

National Museums Scotland Object Handling Guidelines

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1. Introduction

These Guidelines are intended for all staff , volunteers, visitors and contractors who may handle NMS objects.

The advice given is the minimum standard for handling all NMS collections. Some objects may need even greater care and some will be too fragile to move at all without specialist advice .

Museum objects are at a high risk of accidental damage when they are being handled or moved. It is therefore important to handle all objects in the correct and most appropriate way. Damage caused by handling is often cumulative and not immediately apparent to the user.

If in any doubt how to handle an object, or are unsure whether an object is sufficiently robust to be moved please consult a conservator before attempting to move the object yourself .

2. General Guidelines

2.1 Prepare before you move

- Never try to carry something in a rush or over strain yourself to save time or because people are busy.
- When moving objects between buildings or over some distance within a building, always decide on the route that an object will take before starting to move the object. Assess the options for using different lifts within the building to plan the safest route. The shortest route may not always be the safest. Make sure all obstructions have been moved, that doors will be open or someone will be available to open all doors for you. Make sure the space where the object is going to is prepared and clear.
- It is always safer to use trolleys, trays or other moving equipment, than to directly carry an object yourself.
- Always make sure there are enough people to carry objects and never attempt to lift objects that are too heavy. Manual handling training can be provided by NMS to instruct staff how to lift heavy and awkward objects safely (contact the NMS Training Officer for more details). In some cases specialist equipment is required, like pallet trucks, or genie lifts and these should only be used by trained NMS staff.
- Pad corners or sharp protrusions on the objects before you start moving it. Make sure the padding is securely attached so that it cannot slip off.
- Prepare for handling objects, Take off sharp jewellery, watch straps (take Museum Swipe cards off). If you are wearing a belt or clothes with sharp buttons take them off or cover with an overall.

2.2 Use Common Sense

- Do not eat or drink in storage areas or in areas where objects are being handled.
- Always use both hands to carry objects .
- Use a trolley, or pack objects into a box especially when many objects need to be moved, or they are being carried over any distance. Objects may be heavier than they look.
- Check the bases of boxes/trays before lifting them as some boxes may not be robust enough to carry the object in.
- If you have to carry objects, only carry one object at a time using your hands, even if the objects are small, do not be tempted to stack objects.
- Always set objects down away from the edge of the shelf, table, or other surface
- Always lower an object gently to avoid chipping the bottom or corners. Make sure the object is stable and cannot topple before you leave it.
- Never leave objects in a position where other people may fall or trip over them.
- Try to avoid vibration when moving objects (For example ; avoid pushing trolleys over uneven surfaces) as even small vibrations could cause micro-cracking in some objects and eventually result in a breakage.
- For all objects try to reduce, as far as is practicable, the number of times they need to be handled and moved.

2.3 Keep track of the objects

- Make sure all objects and all packaging is labelled with the object name and accession number, and weight before they move.
- When moving an object, make sure you make a record of its original location and its new location (and any temporary location). This information should be given to the Storage and Inventory Officer as soon as possible so the location record can be updated on Adlib.
- If objects need to be labelled before they are moved ensure you follow the Museums Documentation Association guidelines for guidance of where to mark objects. If all objects are marked consistently then this will avoid unnecessary handling. (A Training course in Marking and Labelling objects has been devised by Collections Care and Conservation staff - contact the NMS Training Officer for more details.) If in any doubt speak to someone in the Conservation department.

2.4 Gloves

It is recommended that Gloves are worn when handling almost every type of object.

Gloves protect the objects from sweat and dirt on people's hands, but also protect the person handling the object from any toxic residues on the objects. Many objects may have come into contact with toxic substances during their lifetime, either through use, storage or through treatments for insect pest infestation. (eg. mercury and arsenic). There is usually no record of which objects have been treated in this way so gloves should always be worn as a precaution to protect the wearer.

Make sure the gloves that you wear are well fitting, and powder free. Do not use latex gloves if you suffer from allergies.

Heavy duty work gloves will be needed when lifting heavy objects.

