information. Back-logs have built up and publication has slowed. The cost of publication itself has begun to impose its own form of discipline. The Frere Report (1975) was the first to try to set out basic rules but problems persisted and further attempts were made in the Cunliffe Report (1982) to rein in what was seen as peripheral research in an attempt to speed publication of the basic data. More recently arguments have emerged which if sustained will re-establish the excavation archive as the principal product of excavation, seeing the task of publication as essentially that of summary and dissemination of presently perceived results while serving as a guide to the future use of the preserved archive. Clearly once formed and accepted by the museum such an archive will remain a major source of information for future workers in the field.

It is because archaeological objects need interpretation and are rarely self-explanatory that archaeological collections provide ideal teaching material. They force us to decide what questions to pose, make us learn to select the relevant and see in it the basis for further enquiry. The finest objects will delight the senses and fire the imagination; many more will demand disciplined examination to tease out the information they contain. The bulk may yield only to a broader array of statistical treatments as interrogation moves from simple questions of identity and presence to more complex issues of quantity, frequency and chronological spread. For periods before written documentation, the objects provide along with the supporting contextual evidence which modern scientific examination can reveal, the only evidence with which we can begin to gain some knowledge of the past. For the historic periods the task is no less pressing for we need to test the quality and bias of the written source and to flesh out areas lying outside the record so preserved.

If the collections are to be used to fulfil their potential, then their care becomes a matter of paramount importance. Preservation, far from being a passive role, is a task that must be worked at. It calls for the combined efforts of the security officer, conservator and curator to turn good intention into reality. To be effective in this task museums must seek to reach attainable standards and these need to apply to all aspects of the problem - the environmental conditions under which the collections are kept, their documentation, conservation and availability for study as much as the physical conditions and security of the building and storage.

To accept archaeological collections imparts both moral and financial

commitments, for we are talking here not simply of good housekeeping - though without this all else will fail - but of the on-going and expanding use of the collection for display, research and for education. Collections need curators, not mere store-keepers, to release their potential. Adequate staffing levels must inevitably be borne in mind. Not all museums should embark upon this voyage. If the likelihood is that resources are either not or unlikely to become available then it would be professionally more responsible to seek out others more capable to shoulder the burden. For those committed to the task the attainment of the highest professional standards has to be the goal. It is the objective of this booklet to spell out those standards and offer helpful advice as to how they can be achieved.

Dr Ian Longworth,
British Museum
December 1991.

References

Frere, S. S., *Principles of Publication in Rescue Archaeology*, (Frere Report), 1975, Report by a Working Party of the Ancient Monuments Board for England Committee for Rescue Archaeology, Department of the Environment, London.

Cunliffe, B. W. (ed), *The Publication of Archaeological Excavations* (Cunliffe Report), 1982, Department of the Environment and Council for British Archaeology, London.

Introduction

This booklet is one of a series being published by the Museums & Galleries Commission setting out standards in various aspects of museum work. The first four in the series will cover the museum care of archaeological, biological, geological and industrial collections.

The purpose of this booklet is to set down standards for the museum care of archaeological collections, and to provide guidance on the interpretation of these standards. It has been difficult to write, because museums vary so greatly, and so do archaeological collections, and because so many activities go to make up "care". There is, however, a growing consensus within the museum profession on how such care should be exercised. The Museums & Galleries Commission therefore drew together a group of practising archaeological curators, excavators, conservators and other experts, and this publication owes everything to their discussions and conclusions.

These standards represent a consensus of current professional opinion of best practice and as such, the Museums & Galleries Commission believes that every museum should be aspiring to reach them. "Aspiring" is the key word. We take the pragmatic view that not all museums will be able to achieve all of them in the short-term. Some standards, on the other hand, will soon be met by all museums. The standards for documentation, for example, are essentially those that all Museums & Galleries Commission registered museums are already committed to reaching.

These standards will certainly change, as techniques change and expert opinion changes. The Museums & Galleries Commission intends to publish up-dated editions of this booklet every few years.

How do we envisage the booklet being used?

- A curator is asked by management to draw up a schedule of performance objectives and indicators for the care of archaeological collections. The national standards in this booklet will be a bench-mark for the museum's own objectives and performance indicators.
- An auditor (internal or external) may wish to review how a local authority is looking after its collections. This booklet will give defined national standards against which achievement may be measured.
- A curator is trying to persuade a museum governing body to make more resources available for care of collections. This booklet will help make the case.
- A local history museum run by volunteers is reviewing its acquisition policy, and is looking for professional guidance on the implications of acquiring various classes of material. This booklet will help in drawing up a sensible policy reflecting the constraints posed by the museum's resources.

- An architect is asked to design new premises for archaeological reserve collections. This booklet sets out the standards of security, environmental control, etc that should be attained.
- A grant-giving body needs reassurance that a museum applying for grant will use it responsibly. These standards enable it to judge whether the museum is likely to do so.

Because so much goes into looking after collections, the booklet is quite long. An alternative approach would have been to separate the different aspects - security, curation, pest control and so on - into different booklets. Eventually we decided to include all aspects in one booklet, so that it could more easily be used in the ways imagined above. No harm will be done by the consequent overlap in the different booklets in the series.

Each aspect of caring for collections is divided into three sections:

- The standards themselves. These are the standards at which every Museums & Galleries Commission registered museum should be aiming. Larger and specialist museums may already be meeting even higher standards.
- Guidelines and notes, explaining and enlarging on the standards.
- Sources of advice and help: generally one or two basic publications and a first-stop address.

We have tried, in each section, to achieve a balance between the statement of principles and detailed guidelines.

The Museums & Galleries Commission is grateful to the Department of National Heritage for funding its standards development programme, and to the members of the "expert group" and others who gave their help, who are listed below.

Users of the booklet are warmly invited to comment on its usefulness, and to make suggestions for improvements - or even for a new approach - for a second edition.

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Brian Platt, Museums & Galleries Commission
Sarah Watkins, UK Institute of Conservation, Archaeology Section
Peter Winsor, The Conservation Unit, Museums & Galleries Commission

Editor Crispin Paine

Secretary Georgina Stagg

Other individuals and organisations consulted	Alan Aberg	Royal Commission on the Historical Monuments of England
	Barbara Adams	Petrie Museum of Egyptian Archaeology
	Lindsay Allason-Jones	Museums North Archaeology Panel
	Jane Arthur	West Midlands Area Museum Service
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	Hugh Chapman	Society of Antiquaries of London
	Bob Child	National Museum of Wales
	Susie Clark	Photographic Conservator, York
	Conservation Staff	The British Museum
	Mike Corfield	English Heritage
	Helen Cox	Doncaster Museum & Art Gallery
	Tom Craig	Dorset County Record Office
	Valerie Cumming	Museum of London
	Barry Cunliffe	Institute of Archaeology, Oxford
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	Jonathan Drake	Institute of Field Archaeologists
	Mrs J Ely	Rotherham Museum
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Part One: Managing Collections

1

Standards for collecting

1. 1 The museum's governing body must draw up and publish a detailed acquisition and disposal policy, which must be formally reviewed at least every five years.
1. 2 The museum must ensure that it secures legal title to items it acquires.
1. 3 Every item must be acquired in accordance with the code set out in the Museums & Galleries Commission's *Guidelines for a Registration Scheme for Museums in the United Kingdom*. Once a decision has been taken formally to acquire items for a museum's permanent collections, there should be a presumption against disposal. If disposal of items is considered, it should be undertaken in accordance with the procedure outlined in the same document.
1. 4 The museum must make every effort to be involved from the earliest stages in the planning of excavations, the archives of which may be deposited in the museum, and in particular in planning the "research design". The excavating body must ensure that the recipient museum is so involved.

Guidelines and notes

1. 5 Acquisition policies should include reference to the geographical area from which collecting takes place, and to the collecting policies of other museums, in order to avoid unnecessary duplication and waste of resources. They should also reflect the limitations on collecting imposed by such factors as inadequate staffing, storage and conservation. Small museums without archaeological specialists, and particularly those without any qualified and experienced curatorial staff, should give careful consideration to the resources which, in the light of these standards, they will be able to bring to the care of archaeological collections. It may be appropriate to exclude future acquisition in this area.
- 1.6 Many archaeological objects are acquired as casual finds, or from amateur or old excavations. Here, too, every effort should be made to observe the museum's collecting policy and to acquire as full documentation as possible.
1. 7 There is still no professional agreement on the extent to which archaeological archives may or should be sampled and disposed of by excavator or museum. Caution and conservatism are therefore advisable. The Society of Museum Archaeologists (SMA) is developing written guidelines in this area (see below).
1. 8 The museum should be sensitive to the issues involved in the curation of human remains and material of ritual significance. The Museums Association's Code of Conduct for Museum Professionals, 1991, the Museum Ethnographers Group's *Recommendations on Professional Guidelines Concerning the Storage, Display, Interpretation and Return of Human Remains in Ethnographical Collections in United Kingdom Museums*, May 1991, and the Society of Museum Archaeologist, *Selection, Retention and Dispersal of Archaeological Collections* (forthcoming), provide guidance.

Sources of advice and help

- Advice on drafting an acquisition and disposal policy can be obtained from the Area Museum Councils or from the Museums & Galleries Commission.
- Essential information on the acquisition of excavation archives is contained in; English Heritage, *Management of Archaeological Projects*, 1991, (2nd

edition), Historic Buildings and Monuments Commission for England, London, and Walker, Kirsten., *Guidelines for the preparation of excavation archives for long-term storage*, 1990, United Kingdom Institute for Conservation Archaeology Section, London.

see also

1 Institute of Field Archaeologists Finds Group, *Guidelines for finds work*, (forthcoming).

Society of Museums Archaeologists, *Selection, Retention and Dispersal of Archaeological Collections* (forthcoming).

