CARING FOR
AMERICAN INDIAN OBJECTS
A Practical and Cultural Guide
EDITED BY SHERELYN OGDEN
How Should Cultural Items Be Stored?

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Using the appropriate containers, supports, mounts, and furniture for the storage of cultural items is crucial to their preservation and is an important aspect of preventive care. This chapter provides some of the basic information you will need to make sound decisions and selections regarding the housing of your cultural items.

Storage Containers, Supports, and Mounts

Containers, supports, and mounts are used to provide physical protection and support for items while they are in storage. Not all items require this protection, but those that do will benefit greatly from having it, and their useful life can be extended significantly.

WHY ARE CONTAINERS IMPORTANT?

Often the best way to protect an item in storage is to place it in a container. This will help keep it clean, will keep fragments or other detached parts with the item, and depending on the type of container, will protect the item from being broken as well as assist in moving it from one place to another. Containers range greatly in variety and include such enclosures as boxes, bags, and small glass bottles (for tiny loose pieces such as beads).

BOXES

Boxes are probably the most commonly used containers. They should be strong enough to support the weight of the item(s) they contain without buckling, and yet be as light as possible so they do not add unnecessary weight and
bulk. All materials used in the construction of boxes should meet preservation standards as much as possible (discussed below). Boxes can be made in-house or purchased from a commercial supplier. It is easier and probably more cost-effective to buy them. Commercially available boxes range from expensive cloth-covered and lined varieties to less costly self-assembly types made of uncovered acid-free cardboard. They are available in custom or standard sizes and vary from ones large enough to hold a dress to those small enough to accommodate a single piece of ball ammunition. Commercially available two-piece boxes of simple construction in standard sizes are probably the least expensive and most practical choice for the majority of situations.

Many museums professionals find small standard-sized boxes to be invaluable in drawer storage. These relatively low-cost boxes can be used to contain round objects that roll, heavy objects that slide, or detached pieces of items that shift and become misplaced when the drawer is opened and closed. They can also be used to hold natural materials, such as fiber cord or strips for weaving, so they will not spill or become entangled in a drawer. The use of boxes makes items easily portable, protects them from physical damage, and prevents them from becoming lost. Finally, boxes can be used to subdivide a drawer to house many small items.

WHY ARE SUPPORTS AND MOUNTS IMPORTANT?

Supports and mounts vary as widely as American Indian items themselves and include such devices as pads, rings, tubes, trays, and hangers. Many items, particularly weak and physically damaged ones, need the protection of a storage support or mount to enable them to be stored safely without losing their shape or suffering further physical damage. Several examples illustrate this.
A buckskin vest needs the benefit of a padded hanger to support the rounded shape of the shoulders when it is hung, so that the skin does not crease or break at the shoulders from the weight of the vest, especially if the skin is weak. If the vest is beaded, it may be too heavy to be hung and need to be stored flat instead. Even when stored flat, without the support of the padded hanger, or other type of padded support, the skin eventually may crack in the area of the shoulders.

Similarly, a dress with jingles made from dozens of snuff tin covers is too heavy to hang and needs to be stored flat. To prevent the textile from which the dress is made from creasing and eventually breaking where folded, it needs to be stuffed with crumpled acid-free tissue along its folds to avoid sharp creases.

Woven sashes, because of their length and weight, cannot be hung without becoming distorted. They need to be stored flat, but because of their length they must be folded. To avoid creating creases that could eventually become breaks, the sashes need to be folded over acid-free tubes cushioned with acid-free tissue. If tubes are not available, acid-free tissue can be rolled or twisted into a similar shape and used by itself.

A woven basket with a rounded base needs a ring support to immobilize it so it does not roll on the shelf where it will be stored. This needs to be shaped to fit the basket from a rolled length of polyester batting wrapped in cotton-knit fabric.

**WHAT IS THE BEST TYPE OF CONTAINER, SUPPORT, OR MOUNT?**

Selecting the best type of container, support, or mount involves assessing the materials from which the item is made; its construction, size, shape, condition, and use; the availability of space for storage; the need for access to the item; the need to have interns and volunteers make the container, support, or mount; and the cost. In addition, you may want to seek input from the people who made the items or other appropriate members of the American Indian community.

Containers can be custom made to fit a specific item. Often, however, as mentioned earlier, commercially available standard-sized containers are adequate or can be modified to fit a particular item. Unlike containers, most supports and mounts need to be custom made. Sometimes they need to be made to the size and shape of one particular item. Other times, one support or mount can be made to hold several items. For example, a padded acid-free cardboard mount with sets of cotton ties can hold several war clubs that are stored in a drawer. The clubs are held in place on the board with the ties. The padding on the board reduces vibration to the clubs caused by the drawer’s movement. The board is made to fit in the drawer in such a way that it does not shift as the drawer is opened and closed, thus protecting the clubs from sliding. This mount has the added benefit that the clubs can be moved on it,
such as from the drawer to a research area, being supported while in transit without being handled. Also, custom mounts that hold several items rather than just one make more efficient use of storage space. It should be noted, however, that such mounts, particularly ones that stack, may not show proper respect for certain items. The advice of appropriate members of the American Indian community should be sought prior to making mounts like these.