Some people do not like wearing gloves as it can reduce the handling sensation and there is a perception that an object is more likely to be dropped when gloves are worn. This can be overcome by choosing well fitting gloves of the most appropriate type for the object being moved. This is covered in the material specific sections below.

A conservator or a member of the Collections Care Team can help you source a comfortable size and material of Glove.

Change gloves frequently as they will get dirty and the dirt could be passed onto other objects.

2.5 Moving Larger/Heavy Objects

Manual lifting and handling carry a risk of personal injury. To reduce the risk keep all manual handling to a minimum and use trolleys, trucks and lifts wherever possible.

The Manual Handling regulations set a maximum load of 25kg for loads at elbow height carried by a man. The equivalent figure for women is 16.7kg. However reduce these loads by 5kg when carrying in any other position and by 10kg when objects are being carried below elbow height.

Do not try and carry/lift anything that you are not 100% comfortable with. Take time to find and use the right equipment for the job for both the safety of yourself and the object.

NMS provides training in Manual Handling of heavy items and all staff should undergo this training prior to being asked to move heavy artefacts. Contact the NMS Training and Development Officer for details.

2.6 Health and Safety

There are many items in museum collections that can be a health and safety hazard to the people handling them. The following is a guide to some of the hazards that may be come across in NMS collections.

Do not attempt to move anything that you are not sure is safe, or if you have not taken the appropriate safety precautions. In most cases the simple precautions of wearing gloves or protective clothing will negate any risk, however items such as those containing asbestos or radioactive items require specialist training. NMS provides additional training in a number of these areas, so the NMS Training and Development Officer should be contacted to arrange training if required.

Asbestos:

Asbestos may be present in collections particularly associated with heat and electricity, but in many other items as well. Some geological items may also be asbestiform. NMS provides Asbestos Awareness Training and staff likely to come into contact with asbestos containing

objects should attend this course. An Asbestos Management Policy is being written (available 2010). Do not attempt to move anything that you suspect contains asbestos without consulting one of NMS's non-licensable asbestos removal officers.

Radiation:

Collections such as aviation are particularly likely to contain radioactive items, but more unusual items such as uranium glass and glazes on pottery are also a potential hazard. Some geological specimens are also radioactive. Most items at NMS will be clearly labelled and/or stored in a separate radiation store. NMS has a Radiation policy and Radiation Protection Supervisors who should be contacted about any instances where radioactive items require to be moved.

Mercury:

Items likely to contain mercury include thermometers, sphygmomanometers, hydrometers, regulator pendulums, electrical demonstration apparatus, valves, rectifiers, tilt switches, x-ray tubes and barometers. Other items might be 18th and 19th Century felt hats, or organic items that may have been treated with a mercury based pesticide.

Mercury can easily be spilt from thermometer and barometers. Do not attempt to move anything containing mercury without a Mercury Spill kit and a trained member of staff who can deal with mercury spillages on hand. Cased items, especially thermometers, may be broken inside their cases and should only be opened over a tray or other surface which will catch any spillage.

Chemicals:

Chemicals in the collection may be corrosive or toxic, and some containers have suffered with age, and some samples are not in containers. There should be a strong presumption against handling chemical before identifying them and assessing the hazards. Chemicals should be moved and stored in containers which will catch any spillage, and incompatible chemicals (eg acids and alkalis) should not be stored in proximity.

Nitrile gloves should be worn and immediately discarded inside out.

Toxins and Poisons:

Some ethnographic items, such as arrows and spears or the inside of bowls may contain residues of poisons. There is also the potential of biological agents – such as bacteria being present in some collections – such as water samples. Before moving anything that is a potential risk, a full risk assessment should be done, and training in how to handle specialist objects, like weapons, received.

Pesticides:

Many organic collections may have been treated with pesticides in the past. These include arsenic and mercury. Always wear gloves when handling objects to avoid contact with the skin.

Implosion:

Some scientific glass items, including, but not limited to light bulbs and x-ray tubes contain low pressure gas. These are usually weaker than their modern equivalents and may implode.