2

Standards for the preparation and transfer of archaeological archives*

2. 1 A written agreement covering all aspects, including the question of ownership and any financial aspects, must be drawn up by site owner, developer, excavating body and recipient museum, prior to the transfer to a museum of the archive (finds and records) from an excavation, and, wherever possible, before the excavation begins. All parties must have regard for the principle of the integrity of the whole archive.
2. 2 In order to ensure compatibility with the systems of the recipient museum, the museum must be consulted about and keep itself aware of all finds work from pre-excavation planning onwards.
2. 3 Finds, samples and all other records must be physically prepared and packed, catalogued and numbered by the excavating body, in a form agreed between the excavating body and the recipient museum before they become the responsibility of the museum.
- 2.4 The sampling or other methods used to find and retrieve objects from the site must be specified in detail, as must subsequent sampling and disposal.
- 2.5 Full site documentation to a standard and in a form agreed between excavating body and museum, must accompany the finds, and must permit their contexts (layer numbers, etc) to be readily related to site stratigraphy, ie records.
- 2.6 Finds, including pottery, must not be washed on site without prior consultation with the appropriate specialist (conservator, environmentalist, bone specialist, etc), otherwise valuable evidence could be lost or deterioration encouraged. All finds must be permanently marked or labelled as appropriate. They should be packaged using methods and materials agreed by the recipient museum. A conservator should be available to block-lift delicate or broken objects and any physical structures worthy and capable of museum display or needed for research, and to supervise packaging and transport to the museum.
- 2.7 The archive of finds from each site must be reviewed at identified stages by finds researchers, museum curators and conservators in order to make an agreed selection of which objects are to be conserved, and to what level.
- 2.8 Arrangements for finds selected for specialist examination must be agreed between excavating body, museum, and specialist. All finds must be stored in appropriate environmentally monitored and controlled conditions, and must have been treated to previously agreed standards before the archive is transferred to the recipient museum. Conservation records must be treated as part of the excavation archive.
- 2.9 Classification and analysis of finds must be carried out, prior to transfer of the archive, in a manner and to a level (normally to "Level III" of the Frere Report') agreed with the museum.
- 2.10 The excavating body must ensure that the full archive of the excavation is transferred to the museum, including any items lent to specialists, etc within an agreed period of time, eg within one month.
- 2.11 The recipient museum must acquire the right to research, study, display, publish and provide public access to all the information and finds contained in the archive either immediately or after an agreed period.

Guidelines and notes

- 2.12 A museum expecting to receive an excavation archive should be fully involved from the beginning in the planning of the excavation, and in the drafting of the research design. The museum should issue guidelines for the excavating body to follow; a museum which regularly receives excavation archives should have standard conditions and arrangements.
- 2.13 In drawing up an agreement the excavating body and the museum should consider the following guidelines:
- i) The excavating body should provide the museum with two copies of an indexed inventory listing of the excavation archive. This should include lists of small finds, a list of containers of the bulk finds (eg pot bags, tile boxes, etc), a list of the paper archive (eg notebooks, ring-binders, card-index boxes, etc) and a list of maps, plans and diagrams. (One copy of these lists is retained in the museum's supplementary information file; the other is for everyday use in managing the archive in the museum). The contents of these inventory lists should be agreed, for example, small finds and bulk finds lists may include 'object type', 'material', 'provenance', 'drawing and conservation numbers and dimensions'.
 - ii) Where finds have undergone destructive analysis and cannot therefore be submitted with the full archive, the excavator should mark all relevant records accordingly.
 - iii) The excavating body should give the museum two copies of the final report. (One copy is for the museum library, one for use by researchers).
 - iv) The museum should assign a global museum identity (accession, loan, or other sequence) number to the whole site, ideally before excavation starts; this number is then applicable to the finds, the paper archive, etc. The museum number acts as the unique identifier for the totality of the archive, and must be utilised as such, eg it should be cited by the excavating body in the final publication and in all correspondence relating to the transfer of finds, and subsequently by the museum in correspondence with researchers, on museum labels, etc. The global number then acts as a lead into the site's own internal numbering sequences, eg context numbers, list of small finds, list of bags, samples, box numbers, etc (cutting duplication of effort or the need for re-numbering). The relationship between object and archaeological context is crucial to the use of the archive, and the identification number of the object and its relationship to the records relating to the site must be maintained.
 - v) It is usually not feasible to add the museum identity number to small finds or bulk finds (eg pot, tile, etc); these require either the relevant small finds number, or the site code and/or stratigraphic unit number. However, the museum identity number for the whole site should be added by the excavating body to all archive containers, boxes and bags transferred to the museum.
 - vi) Finds and assemblages which are illustrated and published in detail in the excavation report should be packed and marked so as to be easily identified and retrieved.
 - vii) The excavating body should provide hard copy of any information carried in magnetic media. Any computerised records should be accompanied by a full description of the software and hardware (including disk type) used to generate them. The location of back-up copies (if not with the museum) should be recorded.
- 2.14 The aim is to create, as cost-effectively as possible, a publicly accessible archive of finds and records from the excavation. Wherever possible all original records and finds from a single excavation should be curated together. If they are not, it must be clearly stated in each part of the archive what elements of the total archive are stored elsewhere and where they are located. If the paper and computer archives are placed in a record office, a copy should be deposited with the finds. Normally the recipient museum acquires all rights to ownership, publication, research, study and public access.

- 2.15 The museum should liaise closely with the County Archaeologist or other archaeological advisor to the local planning authority. The implications of the Planning and Compensation Act 1991 should be noted.
- 2.16 Distinct legal and administrative arrangements in Scotland make much of the practice for the transfer of archives recommended above impossible to follow there. Records of excavations funded by Historic Scotland go to the National Monuments Record of the Royal Commission on the Ancient and Historical Monuments of Scotland; finds are allocated (usually towards the end of an excavation) by the Queen's and Lord Treasurer's Remembrancer to the Secretary of State, who in turn allocates them to a suitable museum on the advice of the Inspectorate of Ancient Monuments, itself advised by the Finds Disposal Panel.

Guidelines for underwater sites

- 2.17 Ideally the same standard of recording, excavation, sampling and object care should apply underwater as on land sites. It is, however, important for museums to appreciate that underwater excavation can be difficult and that the discipline is still in an early stage of development in Britain. For the next few years there will continue to be sites producing important archaeological material which, while receiving a degree of systematic recording, are excavated to standards well below those which are currently expected on land sites. This makes it all the more important that museums should establish close contact with the excavation and offer guidance.
- 2.18 Underwater sites often produce large quantities of organic material, including waterlogged structural timbers, as well as corroded metals and concreted artefacts, and so the conservation requirement is of a different nature and on a different scale from that normally encountered on land. This requires well-prepared facilities and a carefully considered sampling and retention policy.
- 2.19 The question of ownership of material excavated from the seabed is different from that on land and is often more complex. Ownership rights can extend back over centuries and the remains of a ship and the items in it may have different owners. Establishing ownership may take up to a year from the date of recovery. It is the current policy of the Department of Transport to award to the salvor most recovered material classed as "unclaimed wreck".
- 2.20 Before the recovery of artefacts begins, arrangements should be made with the Receiver of Wrecks to permit the museum to take custody of the material during the year's retention period required by the Merchant Shipping Act 1894.
- 2.21 The recovery of artefacts from the seabed for whatever motive - commercial, the curiosity of sports divers, or archaeological investigation - is subject to the laws of salvage. As a result some excavators of underwater sites adopt attitudes to the disposal of finds which land archaeologists would find ethically unacceptable. Museums considering accepting material from underwater sites should emphasise to the salvors in the strongest terms the importance of keeping the archive intact.
- 2.22 Whether museums should accept material which was recovered for commercial motives is a complex ethical question in which the desirability of taking important artefacts into public collections has to be weighed against the risk of encouraging the future destruction of seabed sites. Museums should be guided by the *recommendations* of the International Council of Maritime Museums.

See over for sources of advice and help

Sources of advice and help

- The most detailed published source of guidance on the preparation and transfer of excavation archives is contained in *The Management of Archaeological Projects*, 1991 (2nd edition), published by English Heritage. Although intended for excavating bodies, museums will find this a valuable guide to best practice in the management process which leads to the production of the archive.
- Advice can also be obtained from the Society of Museum Archaeologists. A number of museums, such as the Museum of London, have drawn up internal standards and procedures for the transfer of excavation archives.
- Advice can be obtained by Scottish museums from the Scottish Museum Council and from the Association of Scottish Regional and Island Archaeologists.
- Invaluable advice is contained in:
Conservation Guidelines No 2, Packaging and Storage of Freshly Excavated Artefacts from Archaeological Sites, 1983, United Kingdom Institute for Conservation Archaeology Section.
Watkinson, David., (ed), *First Aid for Finds*, 1987 (2nd edition), Rescue and United Kingdom Institute for Conservation Archaeology Section.
- Helpful advice on the special problems of waterlogged wood is given in Coles, J. M. et al (eds), *Waterlogged Wood: The Recording, Sampling, Conservation and Curation of Structural Wood*, 1990, proceedings of a conference sponsored by the Wetland Archaeology Rescue Project (WARP) and English Heritage on 15 January 1990. Obtainable from English Heritage.
- Advice on underwater archaeology can be obtained from the National Maritime Museum and from the Department of the Environment's Archaeological Diving Unit at the University of St Andrews.
- Copies of *Recommendations for ICMM's position with regards to museum acquisition of objects from underwater archaeological sites* are available from the National Maritime Museum.
- Guidance on environmental samples is given in Walker, Kirsten., *Guidelines for the preparation of excavation archives for long-term storage*, 1990, United Kingdom Institute for Conservation Archaeology Section. Advice can also be obtained from the Association for Environmental Archaeology.