3. Object specific guidelines

3.1 Furniture and wood

- All furniture should be handled and moved as little as possible. The most damage happens to furniture during movement and handling.
- Cotton or non-powdered gloves should be worn when handling furniture. Oils, sweat and dirt on hands can damage varnished or waxed surfaces.
- Moving furniture usually requires at least two people even for quite small items. Always make sure there are enough people available before starting to move objects.
- Furniture may have well disguised old repairs or be worm eaten. Such parts may be particularly weak and will require extra care. Pieces of furniture which look substantial may have weak parts that are not obvious.
- Furniture is often heavy so take care when lifting. Keep your back straight and bend your knees before lifting the object. Straps can be used to lift larger pieces. Be careful when putting an object down not to trap fingers or toes.
- Always make sure the new location is clear and free and ensure the route to it is clear.
- Whenever possible separate the piece into its component parts and move them separately. E.g. remove drawers, tops, and mirrors. Check drawers and doors are empty. Shut doors firmly and tie them if necessary so that they cannot swing open. Number drawers if they are removed and line them up carefully when replacing them as it is easy to knock off veneers round the edges of the drawers when pushing them in again.
- Pad corners and veneers before moving
- Always pick up the furniture by the lowest load bearing part. Never pick up chairs by the arms or pick up a piece by the top as this will put strain on and loosen the joints.
- Never touch upholstery when lifting chairs as this may be strained or split. Lift chairs by the legs.
- It is necessary to lift objects directly off the floor without tipping them back, lift squarely and evenly when moving, even when they are fitted with castors, rather than dragging them, which causes massive strain on the legs of the object, possibly even breaking them. Dragging furniture may also damage the floor or carpets.
- Never carry marble tops flat as they may break under their own weight. Raise them vertically, then lift them and carry vertically.
- Some furniture is fitted with handles however do not use them to move the piece as they will probably not be strong enough.

3.2 Pictures and Mirrors

- Wear clean white cotton gloves or disposable nitrile gloves when handling frames or framed objects. The only exception is when a painting or mirror is so heavy that you would be unable to get a secure grip while wearing gloves.
- Always check the structure of a framed work to ensure that it is robust enough to be moved. Check the surface of the frame for any loose decorative areas.
- Never pick up a frame or mirror by the top of the frame. Hold it by both sides; otherwise the top corners of the frame will be weakened. If the painting is small and light enough to be carried by one person, it should be lifted with the surface towards them.
- Two people will be needed for large pictures or mirrors. Hold large frames by the side and bottom to support them. Frames are easily damaged when they are put down so do this with care. Very large paintings will need specialist movers.
- Carry pictures and mirrors vertically, not horizontally. Large pieces of glass or canvas can snap or distort under their own weight if they are laid flat without support.
- Never pick up a picture by using the stretchers on the back of the canvas this may stretch and distort the canvas and may cause the paint to flake.
- Never touch the picture within the frame
- Never touch the back of mirror glass or place any item against the silver as it is easily damaged.
- Pad the corners and bottom of the frame to prevent chipping and scratching the frame.
- When standing a picture or mirror upright make sure that it cannot slip backwards or fall forwards.
- Never lean one picture or mirror directly against another. If frames must touch put protection between them to prevent scratching. It is particularly important with unglazed pictures not to lean anything against them. The canvas may be easily distorted or torn.
- If pictures must be stacked, stack face to face or back to back. Always watch out for picture hooks, screws, eyelets or mirror back plates on the back of the picture or mirror. These must never come into contact with another picture or mirror as they can easily cause tears and scratches
- When packing pictures for transport always put strips of masking tape or low-tack glass tape across the glass. If it breaks in transit the glass should remain in place reducing the risk of the paper or canvas being cut.

- Perspex should not be taped but protected with a layer of tissue as it is easily scratched. Never cover Perspex in bubble wrap without an intervening layer of tissue
- Pack glazed pictures vertically in crates to reduce the risk of glass breaking
- When moving pictures from one level of a building use a lift where ever possible.