Footnotes

* The term 'Archaeological Archive' in this booklet means all the finds and records, in whatever form, generated by an archaeological excavation or other fieldwork programme.

¹ Frere, S. S., *Principles of Publication in Rescue Archaeology*, (Frere Report), 1975, Report by a Working Party of the Ancient Monuments Board for England Committee for Rescue Archaeology, Department of the Environment, London.

3

Standards for curation and conservation

- 3.1 The museum's collections management policy should include a programme of care based upon the research, exhibition and conservation priorities of the archaeological collections.
- 3.2 All museums with archaeological collections should have access to the advice of a trained and experienced archaeological curator.
- 3.3 All collections, whether newly excavated or part of the collection, must be inspected regularly by a trained and experienced archaeological conservator.
- 3.4 Appropriate training must be undertaken by those responsible for the day-to-day care of the collections.

Guidelines and notes

- 3.5 Museums with collections of any size, and those which accept material from excavations, should have a trained and experienced archaeological curator and a trained and experienced conservator on the staff.
- 3.6 It is not uncommon for small museums without specialist archaeological staff to hold archaeological collections, as indeed do many very small museums which have no paid staff at all. Every museum, however, whatever its size, has a duty to care for its collections, and at a minimum must maintain formal arrangements for them to be inspected regularly by a trained and experienced archaeological conservator. Museums without an archaeological curator on the staff should try to make similar arrangements for regular inspections by a trained and experienced museum archaeologist as well. It has already been noted that such museums should adopt an extremely cautious approach to the acquisition of new archaeological collections.
- 3.7 Such staff can help draw up a programme of regular inspection. The curator can advise on the identification and check the documentation of the collections and will ensure that they make their proper contribution to the wider world of scholarship; the conservator can check their physical condition and advise on conservation requirements and appropriate environmental conditions. The museum's budgets should make appropriate provision for the cost of such visits.
- 3.8 The bulk or general finds store should be inspected at least annually, with spot checks on individual items. Sensitive finds must be checked at least bi-annually, but more regularly during their first year in the museum. Appropriate action should be taken to maintain the collections in a stable condition. The museum's budget should make appropriate provisions for the costs of remedial and preventive conservation.
- 3.9 All objects temporarily transferred to new locations, whether for the purposes of conservation or exhibition, should receive the same or better conditions of care than those housed in the archaeological store. These conditions as they apply to environment, handling, packing, transport and security, are outlined elsewhere in this document.
- 3.10 Any investigative work, cleaning or other conservation-related treatment should be the subject of MI discussion between the responsible archaeological curator, finds specialists and conservators before the work is started, taking into account the use to which the object will be put (eg research, display) after conservation.
- 3.11 The conservator should keep a systematic and consistent record of all their observations on

an object as well as details of all investigative cleaning and remedial conservation treatment, including where appropriate relevant drawings, scaled photographs, and X-rays. These should be treated as part of the documentation of the excavated archive or collection (see also Section 6 below).

Sources of advice and help

- Area Museum Councils will be able to advise smaller museums about local specialist staff who may be able to undertake inspections.

- The Conservation Unit of the Museums & Galleries Commission maintains a Register of qualified and experienced conservators. It also publishes a guidance leaflet *How to Choose a Conservator or Restorer*. Contact:

The Conservation Unit
Museums & Galleries Commission
16 Queen Anne's Gate
London SW1H 9AA

- A similar service is provided in Scotland by the Scottish Conservation Bureau of Historic Scotland. Contact:

Historic Scotland
Stenhouse Conservation Centre
3 Stenhouse Mill Lane
Edinburgh EH11 3LR

- The United Kingdom Institute for Conservation is the professional body for archaeological conservators in the United Kingdom. It has a Code of Ethics which all practising members agree to abide by, and also has *Guidance for Conservation Practice*. The Archaeology Section of the United Kingdom Institute for Conservation publishes a number of useful information leaflets on the care of archaeological artefacts. Contact:

United Kingdom Institute for Conservation
37 Upper Addison Gardens
Holland Park
London W14 8AJ

- Information on training available can be obtained from the Museum Training Institute, The Conservation Unit of the Museums & Galleries Commission, and the United Kingdom Institute for Conservation. The Museum Training Institute can be contacted at:

Museum Training Institute
Kershaw House
55 Well Street
Bradford BD1 5PS
(Tel 0274 391056)

- Useful publications include:

Cronyn, J. M., *Elements of Archaeological Conservation*, 1990, Routledge, London.

Walker, Kirsten, *Guidelines for the preparation of excavation archives for long-term storage*, 1990, United Kingdom Institute for Conservation Archaeology Section, London.

4

Standards for access

- 4.1 Every museum must make publicly known the existence of its archaeological study collections.
- 4.2 Any bona fide enquirer must under normal circumstances be allowed to inspect objects and archives from the collections.
- 4.3 An enquiry about the presence of a particular type of object must normally be answered within fifteen working days.
- 4.4 An enquirer must be able to secure an appointment to see objects within 30 working days of applying to the museum.
- 4.5 An enquirer having an appointment must be able to consult all available documentation (save for confidential information) relating to the collections, and associated excavation archives where appropriate, on arrival.
- 4.6 The visitor, having made an appointment to see a collection, must be able to see any object within it, if it is on the premises, within 30 minutes.
- 4.7 A suitable study-area must be available with good light, power points, low-powered binocular microscope, equipment to read records (disks, x-rays, slides, microfiches), clear table space, access to washbasins and WC, and free of food, drink and tobacco smoke.
- 4.8 Enquirers with impaired mobility, sight or hearing must have, as far as possible, as ready access as any other enquirers.

Guidelines and notes

- 4.9 An enquirer should be regarded as bona fide unless there is reason to believe that he or she is contravening or intends to contravene the law or codes of archaeological ethics. See 9.3 for standards for invigilation.
- 4.10 All excavation archives should be made available for consultation at the latest three years after the end of active excavation, whether or not published.
- 4.11 The study area should as far as possible have the same environmental conditions as those in which the collections are normally kept. Compromise may be necessary to maintain temperatures in working areas at the legal limit.
- 4.12 The museum will need to balance the good aim of encouraging access to its collections with the requirements of conservation and of security (see especially 12.9 and 9.3.2). Enquirers who need to handle objects should be advised on how to do so safely; some objects may be too fragile to handle at all (see Section 12).

Sources of advice and help

- Museums & Galleries Commission, *Code of Practice on Disability for Museums and Galleries*, (and accompanying Resource Pack), 1992, Museums & Galleries Commission, London.

5

Standards governing the loan of objects

- 5.1 Every museum must have a written loans policy and standard conditions. Borrowers must accept these conditions in writing before a loan is made.
- 5.2 All archaeological material is valuable and irreplaceable, and so loans must be packed carefully, securely, and where appropriate in environmentally controlled conditions. Suitable quality containers, packing material and means of transport must be provided.

Guidelines and notes

- 5.3 There should normally be a presumption in favour of lending items from the collection, whether for exhibition or for research. However, loans inevitably put objects at greater physical risk, and a responsible museum will approach the drafting of a loans policy with great care, and will ensure that the policy is rigorously observed.
- 5.4 Museums should keep a register of approved borrowers, both institutions and individuals.
- 5.5 A written agreement between lender and borrower should normally include:
- object condition reporting;
 - insurance arrangements;
 - length of loan and arrangements for renewal;
 - conditions of security, handling, presentation and environmental monitoring and control;
 - agreement on limits of remedial conservation;
 - arrangements for return.
- 5.6 See 12.37 -12.41 for the prevention of damage to objects in transit.

6

Standards for documentation

- 6.1 Entry records must be maintained of all items deposited in the museum, whether as enquiries, loans or potential acquisitions.
- 6.2 Bound registers must be maintained with records about all accessions, each including an accession or inventory number and sufficient information for collection management purposes. Long-term loans must be similarly recorded either in the same or in a parallel register. Fully automated accession systems must be backed up by a bound hard-copy record on archival-quality paper.
- 6.3 Each accession and (where appropriate) each individual item must be marked or labelled with a unique accession or inventory number. Such marking must not damage the object. Any previous marking must be preserved or recorded.
- 6.4 A catalogue must normally be maintained, bringing together all the primary information about each item or group in the collection.
- 6.5 One or more indexes, or equivalent information retrieval facilities, must be maintained, including (where appropriate) subject, donor and location lists.
- 6.6 Back-up copies of key records, including entry records, accession records, catalogue records and current exit records must be made regularly and kept in a separate building.
- 6.7 The documentation system must record every movement of an object both inside and in and out of the museum.
- 6.8 Every new acquisition must be accessioned as soon as possible and at least within one year, and the museum must adopt a formal policy designed to address any backlog of documentation.

Guidelines and notes

- 6.9 These standards refer to the general principles which should govern documentation of museum objects. The special factors which should be taken into account in documenting excavation archives are covered in Section 2 above.

Sources of advice and help

- An invaluable introduction to museum documentation is:

Holm, Stuart A., *Facts & Artefacts: How to Document a Museum Collection*, 1991, Museum Documentation Association, Cambridge.

- The Museum Documentation Association determines standards for museum documentation, publishes

appropriate guidance, record cards and computer programs, and offers general advice on all aspects of documentation.

- Data standards are expanded and explained in the *MDA Data Standard*, 1991, Museum Documentation Association, Cambridge. A leaflet introducing the Standard is available free from Museum Documentation Association.

- Advice can be obtained in the first instance from the Area Museum Councils or direct from:

Museum Documentation Association
347 Cherry Hinton Road
Cambridge CB1 4DH
(Tel 0223 242848)
(Fax 0223 213575)

- Museums in Scotland may also obtain advice from the Scottish Museums Documentation Unit of the National Museums of Scotland.

Footnotes

* 'Documentation' in this booklet means all the recorded information a museum holds about its collections, and also the gathering, storing, manipulation and retrieving of that information.

7

Standards for museum archaeological research

- 7.1 The museum governing body must formally approve a policy for archaeological research, which should be regularly reviewed.

Guidelines and notes

- 7.2 Research is fundamental to the function and purpose of a museum, though its form will vary greatly between museums of different sizes and types.
- 7.3 The museum's research policy should preferably be written as part of the museum's development plan or collections management policy. It should be realistic, relevant to the museum's collections, its staff and resources, and to its public role.

Sources of advice and help

- A valuable introduction to archaeological research in museums is: Davies, Gareth, 'Research: archaeological collections', in Thompson, J. M. A. et al (eds), *Manual of Curatorship*, 1984 (1st edition), Butterworths/Museums Association, London.
- The museum research policy should be drafted in discussion with neighbouring and related museums and with appropriate local and national academic societies and specialist groups; help can be given by staff at the relevant national museums and by the Society of Museum Archaeologists.

8

Standards relating to sites and monuments records

- 8.1 Museums with provenanced British archaeological material must provide information on these collections to the relevant Sites and Monuments Record.

Guidelines and notes

- 8.2 Sites and Monuments Records are invaluable to research and to informed decision making about *in situ* preservation.
- 8.3 Sites and Monuments Records have a key role in the planning process; they also make a major contribution to conservation, management, tourism, education and research. It is essential that their records be as complete as possible. Museums have a responsibility to ensure that the information they hold is considered when decisions about the archaeological resources of an area are made.
- 8.4 There should be an established procedure whereby the museum passes relevant information to the Sites and Monuments Record and the Sites and Monuments Record/planning authority notifies the museum, where appropriate, of planning applications and other work affecting archaeologically sensitive areas.
- 8.5 The information which museums should routinely pass to Sites and Monuments Records should include not only that relating to acquisitions but also information about items brought in for identification and archaeologically significant enquiries.
- 8.6 All English counties now have Sites and Monuments Records, usually maintained by the County Museum Service or Planning Department; comparable arrangements are in place in Wales, and in Scotland where they are based on the Regional Councils. The Sites and Monuments Record for Northern Ireland is the responsibility of the Historic Monuments and Buildings Branch of the Department of the Environment for the province.
- 8.7 The Royal Commissions on the Historical Monuments (RCHMs) of England, Wales and Scotland maintain the National Monuments Records and copies of archaeological archives held by museums, and are the lead national bodies for oversight of the system of local Sites and Monuments Records. They oversee and promote the work of Sites and Monuments Records, and maintain a national index to their more detailed local collections of data. Together the records of the Royal Commissions form a national archaeological database.
- 8.8 Some museums, mainly those with active fieldwork sections, may hold their own Sites and Monuments Records separately from their county Sites and Monuments Record. These should always have clear links with the records held at county, regional and national level.
- 8.9 Authorities with the responsibility for maintaining Sites and Monuments Records should guarantee access free of charge for museums, in order to enable them to meet their responsibilities in framing policies and actions to safeguard the archaeological inheritance.

See over for sources of advice and help

Sources of advice and help

- Information about Sites and Monuments Records relevant to anywhere in Britain is available from:

The Hon Secretary
Association of County Archaeological Officers
c/o Association of County Councils
Eaton House
66A Eaton Square
London SW1W 9BH

- The four lead bodies are:

Royal Commission on the Historical Monuments of England
Fortress House
23 Savile Row
London W1X 2JQ
(Tel 071 973 3500)

Royal Commission on the Ancient and Historical Monuments of Scotland
John Sinclair House
16 Bernard Terrace
Edinburgh EH8 9NX
(Tel 031 662 1456)

Royal Commission on Ancient and Historical Monuments (Wales)

Crown Buildings
Plas Crug
Aberystwyth
Dyfed SW23 2HP
(Tel 0970 624381)

Historic Monuments and Buildings Branch
Department of the Environment for Northern Ireland

5-33 Hill Street
Belfast BT1 2LA
(Tel 0232 235000)

- Association of County Archaeological Officers, *Sites and monuments records: policies for access and charging*, 1991, Association of County Archaeological Officers, London.

See also:

Department of the Environment, *Archaeology and Planning*, Planning Policy Guidance (PPG16), 1990, HMSO, London.

Part Two: Protecting Collections

9

Standards for protection against theft

9.1 Standards for physical protection

- 9.1.1 The STRUCTURE of the building or area in which collections are kept must be capable of withstanding a determined attack by an intending thief or vandal.
- 9.1.2 WINDOWS must be physically defended so that an intruder is deterred from trying to get in or is delayed long enough to allow a supporting intruder alarm to trigger a response before the intruder can enter, steal and escape.
- 9.1.3 DOORS must be physically defended to the same standard as windows.
- 9.1.4 SHOWCASES must not be regarded as the primary protection against theft of display material when the building is unoccupied. Their construction must provide a level of security appropriate to the risk.

Guidelines and notes

- 9.1.5 Further advice on these standards and guidelines can be obtained from the Museums & Galleries Commission's Museums Security Adviser.
- 9.1.6 The structure of the building should be in at least 9" cement mortar/clay brickwork or material of the equivalent penetration resistance.
- 9.1.7 The number of windows should be reduced to the essential minimum. Windows no longer required should be bricked up using clay bricks or equivalent and cement mortar fully keyed into the existing walling, or by other methods agreed with the Museums Security Adviser. Windows in use should be protected by means agreed with the Museums Security Adviser.
- 9.1.8 Doors to the outside should be reduced to the minimum, leaving only those required for entry or as Emergency Exits. Unused doors must be bricked up as with windows, or blocked by other methods agreed with the Museums Security Adviser. Remaining doors should be of at least 2" thick solid construction and fitted with security standard mortice deadlocks. If doors of lesser quality are to be retained, they should be protected by internal roller shutters or folding metal gates. Emergency exit doors should be fitted with modern quick release door furniture which must be capable of being deadlocked when the building is unoccupied.
- 9.1.9 Pitched ROOFS of slate or tile should be fitted over close-boarded timber. The use of roofs constructed of other materials should be agreed with the Museums Security Adviser. Unauthorised access to the roof should be limited by physical barriers, such as fencing, anti-climb paint or anti-vandal barriers.
- 9.1.10 The risk to objects on display will vary enormously, depending on the value of the object, type of visitor, neighbourhood, etc. The risk should be assessed with the Museums Security Adviser and Crime Prevention officer and appropriate showcases, etc provided.

9.2 Standards for perimeter alarms

- 9.2.1 All openings in the building fabric, such as doors, windows and rooflights, must be fitted with intruder detectors. An intruder detection alarm system which qualifies for a NACOSS certificate and is to BS 4737: *Intruder Alarm Systems in Buildings*, specification should be fitted by a reputable company.

Guidelines and notes

- 9.2.2 The system should be as simple as possible to avoid an unacceptable false alarm rate and should depend upon suitable sensors fitted to doors and other openings. Movement or body heat detectors, being prone to false alarms, should be used only where absolutely necessary and in limited numbers.
- 9.2.3 The signalling of an alarm condition should be by means of a monitored line to an alarm company's central station. This will give an alarm if the line is cut.

9.3 Standards for invigilation

- 9.3.1 The level of invigilation of the displays must be appropriate to the risk.
- 9.3.2 The bona-fides of all researchers with access to objects must be checked and recorded, and they must be adequately supervised.
- 9.3.3 Nobody must be allowed into museum stores unless accompanied by an authorised member of staff.

Guidelines and notes

- 9.3.4 The risk to items on display should be assessed and an appropriate level of invigilation be provided. This level must never be reduced; if sufficient invigilators are not available the gallery or even the whole museum should be closed. Special care should be taken at unusual times, eg exhibition installation or evening events.
- 9.3.5 Researchers have, unfortunately, been responsible for serious thefts from museums. Even the most senior scholars will understand the need for tactful, but strict, invigilation.
- 9.3.6 The Museums Association's *Guidelines on Security When Using Outside Contractors*, published annually in the Museums Yearbook, Museums Association, London, should be observed.

9.4 Standards for key security

- 9.4.1 A strict policy regarding the possession of keys must be devised and enforced.

Guidelines and notes

- 9.4.2 There should never be more keys than is strictly necessary and the number of people in possession of keys should be kept to the barest minimum. All keys, other than the external doorkeys held by keyholders, and keys to safes should remain within the building in a secure key cabinet or safe, and should be identified by a coding system. An issue system against signature should be used as a security measure.

Sources of advice and help

- The following publications form a useful introduction to museum security:
 - a leaflet published by the Museums & Galleries Commission, *Museum and Gallery Security*, 1989, Museums & Galleries Commission, London.
 - Hoare, Nell, *Security for Museums*, 1990, Committee of Area Museum Councils.
 - Burke, R. and Adloye, S., *Basic Museum Security*, 1991 (2nd edition), International Council of Museums, Paris.
 - Kluwer Handbooks, *Handbook of Security*, Updated periodically, Croner Publications Ltd, Kingston on Thames.
 - Thompson, J. M. A. et al (eds), *Manual of Curatorship*, 1984 (1st edition), Butterworths/Museums Association, London.
- Museums Association's *Guidelines on Security When Using Outside Contractors*, published annually in Museums Yearbook, Museums Association, London.
- Advice is readily available from the Museums & Galleries Commission's Museums Security Adviser (Tel 071 233 4200) and from the Area Museum Councils.