Health & Safety Warning

The silvering on mirrors up until 1900 is a tin -mercury amalgam. Mercury vapour is toxic and it is possible that corrosion of the amalgam can release liquid mercury. Therefore wear gloves for handling and treat all dust residues as poisonous mercury residue. Do not use a vacuum cleaner to remove mercury dust as this will simply vaporise mercury back into the room. Consult the Health and Safety officer for further advice if this situation arises. Wash hands carefully and dispose of gloves after handling mirrors.

3.3 Unframed works on paper

- Always ensure your hands are thoroughly clean and wear clean cotton or nitrile gloves. Oils, sweat, acids and dirt on the hands can leave permanent damage to paper objects.
- Make sure that you do not touch the image, as pencil, chalk and other mediums can be easily smudged or damaged.
- Try not to pick up a print, drawing or letter by the edges or corners. If paper has to be picked up directly then support it using diagonal corners.
- Where paper is torn or very fragile, support the paper from underneath with card or stiff paper which is slightly bigger than the item. A card support is essential if the image or writing is on both sides of the paper or if the object is to be moved.
- Use only acid free mounts or envelopes or archival quality polyester sleeves for storage. Take extra care when putting paper items into or taking them out of such envelopes or sleeves. It is easy to crease or bend the paper or damage the corners. The easiest way to handle paper items is often to slide a piece of card under the object and slide it into or out of the sleeve on the card which can then be removed. Transparent polyester sleeves have the advantage that the object can often be viewed without the removal of the sleeve. However, paper objects that have friable media (chalk/pastel etc) should not be inserted into polyester sleeves as the static will cause the media to lift.
- Every time folded or rolled paper is opened or closed its strength is reduced, and therefore re-rolling should be limited as much as possible. If there is any doubt as to the fragility or brittleness of the paper a conservator should be consulted prior to unrolling.
- Use acid free boxes for storage and acid free mounts and framing materials.
- When packing unframed paper items for transport make sure they are supported to prevent bending or creasing (e.g. wrap sleeve in paper and tape to a piece of card.). In groups of papers are boxed together for storage or transport pack them so that they cannot crease or bend each other, interlocking sheets of card if necessary for extra protection.
- Where sticky tape of any kind is used on the outer packing of paper objects make sure that it cannot in any way come into contact with the paper object. When unwrapping the package, remove all the tape completely before exposing the object to avoid risk of accidental damage. If tape does come into contact with an object do not attempt to remove it yourself – contact Paper Conservation.

3.4 Photographs and negatives

- It is essential to wear gloves when handling photographs. Oils, sweat, acids and dirt on the hands can leave permanent damage to photographic objects. Always ensure your hands are clean and wear clean cotton or nitrile gloves. Even when wearing gloves, avoid touching the image as much as practicable.
- It is preferable for photographs to be stored in enclosures and photographs should only be moved from these if unavoidable. Never allow your fingers to touch the surface of the photograph or negative; hold them by the edges only with your fingers at right-angles to the print or negative. Whenever possible place the photograph on a sheet of stiff paper or card so that you can pick up the card to move or examine the object without directly handling the photograph.
- Use only acid free mounts or envelopes or archival quality polyester sleeves for storage. Take care when putting photographs into or taking them out of such envelopes or sleeves. It is easy to crease or bend the photograph or damage the corners. The easiest way to handle is often to slide a piece of card under the object and slide it into or out of the sleeve on the card which can then be removed. Transparent polyester sleeves have the advantage that the object can often be viewed without the removal of the sleeve.
- Use acid free boxes for storage
- Interleave photographs in albums with photo -safe storage paper so that the surface of the photo cannot touch another photo or a blank page that may not be acid free.
- When packing unframed photographs for transport make sure that they are supported to prevent bending or creasing. If groups of photographs are boxed together for storage or transport pack them so that they cannot crease or bend each other, interlocking sheets of card if necessary for extra protection.
- Where sticky tape of any kind is used on the outer packing of photographs make sure that it cannot in any way come into contact with the paper object. When unwrapping the package, remove all the tape completely before exposing the object to avoid risk of accidental damage. If tape does come into contact with an object do not attempt to remove it yourself – contact Paper Conservation.