10 Standards for protection against fire

- 10.1 The museum building must be designed or adapted to minimise the risk of fire and to prevent its spread.
- 10.2 Areas housing collections must be rigorously insulated to a high standard (not less than half an hour protection, but preferably to one hour) from fire spread from areas of risk, eg workshops, laboratories, kitchens, boilers, chemical stores. The degree of risk from 'risk areas' must be reduced as much as possible, eg by using an external chemical store. If chemicals are kept within the building, it must be in accordance with the advice of the local authority's Fire Officer. A suitable Control of Substances Hazardous to Health (COSHH) Regulations assessment must be made.
- 10.3 All electrical wiring and equipment (including portable equipment) must be installed in accordance with the appropriate British Standard, the Institute of Electrical Engineers' Regulations, and the Electricity at Work Regulations, and must be regularly maintained and checked as required by those regulations. All mechanical equipment must also be installed in accordance with appropriate British Standard and statutory instructions and must be regularly maintained.
- 10.4 The Fire Officer's advice must be sought on the selection of all materials used in displays and storage areas. Normally all such materials should be fire-retardant.
- 10.5 Local Authority Fire Officers must be invited - quite apart from their statutory responsibilities - to inspect the premises at least once a year, and be made aware of the particular requirements of museums. Their recommendations must be reported to the museum's Board of Management. Their approval must be sought when any building alterations are to be carried out.
- 10.6 All contracts for work on the premises must be on a 'Permit to Work' basis and must include a "hot-work clause" to cover the safety regulations contained in Section 31(4) of the Factories Act 1969.
- 10.7 All parts of the building must be covered by an automatic fire-detection and alarm system, installed and maintained in accordance with BS 5839: *Fire Detection and Alarm Systems in Buildings*.
- 10.8 The premises must be equipped with fire-fighting equipment as recommended by the Fire Officer and complying with BS 5423: *Portable Fire Extinguishers*, and BS 5306: *Fire Extinguishing Installations and Equipment on Premises*.
- 10.9 Fireproof cabinets must be provided to house the primary records and museum documentation.
- 10.10 All staff and volunteers must regularly attend training in fire prevention and response. The level and standard of this training must be at least consistent with Part 1 (18) Fire Precautions Act 1971.

Guidelines and notes

- 10.11 A survey is needed to decide the type, number and location of fire-detection sensors appropriate to the building. Indeed, a wider ranging survey can be undertaken to identify specific risks and precautions required, to provide a fire precautions manual containing checklists and disaster plans (see Section 16) and to set out a reporting procedure. Both specialist companies and many major security firms can give such advice.

Smoking should be confined to designated parts of the premises which do not contain collections.

Sources of advice and help

- Information about UK fire authorities and companies offering prevention and detection services is given in the *Security & Fire Prevention Yearbook*, available from:

Paramount Publishing
17-21 Shenley Road
Borehamwood
Herts

- Other useful information such as safety data sheets can be obtained from:

Fire Protection Association
140 Aldersgate
London EC1

and

Fire Prevention Information
Aldermay House
Queen Street
London EC4N 1TJ

- Many museums are in historic buildings, whose adaptation to meet fire

prevention and security requirements often causes problems. *Fire Safety in Historic Buildings*, 1990, published by the Fire Protection Association is a useful source of advice. Area Museum Councils can also give advice - directly or through consultants - on possible solutions.

- Useful information on the interpretation of the Fire Precautions Act 1971 can be found in *Code of practice for fire precautions in factories, offices, shops and railway premises not required to have a fire certificate*, HMSO 1989, and in *Fire Precautions Act 1971: guide to fire precautions in existing places of work that require a fire certificate*, HMSO.

- Helpful advice is contained in:

East Midlands Museums Service, *The Museums and Records Office Emergency Manual*, 1991, East Midlands Museums Service, Nottingham.

11

Standards for protection against flood

- 11.1 As far as possible no pipework or tanks must be permitted in new buildings in areas where collections are kept; every effort should be made to exclude pipework from such areas in old buildings.
- 11.2 Objects which can be raised (if necessary on a pallet, with lifting gear), must be placed higher than six inches above the floor and away from the walls.

Guidelines and notes

- 11.3 "If a flood can occur, one day it will"; this assumption should guide all arrangements in the museum.
- 11.4 Compliance with relevant building regulations and recommendations, especially in old buildings, may make complete exclusion of pipework difficult. Every effort should be made, in discussion with the appropriate technical consultant, to find a satisfactory compromise solution. In areas where objects can be raised off the floor, one solution may be to run the pipework at ground level rather than ceiling level. Automatic cut-off valves should be installed, and leak detectors are desirable.
- 11.5 All pipework and stop-cocks should be labelled in accordance with BS 1710: *Identification of pipelines and services*, should be noted on the building plan in the museum's Disaster Plan, and should be very frequently inspected during frosts.
- 11.6 Adequate drainage to cope with flooding should be provided; drains should have non-return traps.
- 11.7 The danger of water-damage as a result of fire should be considered in disaster plans (see Section 16), and should be regularly discussed with the Fire Brigade.
- 11.8 Where there is a risk of water leaking from above, the tops of shelves and showcases should be protected with polythene sheeting. Waterproof boxes, cabinets, etc should be used whenever possible.
- 11.9 All staff and volunteers should receive regular training in flood prevention and response.
- 11.10 Section 16 gives standards for disaster planning.

Sources of advice and help

The Fire Brigade will provide advice on the prevention of flooding.

12 Standards for protection against physical damage

- 12.1 All objects must at all times be provided with appropriate physical support, providing maximum support with minimum stress to the object.
- 12.2 Packing and support materials must be inert and must not affect the object in any way.
- 12.3 The handling and movement of objects must be kept to an absolute minimum; archaeological materials are more fragile and vulnerable than their modern counterparts.
- 12.4 Suitable equipment must be available for the safe moving of objects.
- 12.5 All objects must be handled wearing clean white cotton or polyvinyl surgical gloves; if that is impracticable, hands must be washed and dried before and after handling objects.
- 12.6 Objects must never be worn, tried on, flexed or used except for purposes of authorised research.
- 12.7 Objects must be protected from physical shock and vibration.
- 12.8 Objects must, where appropriate, be kept separate from each other to prevent abrasion and contamination.
- 12.9 Staff, researchers and volunteers must be trained in the handling and moving of objects, and must be aware of the potential risks and dangers both to the objects and to themselves.
- 12.10 Appropriate procedures to prevent accidental damage must be set up and followed.

Guidelines and notes

- 12.11 'Faulty procedures and high risk situations are to be found in both small and large institutions. Every museum should periodically re-examine procedures, eliminate incompetent handling and hazardous activities and introduce training programmes for all categories of personnel involved' (Stolow 1987).

In storage

- 12.12 Appropriate packaging using inert materials should fully support and protect an object whilst allowing it to be readily accessible. It should be possible to undertake an initial examination of an object without removing it completely from its packaging or handling it directly.
- 12.13 Smaller items should be individually bagged and/or boxed so that there is no risk of abrasion. Bags should be of perforated polythene which is inert and enables the object to be seen. Boxes should be of acid-free cardboard with phosphor bronze staples, or of polythene if a micro-climate is required. The size and thickness of bags and boxes should be appropriate to the size and weight of the object.
- 12.14 Boxes and bags should be clearly labelled so that their contents can be identified without unpacking.

- 12.15 Within their boxes, objects should be placed in 'nests' of acid-free tissue paper or of polyethylene foam; they should not be cocooned or mummified. White cotton tape should be used to secure packaging, never sticky tape.
- 12.16 Larger objects, eg architectural fragments, should be palletted if too large for shelves. Pallets should be larger than the object to provide protection from knocks, and the object should be strapped to the pallet, from which it should be separated by polyethylene foam. Objects should be covered with dust sheets of unbleached, undyed cotton or calico.
- 12.17 Shelving should be strong enough, and should be wider than the boxes or objects to be placed on it. If boxes overhang they can easily be knocked off. The stacking of boxes should be avoided. The heavier items and boxes should be placed on the lower shelves to reduce risk of damage and injury when removing them.
- 12.18 Roller racking and drawers which stick can damage fragile specimens.
- 12.19 Floor loading should conform to BS 6399: Part 1, *Design loading for buildings: Part 1. Code of practice for dead and imposed loads.*

Moving items within the museum

- 12.20 Lifting and moving equipment should be provided to ensure that no one lifts, carries or moves any load which is so heavy or bulky as to risk causing injury.
- 12.21 Aisles and corridors should be kept clear at all times.
- 12.22 Objects should always be moved in their boxes or pallets, or in an alternative container.
- 12.23 Before an object is moved the route should be prepared and a clear area made ready to receive it.

Handling objects (study, photography, drawing, etc)

- 12.24 The museum should define the amount of handling permissible for each object, taking account of its material, its fragility, its rarity, its scientific, aesthetic and educational value and the potential risk of damage. Some objects, for example, will be offered to visiting parties to handle; those that may be used in this way should be identified. Some researchers may need to feel an object with the bare hand, for example when identifying pottery fabrics; if so, their hands must be scrupulously clean and dry. In every case the museum will need to balance reasonable use and preservation. The condition of objects should be checked and recorded before and after handling.
- 12.25 The wearing of clean gloves is not only to protect objects from the corrosive, staining effects of hands but also to protect the handler. Materials such as lead, some copper corrosion products, lead glazes and some substances which have been used in conservation treatments are poisonous. Different gloves should be used for different materials to prevent cross contamination.
- 12.26 Archaeological materials are more fragile than modern equivalent materials and objects. Before handling, always STOP, LOOK and THINK. Do not pick objects up by vulnerable, easily-detached parts such as rims, handles, arms, legs, heads or restored areas. Beware of hairline cracks in glass and ceramics. Avoid flexing moving parts such as chains or tweezers. Always use two hands to hold and fully support the main body of an object, ensuring that vulnerable parts are safe. This applies even to the smallest object: hold the object with one hand, with the other cupped underneath or place it in a suitable container.

- 12.27 Lift and put down objects gently. Handle objects over a soft surface, maintaining a minimum distance between object and surface so that if it is dropped the risk of breakage is reduced.
- 12.28 Do not use Blu-tak™, tape or plasticine in direct contact with objects; they stain and detach loose surfaces. Support objects with foam or acid free tissue, or cover plasticine with clingfilm to isolate it from the object.
- 12.29 Take precautions to prevent physical damage from things used to study or record objects, or worn by the handler, such as jewellery, watches, scissors, pens, lights, cameras or lens caps.
- 12.30 Museums should establish procedures for dealing with breakages. If an object is dropped or otherwise broken, all the pieces should be picked up, kept safely, and passed to the conservator.

On display

- 12.31 The physical security of an object should not be sacrificed for a dramatic design effect.
- 12.32 Display mounts should provide maximum support to the whole object, taking account of its weight and centre of gravity. Ensure that mounts and shelves are strong enough and secure. Avoid glass shelves.
- 12.33 Ensure that objects and mounts are not subject to vibration, for example when people walk on the floor or knock the case. Objects on glass shelves can 'walk' if the shelf vibrates.
- 12.34 The mounting technique should be carefully devised to avoid any risk of damage to the object. For example, thread should be padded to prevent it cutting into the surface, and pins should be covered with an inert material.
- 12.35 Objects should not be allowed into exhibition areas whilst preparations, such as carpentry, electrical work and painting are going on.
- 12.36 Dangerous and careless cleaning and dusting procedures on and around objects on display can lead to physical damage. Cleaning staff should receive regular training.

Moving objects between museums

- 12.37 The condition of objects should be checked and recorded before and after the move.
- 12.38 It is essential to protect objects against shock and vibration at all stages. Additional packaging may be needed to ensure soft, flexible materials immediately next to objects to buffer against physical shock and vibration, within an outer rigid casing. Objects should not be able to rattle about within their packaging. A variety of instruments is available to monitor shock and vibration received in transit.
- 12.39 There are specialist firms trained and equipped to transport particularly large, awkward, fragile, environmentally sensitive and valuable items. A removal service, using specially-designed high-security vans, is available through some Area Museum Councils.
- 12.40 Objects should not be entrusted to the post office or general parcels services. Objects should always be couriered.
- 12.41 Boxes, crates, etc in vehicles should be secured so that they will not move or slide about. Drivers should be made aware that they are carrying a fragile load and should drive accordingly.

Sources of advice and help

- Advice can be found in

Watkinson, David.,(ed), *First Aid for Finds Finds*, 1987 (2nd edition), Rescue and United Kingdom Institute for Conservation Archaeology Section.

British Museum, *A Guide to the Storage, Exhibition and Handling of Antiquities, Ethnographia and Pictorial Art*, 1990 (2nd edition), British Museum Publications, London.

Stolow, Nathan., *Conservation and Exhibitions*, 1987, Butterworths, London.

Sandwith, H. S. and Stainton, S., *The National Trust Manual of Housekeeping*, 1991 (2nd edition), Viking.

- The National Trust also publishes a series of training videos entitled *Keeping House*, much of which is relevant to the care of archaeological collections in museums.

- Advice and practical help can be obtained from the Area Museum Councils.

13 Standards for protection against damage due to poor construction or maintenance of buildings and of their furnishings and fittings

- 13-1 Buildings used for the display, storage or examination of objects must be regularly inspected to ensure they continue to provide adequate physical protection against the weather, and are generally fit for the purpose.
- 13.2 Maintenance of the fabric of the building must be given a high priority and funds budgeted for this. A badly maintained building will put a collection at risk from environmental damage.
- 13.3 Expert technical advice must be taken when planning modifications to the building or the introduction of measures to control the environment.
- 13.4 All collections and storage areas must be kept clean and tidy, and a regime for regular cleaning instituted.
- 13.5 Before environmental control equipment (eg humidity control, heating or air-conditioning plant) is installed, the environment of the area to be controlled must be monitored. A suitably qualified and experienced person must assess the condition of the building using the resulting data. Ideally, the monitoring should be for a period covering all four seasons and be related to the external climatic conditions during the period.
- 13.6 A programme for the regular maintenance of all environmental monitoring and control equipment must be established. Maintenance should be linked to use and not to the time since the last service. These costs should be built in to the budget.
- 13.7 All harmful biologically active agents must be eliminated from the collections, storage areas, buildings and plant.
- 13.8 A programme for regular monitoring of collections, buildings and plant for pests, etc must be instituted.
- 13.9 All incoming objects, together with their associated packaging materials, must be inspected for the presence of biologically active agents before being introduced to the main storage or display areas.
- 13.10 Objects must not come into contact, or close association, with materials that emit harmful substances (gases, fumes or other forms of pollutant).
- 13.11 All materials used for the storage, display or transport of objects must be tested by a recognised method before being used in the construction, fitting out or dressing of a display case or storage module.
- 13.12 All areas where objects are stored or displayed must be kept in darkness when not in use by staff or visitors.
- 13.13 All maintenance, monitoring, cleaning, pest control or related work must be undertaken, or supervised, by fully trained and experienced personnel.
- 13.14 Any use of pesticides must be in accordance with the Health and Safety Commission Approved Code of Practice for the Safe Use of Non-Agricultural Pesticides.

Guidelines and notes

- 13.15 New building work, redecoration and routine cleaning can introduce contaminants such as dust, solvent fumes or large quantities of moisture which are potentially harmful to objects. Action should be taken to remove dust and excess moisture before collections are rehoused following building work.
- 13.16 Recommended levels of relative humidity and temperature within a building can be more easily attained if the building has been well maintained and is well insulated. The structure should be watertight, with all possible sources of damp (failed or non-existent damp courses, leaking pipes, water tanks, faulty guttering, missing roof-tiles, etc) identified and remedied. Basements and attics should be avoided as they are difficult to control environmentally.
- 13.17 Measures should be taken to stabilise the environment within a building or room. Insulation is one way of doing this, but professional technical advice needs to be taken. All apertures should be draught-proofed and blacking out windows or introducing double-glazing may help to reduce temperature fluctuations. However, the cause of temperature instability should first be identified, otherwise these measures can make the situation worse.
- 13.18 Where new building work such as concreting and plastering introduces moisture into a building a period of time for drying out is required. The length of time will depend on the moisture content of the materials used and the thickness with which they have been applied. Surface drying can be speeded up using appropriately sized industrial dehumidifiers before the introduction of specimens into the space.
- 13.19 Dust causes damage directly and indirectly. It can cause surface damage, eg scratches; it encourages mould and corrosion by attracting and holding moisture; it can act as a catalyst for other chemical reactions such as fading and corrosion.
- 13.20 Dust can originate from both internal and external sources; good housekeeping and simple preventive measures can be used to reduce levels to a minimum. Windows should be close fitting and kept shut, and concrete floors covered or sealed. All objects should be boxed or protected by dust sheets (avoiding use of all materials that build up static charge and so attract dust), and there should be large loop-piled doormats at the doors. The use of vacuum-cleaners with ultra-fine filters is recommended; these should conform to BS 5412: Section 2.2., Supplement 1, *Specification for type H industrial vacuum cleaners for dusts hazardous to health*.
- 13.21 Biologically active agents include rats, mice, birds, insects, fungi, algae, bacteria, etc
- 13.22 The storage and use of pesticides is controlled under the *Control of Pesticides Regulations, 1986*. Emphasis should be on 'good housekeeping', but where this fails to prevent or control infestation, local treatment of affected items using *approved* pesticides should be undertaken. Remedial treatments to eliminate any biological pest should be minimal, in order to reduce potential risk of damage to specimens, to the environment and to staff and visitors. Non-toxic methods of pest control, such as freezing and the replacement of oxygen with other gases, are becoming more widely used. A suitable Control of Substances Hazardous to Health (COSHH) Regulations assessment must be made.
- 13.23 Many inorganic and organic materials are affected by gases, organic vapours and other compounds given off by substances in contact or close proximity to them. Objects may thus be vulnerable to damage. Sources of these potentially harmful substances include: manufactured boards, natural fibres such as wool-felt and silk, fire retardant coatings, cleaning compounds, recently applied paint, adhesives, and some woods, especially oak. Many woods give off acetic acid in small quantities which can cause damage in an enclosed space.

- 13.24 Both cleaning materials and materials for use in the display and storage of objects should be tested for any possible harmful effects.
- 13.25 Concentrations of reactive gases like sulphur dioxide, ozone and nitrogen oxide can rise to high levels in city air, as can levels of smoke and building dust. These gases cause fading and degradation of organic materials, and deterioration of inorganic materials, while the particles cause irremovable staining and soiling. These pollutants can be reduced in the museum by sealing windows, doors and applying a positive pressure to sensitive areas and by air-conditioning which incorporates air-scrubbers. Well sealed storage containers contribute significantly to protection from external pollutants. Photocopiers are a source of ozone.
- 13.26 Building and finishing materials give off both particles (eg sawdust and concrete dust) and vapours (eg ammonia and water) especially during and soon after application. Specimens should be protected from these effects; a new or newly decorated building should as far as possible not be used to house specimens until tests show that emissions have ceased. This may take some months.