3.5 Textiles

- Handle textiles as little as possible
- All parts of a textile need to be fully supported and no part should be left trailing. A costume or textile may be a lot heavier than it looks so never attempt to move an object that is too heavy or large.
- Always ensure your hands are clean and dry and wear clean cotton or Nitrile gloves, especially if there may be metal threads or accessories within the textile. Never wear jewellery on your hands and wrists that might catch in the weave of the textile.
- All old fabric will be weaker than its modern counterpart. Old fibres lose their elasticity and become brittle; this means that they can snap easily and regardless of appearance all old textiles should be handled as if their condition is fragile. If in any doubt contact a textile conservator before attempting to move the object.
- Objects should be placed in trays or boxes, or placed on a support board wherever possible.
- Textiles are easily torn or pulled out of shape. Support large textiles from underneath (e.g.) by laying them on a sheet of calico or melinex. In the case of very fragile textiles do not turn them over directly without the aid and advice of a textile conservator. If very large textiles are to be moved they should be rolled up and carried on a roll, rather than folded to ensure the least possible strain on the fibres. Use as large a diameter roller as possible and pad it to take any unevenness in the textile. Interleave the roll with acid free tissue.
- Extra care should be taken with fastenings, particularly hooks and eyes and with any attached decoration such as beading or sequins.
- Use only acid free storage materials.
- Folds should be avoided as they put strain on the fibres and will be the point where fibres first snap. If an item has to be doubled over pad the fold with acid free tissue to make a roll rather than a sharp crease. For all costume items pad areas like sleeves, shoulders and busts to try and keep the shape and provide support at the same time. Interleave all layers of a garment with acid-free tissue.
- Whatever the textile try to minimise friction and minimise the weight resting on weak points by careful use of padding and supports.
- Sticky tape is very damaging to all textiles and will leave probably irremovable stains. Try not to use it near textiles but if the outer packaging has to be sealed with tape make sure that it cannot get anywhere near the textile if the packaging gets torn. Remove sticky tape completely when undoing a taped textile package. If tape does come into contact with an object do not attempt to remove it yourself – contact Textile Conservation.

- Use stitched or tie on labels for all textiles. Pens and markers should not be used near textiles. If taking notes use only a soft graphite pencil.
- Textiles are often part of other objects e.g. chair covers and are often the weakest part of the object. This often means it is necessary to take extra care. For example when moving an upholstered chair , do not touch the seat cover but lift by the legs instead.

3.6 Metals

Gold Silver, Copper, Bronze, Brass, Iron Lead, Pewter tin etc.

- **Always** wear gloves for handling metals as skin acids can mark the surface and will always promote more rapid tarnishing. Keep separate pairs of gloves for different metals, e.g. silver, copper and its alloys, because microscopic particles can be transferred from one metal to the other and will increase the tarnishing rate. Nitrile or vinyl Gloves are most appropriate.
- Metals are easily scratched. Make sure that you are not wearing jewellery or sharp belts, buttons or watchstraps.
- Always use both hands to pick up a large object, holding it firmly at the base and round the middle. Never pick up a bowl by the rim. Soldered joints are often weak and should be handled with care, especially knobs, handles etc.
- Always check whether lids are fixed or loose before moving and whether the object can be dismantled into several pieces. If lids are loose or if the object is in several parts, dismantle it and treat each part as a separate item. Even if the lid is attached, always support it when turning the piece upside down.
- Lead is very soft and easily damaged; thin silver, copper and bronze items may be fragile and easily bent or dented by rough handling. Cover the work table with a sheet of supportive material such as plastazote or similar padding to avoid accidental damage.