Sources of advice and help

- The information contained in this Section applies to Section 14 as well.
- Advice can be given by:

Area Museum Councils
United Kingdom Institute for Conservation
Archaeology Section
The Conservation Unit of the Museums & Galleries Commission
- Advice on pesticides is available from all regional offices of the Health and Safety Executive, and from

Registration Section
Health and Safety Executive
Magdalen House
Stanley Precinct
Bootle
Merseyside L20 3QZ
- Several organisations including some commercial conservation firms offer a testing service for the suitability of materials for use in exhibition or storage of museum objects. These include:

Area Museum Council for the South West
North of England Museums Service
Wiltshire Library and Museum Service
Council of Museums in Wales
British Museum Conservation Department
- An up-to-date introduction to the whole field is

Cassar, May, *Environmental Management-Guidelines for Museums and Galleries*, in preparation, Museums & Galleries Commission, London.

 - The following publications are useful:

Chartered Institution of Building Services Engineers, *Lighting guide: museums and galleries*, revised edition forthcoming, Chartered Institution of Building Services Engineers.

Health and Safety Executive, *Health and Safety Commission Approved Code of Practice for the Safe Use of Non-Agricultural Pesticides*, 1991, Health and Safety Executive.

HMSO, *Pesticides*, a list of permitted pesticides published annually on behalf of the Health and Safety Executive and the Ministry of Agriculture, Fisheries and Food.

HMSO, *Control of substances hazardous to health in fumigation operations*, Control of Substances Hazardous to Health Approved Code of Practice, 1988, Health and Safety Commission.

Pinniger, D., *Insect Pests in Museums*, 1990 (2nd edition), Archetype Publications, Denbigh.

Pye, Elizabeth., 'Conservation and storage: archaeological material', in Thompson, J. M. A., et al (eds), *Manual of Curatorship*, 1984 (1st edition), Butterworths/Museums Association, London.

- The Health and Safety Commission and the Health & Safety Executive publish a great deal of information which is of interest to museum managers. Many publications are available free of charge. Contact HSE Publications Point, St Hugh's House, Stanley Precinct, Bootle, Merseyside L20 3LZ (Tel 051 951 4000). A full list of current Health and Safety Commission/Health & Safety Executive publications, "Publications in Series", is published twice yearly.

14 Standards for protection against damage through poor internal environmental conditions (relative humidity, temperature and light).

- 14.1 Different materials must be kept at the relative humidity and temperature levels set out in Tables A and C.
- 14.2 Sudden or extreme fluctuations in relative humidity and temperature must be avoided.
- 14.3 Temperature, relative humidity and light must be monitored in all storage and display areas, and the records assessed regularly with reference to the condition needs of the collection(s). At least every six months a conservator must collate and assess the records. A report must be presented to senior management and any recommendations acted on.
- 14.4 Before environmental control equipment (eg portable humidifiers or dehumidifiers) is acquired or installed, the environment of the area to be controlled must be monitored and the resulting records collated and assessed by a conservator or other suitably qualified and experienced person in the light of the condition of the collection.
- 14.5 All sensitive materials must be protected from excessive exposure to sources of natural and electric light.
- 14.6 Visible and ultraviolet light levels must be kept at or below those shown in Table B.
- 14.7 The period of exposure to light must be kept to a minimum as damage by light is cumulative.
- 14.8 Objects must be isolated from sources of direct heat, including the heat-producing components of lighting installations.
- 14.9 A programme for the regular maintenance of all environmental monitoring and control equipment is essential. Maintenance should be linked to use and not to the time since the last service. These costs should be built in to the museum's budget.
- 14.10 All maintenance, monitoring, cleaning, work, etc must be undertaken, or supervised, by fully trained and experienced personnel.

Guidelines and notes

- 14.11 Levels of humidity and temperature recommended in publications - even in these Standards - should be used with caution. For organic materials, in particular, it is important to maintain an equilibrium between the moisture content of the object and its environment. Advice on the storage of environmental samples is given in Walker, Kirsten., *Guidelines for the preparation of excavation archives for long-term storage*, 1990, United Kingdom Institute for Conservation Archaeology Section.
- 14.12 In order to achieve best environmental conditions for all materials, the organisation of storage and display areas needs to be material specific, with separate zones for sensitive and bulk or non-sensitive material.
- 14.13 As temperature falls, relative humidity rises; as temperature rises, relative humidity falls. This is true if no moisture comes in from outside or is generated from within, and there is no artificial control of the climate within the space.

- 14.14 The higher the temperature, the faster chemical and biological change progresses. For this reason, the temperature should be kept as low as possible in unoccupied areas, though this should not be such as to cause the relative humidity to rise above the recommended levels. It should be noted that legislation governs the minimum temperature for areas in which staff work.
- 14.15 Controlling humidity by installing dehumidifiers and/or humidifiers in bulk storage areas can be more efficient and cost-effective than installing heating equipment. This is because as long as relative humidity is held at the required levels, the temperatures can be allowed to fluctuate.
- 14.16 Condensation can occur on the surface of a cold object when it is exposed to warm air. This is because a volume of warm air is capable of holding more moisture than the same volume of air at a lower temperature. The sudden drop in temperature around a cold object will cause moisture to condense out of the cooled air on to the surface of the object.
- 14.17 Sudden or extreme fluctuations in relative humidity, particularly if repeated, can cause dry organic materials such as wood, leather, bone and ivory to absorb or lose moisture and may result in cracks developing.
- 14.18 Where it is not possible to provide all the appropriate conditions in individual rooms or zones, microclimates should be created; eg in sealed showcases or polythene boxes within a general area maintained at a relative humidity of 50% (see Tables A and C).
- 14.19 Measuring and recording the environment by regular spot-checks using a whirling hygrometer or electronic thermohygrometer is the minimum acceptable level of monitoring. Ideally monitoring should be by remote environmental sensors connected to a datalogging system or by continuous recording thermohygrographs (7/30 day charts). Conditions outside the building should also be monitored. A schedule of regular cleaning and calibration of all monitoring equipment should be instituted. Staff responsible for this work should be suitably trained.
- 14.20 Microclimates should also be monitored. A relative humidity indicator strip should be positioned so that it can be checked without opening the case or container.
- 14.21 All organic and some inorganic materials are light sensitive to some degree. Inorganic materials may have decorative or protective coatings which are more sensitive to light than the substrate. The most noticeable result of over-exposure to light is fading or discolouration, but structural damage can occur in the long term. The standards can be attained by keeping all stores and display areas dark when not in use. Curtains, blinds or screens provide an effective way of reducing light levels cheaply.
- 14.22 Ultraviolet light levels can be effectively reduced by the application of protective film or varnish applied to windows and/or lamps. These films have a limited life and require regular replacement. They should be checked with a hand-held UV meter or by checking their transmittance with a spectrophotometer before application, and at regular intervals to check that they are still effective.
- 14.23 Length of exposure is as important as the level of illumination when assessing the possible damage caused by light. Measuring exposure in lux-hours using an integrating light-meter provides a more accurate record of total exposure.
- Total exposure (lux hours) = time (hours) x illuminance (lux)
- (See also notes with Table B)
- 14.24 Both natural and electric light sources produce heat which can damage objects, eg metal objects will expand as the temperature increases and this may lead to permanent distortion or displacement of coatings or inlays. Sharp or repeated fluctuations of temperature are particularly damaging and are to be avoided.

Objects should be positioned away from sources of heat, and provision made to dissipate excess heat by ventilation, eg display cases with integral light boxes must provide for heat to be vented from above the light box. New lighting equipment, notably low-voltage lighting, creates less heat than older installations, though care must be taken in positioning the transformers away from the display area.

Sources of advice and help

- Advice can be given by:

Area Museum Councils
United Kingdom Institute for Conservation
Archaeology Section
The Conservation Unit of the Museums &
Galleries Commission

- An up-to-date introduction to the whole field is

Cassar, May, *Environmental Management: Guidelines for Museums and Galleries*, in preparation, Museums & Galleries Commission, London.

- The following publications are useful:

Chartered Institution of Building Services Engineers, *Lighting guide: museums and galleries*, revised edition forthcoming, Chartered Institution of Building Services Engineers.

Pye, Elizabeth., 'Conservation and storage: archaeological material', in Thompson, J. M. A., et al (eds), *Manual of Curatorship*, 1984 (1st edition), Butterworths/Museums Association, London.

Thomson, G., *The Museum Environment*, 1986 (2nd edition), Butterworths, London.

Scottish Museums Council, *Caring for Museum Collections, A Video and Information Pack*, 1990, Edinburgh.

15 Standards for the protection of primary records

- 15.1 Records, including paper, microform, disk, electronic tape, etc must be kept to the standards set out in Table C.

Guidelines and notes

- 15.2 The material constituting the Primary Record of an excavation should be identified, as recommended in *The management of archaeological projects*, 1991 (2nd edition), English Heritage, London.
- 15.3 As far as possible records forming part of these Primary Records should be duplicated so that the originals are handled as little as possible. The originals can then be stored in a different building.
- 15.4 The museum should aim to maintain all records to the standard set out in BS 5454: *British Standard recommendations for storage and exhibition of archival documents*.
- 15.5 A copy of all archaeological records should be deposited with the National Monuments Records maintained by the three national Royal Commissions on Historical Monuments (see Section 8 Sources of advice and help).