3.7 Ceramics

- Ceramics are easily broken so extra care should be taken when moving pieces.
- Old glue repairs may be points of weakness. Ceramics may have been repaired 'invisibly' in the past, but there may still be points of damage or hairline cracks that are points of weakness.
- Do not be tempted to handle ceramics without gloves. If the surface is porous or there are unglazed edges (for example, unglazed earthen ware, or biscuit ware), staining can be caused by sweat and dirt on hands .
- Check whether a lid is fixed or loose. If loose take it off and treat it as a separate item. Even if the lid is attached always support it when turning the piece upside down. Never pick up a lid by the knob or the handle.
- Always be careful of outstanding and protruding decoration as this may be easily chipped.
- Cover worktables in a supportive material such as a thin layer of Plastazote. Lower ceramics gently onto work surfaces and shelves to avoid chipping the bases.
- Place the ceramic in the centre of the table or shelf. Do not get distracted or turn around to talk to someone as it is easy to misjudge the distance above a surface or to place the ceramic on the edge of a table.
- Always use both hands to pick up china and pottery and cradle the piece carefully. Never pick up two pieces of ceramic at once.
- Never pick up a jug or cup by the handle as there is a possibility that the join will break. Never pick up a plate or bowl by the rim; it may snap under its own weight. Support it underneath.
- Support ceramics carefully for transport. They can be cushioned with nests of acid free tissues so that they cannot move in any direction within the box or crate. Ensure there is sufficient padding on all sides, including top and bottom to allow for any knocks in transit.
- If an accident should happen never try to fit the pieces together – more damage can be caused as the edges grate together . If possible take a photograph of the broken item, and the pieces where they land on the floor. Cordon off the area and contact a conservator as soon as possible. If a conservator is not available and it is necessary to clear the area pick each piece up and wrap separately, lightly in tissue.
- Once all the large pieces have been collected sweep the whole area and collect even the tiniest fragments.

3.8 Glass

- The biggest risk to glass is breakage. Always take extra care when moving pieces of glass to ensure that your route is clear and your destination uncluttered.
- Crizzled glass will shatter with only a light tap, so be extra careful when setting down on a surface
- Clouded or iridescent glass will lose its surface easily if handled carelessly or too often.
- Check whether a lid is fixed or loose. If loose take it off and treat it as a separate item. Even if the lid is attached always support it when turning the piece upside down. Never pick up a lid by the knob or the handle.
- Old glue repairs may be points of weakness. Glassware may have been repaired 'invisibly' in the past, but there may still be points of damage or hairline cracks that are points of weakness.
- Always be careful of outstanding and protruding decoration as this may be easily chipped.
- Cover work tables with a supportive material such as a thin layer of Plastazote. Lower glass objects gently onto work surfaces and shelves to avoid chipping the bases. Place the glassware in the centre of the table or shelf. Do not get distracted or turn around to talk to someone as it is easy to misjudge the distance above a surface or to place the glassware on the edge of a table.
- Wear nitrile or vinyl gloves to improve grip and minimise fingerprints.
- Always use both hands to pick up glassware and cradle the piece carefully. Never pick up two pieces of glassware at once.
- Never pick up a jug by the handle as there is a possibility that the join will break. Never pick up a plate or bowl by the rim; it may snap under its own weight. Support it underneath.
- Carry large sheets of glass like mirrors carrying them vertically. They may snap under their own weight if laid horizontally.
- Be aware that some glass items may contain liquids and specimens and take extra care when packing and moving these items.

3.9 Stone artefacts and rock and mineral specimens

- Stone artefacts and rock and mineral specimens may appear robust but can be easily chipped or broken. They can also be very heavy. Large pieces of stone will always need several people to carry them and may need specialised equipment, such as a forklift, or pallet truck. Never try to move a piece of heavy stone with insufficient personnel and equipment.
- Smaller stone artefacts and rock and mineral specimens should be treated like ceramics or glass. Take extra care when moving pieces to ensure that your route is clear and your destination uncluttered. Always use both hands to pick up even small stone objects and cradle them carefully.
- A conservator or specialist large object mover should be asked for advice when moving large and heavy stone items. Use straps to help lift large objects /specimens. Make sure that the straps are securely positioned and cannot slip. On awkward shaped objects pad the points where the straps will make contact to avoid rubbing or chipping the stone. Such padding must be securely tied to ensure that it cannot slip.
- Because the weight makes it hard to control, stone is most at risk when being set down. Make sure there is plenty of padding in place before you move to avoid chipping corners.
- Carry marble tops of other large stone slabs vertically; they may break under their own weight. Raise them vertically, then lift and carry them vertically.