Sources of advice and help

- Informal advice is available from the Society of Museum Archaeologists, from the Area Museum Councils, from the County Record Offices or from the Royal Commissions.
- Valuable guidance is contained in:
 - The Royal Commission on Historical Manuscripts *A Standard for Record Repositories*, 1990.
 - Walker, Kirsten., *Guidelines for the preparation of excavation archives for long-term storage*, 1990, United Kingdom Institute for Conservation Archaeology Section.
 - Guidance on the microfilming of archaeological archives will be contained in the Royal Commission on the Historical Monuments of England, *Microfilming: Preserving our Archaeological Past for the Future*, (forthcoming).

16 Standards for disaster planning

16.1 The museum must draw up a Disaster Plan for the protection and rescue of the collections in the event of fire, flood or other catastrophe.

16.2 All museum staff and volunteers must receive regular training in how to respond to disasters.

Guidelines and notes

16.3 The Disaster Plan is a written document which sets out procedures to be followed in an emergency. Its general contents should be known to all staff through prior discussion and through regular training sessions and emergency exercises; its details should provide an aide memoire, list of resources and telephone numbers for those finding themselves in control. Liaison with the public emergency services over its contents is essential; once written, it requires continued revision to ensure that it remains relevant.

16.4 The plan should include:

- responsibilities of personnel, method of raising alarm and communication to others;
- emergency telephone numbers, including home numbers of staff;
- confidential plan of building showing services, hazardous stores, etc. A separate copy of this should be available to the fire brigade on arrival;
- priorities in mitigating damage to the collection;
- sources of relevant expertise, including conservators and nearby museums, archives, etc as agreed beforehand;
- list and locations of material and equipment, (every museum should have a 'safe-box' containing mops, buckets, cloths, overalls, etc);
- list of suppliers and services (eg freeze-drying);
- security measures for the collections if premises damaged, eg pre-arranged safe storage;
- first aid measures for damaged collections, by type of material, drawn up in consultation with conservators.

16.5 A complete record of the collection and its disposition within the store or display should be available some distance from the collection itself, and a duplicate should be held in another building.

Sources of advice and help

- East Midlands Museums Service, *The Museums and Records Office Emergency Manual*, 1991, East Midlands Museums Service, Nottingham.
- Anderson, Hazel and McIntyre, John., *Planning manual for disaster control in Scottish libraries and record offices*, 1985, National Library of Scotland, Edinburgh.

- Jenkins, I. A., *Disaster planning and preparedness: an outline disaster control plan*, 1987, British Library, London.
- Fire Protection Association, *Fire safety in historic buildings*, 1990, Fire Protection Association, London.
- Advice can be obtained from the Area Museum Councils. In addition, The Conservation Unit of the Museums & Galleries Commission (Tel 071 233 3683, Fax 071 233 3686) maintains a Register of private conservators throughout England, Wales and N Ireland and a list of suppliers of materials. In Scotland this information is held by Historic Scotland's Conservation Bureau.
- The National Preservation Office video *If disaster strikes* is useful for training. Contact your Area Museum Council for hire or purchase of this video and to organise disaster contingency planning seminars.

A

Relative Humidity and Temperature for display and storage of archaeological materials

Materials	Ambient Temperature ⁽¹⁾ (°C)	Ambient Relative Humidity ⁽¹⁾	Microclimates (Where needed) ⁽³⁾	Indications of Active Decay
Metals (Non-ferrous)	18 ⁽²⁾ (minimum 10°)	50% (part of mixed collection)	Less than 35%	Tarnish on polished surfaces
	(maximum 25°)	35% (dedicated metal collection)	Not applicable	Powdering
Metals (Ferrous)	As above	50% (part of mixed collection)	Less than 15%	Fresh corrosion products
		35% (dedicated metal collection)	Not applicable	'Weeping', cracking
Organic Materials (bone, leather, wood, etc)	As above	50% (part of mixed collection)	Take advice	Mould & fungus Cracks, warping, flaking
Waterlogged & wet stored materials	10° (the cooler & darker, the better, but always above freezing)	Not applicable	100%	Embrittment, shrinkage, drying out & breakdown of adhesives Fading, bleaching
Inorganic materials (pottery, stone, glass, etc)	18° (minimum 10°) (maximum 25°)	50% (part of mixed collection)	Take advice ⁽⁴⁾	Stone: efflorescence - salts coming out Ceramics: flaking glazes, powdering fabric Glass: 'weeping' - wet surface, 'crizzling' - fine cracks, glass becomes opaque
Composites (eg. metals & organics)	Take advice. The climate should be determined by the most unstable and/or archaeologically significant part of the object.			

Notes

For guidance on environmental samples see guideline 14.11 above.

⁽¹⁾ The single figures recommended in the above table should serve as guide to the optimum level required. How close a museum gets to these figures depends on the conditions to which the collection has become accustomed, the accuracy of the equipment being used and the regularity with which the equipment is calibrated. Every possible effort should be made to reduce fluctuations in RH to a minimum.

⁽²⁾ This temperature meets thermal comfort requirements for people. It should not be exceeded and whenever possible, temperature should be kept below this level. The lower the temperature, the slower is the rate of deterioration of materials.

⁽³⁾ The greater the temperature fluctuation, the greater the humidity fluctuation and the greater the risk to objects, so the more likely there will be a need for microclimates (in some circumstances temperature may be adjusted to control RH).

⁽⁴⁾ For unstable materials, microclimates should be considered.

B

Maximum levels of illuminance and ultraviolet radiation for archaeological materials

Materials*	Maximum Illuminance	Maximum UV Radiation
Paper - all items (eg prints, watercolours, drawings, manuscripts, photographs)	50 lux	75μ W/lumen
Textiles	50 lux	75μ W/lumen
Dyes and Inks on any support materials	200 lux	75μ W/lumen
Undyed organic materials: leather, horn, bone, ivory, wood	200 lux	75μ W/lumen
Inorganic materials: metals, stone, glass, ceramics, jewellery, enamels - all undyed	300 lux**	75μ W/lumen
Conservation, 2500 restoration, technical examination, photography	lux* * *	75μ W/lumen
Waterlogged materials	Total darkness	Not applicable

Definitions Lux (or lumens per square metre) is the unit of measurement of illuminance. 10 lux is equal to the amount of light produced by 1 candle at a distance of one foot (10 lux = 1 foot candle).

Lux-hours: For the general lighting situation in the museum, the concept of lux-hours is useful. Lux-hours is a measure of exposure (illuminance X time). To reduce damage by light, both illuminance and time of exposure need to be reduced. Each museum should attempt to define the maximum number of lux-hours per annum it deems acceptable.

Microwatts of UV per lumen of visible light (μW/lumen) is a measure of ultraviolet radiation. Since this is a measure of the proportion of UV in visible light, it can be measured irrespective of distance from the source. The maximum acceptable level of UV radiation is set at 75μ W/lumens because it is the proportion of UV emitted by a tungsten lamp, the light source which produces the least UV radiation.

Notes * Composite objects should be kept at the illuminance recommended for their most sensitive parts.

** By keeping the maximum level on display at 300 lux, adaptation difficulties between different light levels are prevented.

*** All light is damaging. Exposure time at this level must be kept to a minimum. Heat-emitting light sources can have a drying effect and light can cause darkening, bleaching or yellowing of some surface treatments.

C

Relative humidity and temperature for storage of archaeological records⁽¹⁾

Materials	Ambient Temperature (°C)	Ambient Relative Humidity	Microclimates ⁽²⁾ (Where needed)
Historical Records:			
Documents on paper	13 - 18° ⁽³⁾	55 - 65 % ⁽³⁾	Not applicable
B&W prints	15 - 20° ⁽⁴⁾	30 - 50 % ⁽⁴⁾	Prevention of condensation on cooled material important
B&W negatives:			
Cellulose ester base	<20° ⁽⁵⁾	15 - 40 % ⁽⁵⁾	
Polyethylene terephthalate base	<20° ⁽⁵⁾	30 - 40 % ⁽⁵⁾	
Glass negatives (silver image photographic plates)	15 - 25° ⁽⁷⁾ (preferably below 20°)	20 - 50% ⁽⁷⁾ (preferably below 40%)	
Modern Records:			
Magnetic recording media	18-22° ⁽⁶⁾	35 - 45% ⁽⁶⁾	
Optical or laser discs	18 - 22° ⁽⁶⁾	35 - 45 % ⁽⁶⁾	
Microform/Film (master & copies):			Prevention of condensation on cooled material important
Cellulose ester base	<20° ⁽⁵⁾	15 - 40 % ⁽⁵⁾	
Polyethylene terephthalate base	<20° ⁽⁵⁾	30 - 40 % ⁽⁵⁾	
Colour slides/negatives	2° or below ⁽²⁾	25 - 30 %	Higher than necessary RH accelerates deterioration
Colour prints	2° or below ⁽⁴⁾ ⁽²⁾	30 - 50 % ⁽⁴⁾⁽²⁾	

Notes

⁽¹⁾ There is great debate about acceptable levels. In general the nearer the minimum figure quoted the better.

⁽²⁾ Take advice on microclimates. Refrigeration of these materials should include RH buffering with conditioned silica gel. Allow materials to acclimatise to room temperature before use, and provide moisture sorbents, eg bagged silica gel, to counteract any possible condensation.

⁽³⁾ BS 5454

⁽⁴⁾ ISO 6051

⁽⁵⁾ ISO 5466

⁽⁶⁾ BS 4783

⁽⁷⁾ BS 5687