3.10 Bone, horn, antler and Ivory

- Bone and Ivory are easily damaged by handling. Wear nitrile, vinyl or latex gloves to prevent finger marks, sweat deposition and localised changes in relative humidity (heat and moisture from the hands are sufficient to warp thin ivory).
- Carved bone or ivory pieces are very thin and fragile. Handle with care. Always be careful of protruding decoration it is easily chipped.
- Ivory is easily stained and must not be left in contact with iron, copper, brass or any coloured materials.

3.11 Leather

- Thin and brittle leather can be damaged if handled without care. It may have a soft surface which can be easily scratched.
- Always handle leather wearing cotton or nitrile gloves. Leather is particularly susceptible to mould and your hands will provide the micro-organisms to initiate mould growth.
- Always be careful of decoration on leather. Never touch gilding on leather as the gilding may come off.
- Leather can be easily deformed or broken. Do not lift objects such as suitcases by the handles, instead lift from underneath with two hands. If leather has lost its flexibility do not be tempted to try and bend it back into shape. Consult a conservator for advice.
- Never pack books tightly as this may damage the spines.
- When taking books off shelves, never put your finger over the top of the spine and pull; you may break the spine and the headband. If there is space, put your hand right in and push the book out from behind. If there is no space, push two of the books on either side of the book you want, further into the shelf and then grip the book lightly between thumb and fingers around its spine and draw out. Always grip the book firmly with your fingers completely around the spine.
- Always be carefully with books that have metal clasps. Protect them from rubbing against other books or objects.
- Wear cotton gloves when turning pages.

4. Notes on Specific Collections

4.1 Large and Industrial Objects

These collections can be heavy, unwieldy and awkward to manipulate and manoeuvre. Even where an object was designed to be mobile it can now be too old or fragile to be moved under its own power or supporting its weight on its own wheels.

Specialist help is usually essential and always consult Engineering Conservation prior to moving larger objects. Specialist haulage contractors may also be required and should work closely with Museum staff. It is particularly important to plan each stage of any move in advance, ensuring that routes are not only clear, but also have sufficient load and weight clearance. Choose a route that puts least stress on the objects.

4.2 Lacquer and Japanning

It is essential to wear clean gloves when handling lacquered or japanned surfaces as sweaty hands will leave marks. Remove jewellery to avoid scratching the surfaces. To avoid snagging, dislodging or crushing loose areas, check for any areas where the surface may be lifting, before handling. Avoid touching or holding any decoration or raised areas and do not lift an object by the handles.

4.3 World Culture collections.

In general handle collections as appropriate for the materials that they are made from. Be particularly aware that ethnographic collections may be made from many different materials and are often complex, fragile objects. They may have many joints, fragile surface coatings, be made from many loose elements such as beads and feathers or be held together with old adhesives. The collections should be handled as little as possible and always inspect an object first to identify any areas of weakness. Avoid directly touching surface coatings, painted areas, as pigments are often loosely bound and friable. Ideally objects should be moved in trays, or boxes. Small objects can be supported with two hands.

Always wear disposable nitrile gloves when handling ethnographic collections. Some objects may be contaminated from their past use (e.g. poisons on spears) or may have been contaminated by remnant insecticide treatments (such as arsenic or mercury salts). Chain mail gloves can be worn if sharp weapons such as swords are being moved.

4.4 Musical Instruments

Handle musical instruments as recommended for the materials that they are made from (i.e. see furniture or metal sections). Be aware that instruments may have many protruding features, such as the neck and keys on a stringed instrument. Never hold an object by any projecting features. Ideally cradle the instruments in two hands.

Small mechanical parts may be particularly fragile.

Some instruments are made up of several parts and may have loose joints, or moving parts, for example woodwind or brass instruments. Historic keyboard instruments may be separate from their stands. The older an instrument is the greater the likelihood that different parts no longer fit together, and they may come apart unexpectedly. Inspect an object thoroughly before picking it up to identify any weaknesses.

4.5 Scientific Instruments

To prevent damage to polished metal or other vulnerable surfaces always wear gloves when handling these objects.

There may be particular health and safety issues related to scientific instruments, for example with thermometers, barometers or other instruments containing mercury. These items should be moved by specially trained members of staff, so it is important to contact a conservator before moving these items.

Remove any gold or silver jewellery that you may be wearing as this can pick up mercury vapour. Wear vinyl gloves and take special precautions to prevent mercury spillages. Always have a mercury spillage kit to hand if you are planning to move objects that may contain mercury. If there is any chance that dust on the object may be contaminated with mercury, a mercury mask should be worn.

Before moving an instrument, such as a balance or galvanometer, check that any locking mechanism is engaged. Ensure all catches and doors are closed. Many instruments and clocks will need to be dismantled before they can be safely moved – i.e. the clock mechanism should be removed from the clock casing before travel. This should be done by a trained conservator and should not be attempted unless specially trained.

Barometers should generally be transported inside bags at 45° and never laid flat. NMS has a number of barometer transport jigs for this purpose. The barometer should be tilted gently to avoid the mercury breaking the top of the tube.

4.6 Natural Science Specimens

The general guidance notes should be followed when handling Natural Science Specimens, however there are particular Health and Safety issues that need to be considered when handling these specimens and staff should only move these specimens once they have been fully trained.

The requirements of the Control of Substances Hazardous to Health Regulations 1988, must be complied with when handling any specimens, and the use of hazardous substances in their preparation and preservation. Some organisms contain toxins that will be present in fresh specimens, but may also survive in preserved specimens. Recently dead specimens may also be particularly hazardous and can transfer disease.

Natural Science specimens should only be handled once all the potential hazards have been identified.

When handling any taxidermy specimens, disposable nitrile gloves should always be worn as they may have been treated in the past with chemicals such as arsenic or mercury salts.

Specimens preserved in alcohol can present a fire hazard and it is essential to keep these away from any sources of ignition.

4.7 Geological Specimens

Geological specimens may be very heavy so follow guidelines for large heavy objects where appropriate. It is advisable to wear disposable gloves when handling geological specimens as these may also contain unknown elements that are potentially hazardous to health.

4.8 Archaeological collections.

All archaeological collections should be handled wearing impermeable gloves (such as nitrile or vinyl) to protect them from grease and sweat. Archaeological objects are also more likely to have been treated with chemicals to make them stable (for example benzotriazole is commonly used to stabilise copper alloy objects and this chemical is toxic). Therefore it is important to wear gloves to protect yourself from potential hazards.

In general handle objects according to their material type. Each object should be carefully examined before being lifted as weak areas may not always be apparent. Depending on the extent of corrosion, metal objects may be heavier than anticipated or in some cases, lighter than anticipated. Some objects may appear intact on the surface but the interior of the object may be hollow. Burial conditions may have rendered the objects much weaker than an equivalent historical object.

Waterlogged organics are particularly prone to marking when handled. Be particularly cautious about putting pressure on these surfaces when handling.

4.9 Plastics

Plastics should always be handled with gloves. As well as protecting objects from sweat, dirt and grease on the hands, it is possible that plastics contain plasticizers that are potentially harmful. Unless, a plastic can definitely be identified as being of a stable composition (i.e. polythene) there is a possibility that degradation products may form on the surface of the plastics that are toxic.

Plastic objects may be more brittle than they first appear; particularly older plastics that have aged, so be aware that these objects can be very fragile and may shatter if bumped against a surface.