Several excellent books that provide practical information and simple instructions on the construction of containers, supports, and mounts are available. These are listed in the bibliography (Barclay, Bergeron, and Dignard 2002; Canadian Conservation Institute, CCI Notes; National Park Service, Conserve-O-Gram Series; Rose and de Torres 1992). Some are also available online, as indicated in the bibliography. Containers and, in particular, supports and mounts are essential to the preservation of some items and should be provided if at all possible.

In all instances, the traditional, originally intended method of storage should be carefully considered and respected. Original containers always should be kept unless tribal practice dictates otherwise.
FROM WHAT MATERIALS SHOULD CONTAINERS, SUPPORTS, AND MOUNTS BE CONSTRUCTED?

Whenever possible, containers, supports, and mounts should be made from materials that meet standard museum preservation requirements. These requirements vary depending on the material. In general the materials should be chemically and physically stable, durable, and non-damaging. Materials that do not meet these requirements can cause irreparable visual, chemical, and physical damage.

WHAT DO THE TERMS "ARCHIVAL QUALITY," "CONSERVATION QUALITY," AND "PRESERVATION QUALITY" MEAN?

These terms have been used over the years to imply that materials meet standard museum preservation requirements. The terms have been loosely used, however, and given a variety of meanings, especially by manufacturers and suppliers of storage materials. For this reason, it is best not to rely on these terms but to use specific characteristics, as described in the following pages. Please note, though, that to simplify discussion, throughout this book the term preservation quality is used to describe materials with these characteristics.
Above: Ojibwe hair roaches rolled on roach sticks and wrapped for storage according to tribal method. This storage method preserves the roaches' shape so they can be worn. Below: An Ojibwe braided roach headdress that is too deteriorated to roll and wrap is stored flat on a rigid mount. Right: An Ojibwe hair roach with a beaded headband is stored on a mannequin head to protect the beaded band.
ARE THERE STANDARDS THAT LIST SPECIFICATIONS FOR STORAGE MATERIALS?

Yes, there are national and international standards. They are produced by such organizations as the American National Standards Institute (ANSI), the National Information Standards Organization (NISO), and the International Standards Organization (ISO). These important standards specify in technical terms the characteristics that are recommended by the organization producing the standard. For example, one standard, ISO 18902:2001, formerly ANSI IT 9.2 – 1998, specifies storage materials for photographic processed films, plates, and papers and can be followed in general for the storage of most non-photographic paper-based materials as well. Although there is still not complete consensus among the organizations, they are moving toward agreement. Very few of these standards are cited in supplier catalogs at the present time. Those that tend to be listed in catalogs are mentioned in this book at the appropriate place. For your purposes, it is probably best to rely on the characteristics discussed below when selecting storage materials.

WHY IS CHEMICAL STABILITY IMPORTANT?

Some of the deterioration that items in storage suffer is caused by the acids and other harmful substances in the containers, supports, and mounts that are
used to protect them. These harmful substances migrate from storage materials into the items, causing such problems as discoloration, corrosion, and embrittlement. For example, discoloration caused by an acidic window mat can disfigure and hasten the deterioration of an Indian drawing on paper that has been matted and framed. Similar damage takes place when a textile item, such as a shirt, is wrapped in acidic tissue that discolors the textile and transfers acidity from the tissue to the textile, speeding its deterioration.

To avoid these problems, it is essential for all storage materials to be chemically stable—to not generate any harmful substances. If this is not possible, a chemically stable barrier can be used between the storage material and the item. For example, an acidic cardboard tube can be covered with a stable material such as polyester film, which acts as a protective barrier between the acids in the tube and the item rolled on it.

**Paper-Based Storage Materials Should Be Acid-Free**

Paper-based materials are used widely, being readily available commercially and relatively affordable. Paper materials are made from cotton, linen, or wood fibers, with wood being used most often. Wood, however, contains highly damaging impurities that lead to the formation of harmful acids. For this reason, only paper materials made from wood pulp that has been chemically purified to remove lignin and other damaging impurities are safe to use. Paper materials made of 100 percent cotton or linen are also safe to use. Folders, envelopes, tissue, and papers for interleaving sheets should be lignin-free and made of chemically stable fibers. The board for boxes should also be lignin-free and chemically purified. The board used for matting Indian drawings on paper should be a 100 percent cotton or linen rag board or an otherwise lignin-free, chemically purified conservation mounting board. Tapes for making mats, folders, and boxes should be chemically stable, non-staining, and free of damaging components if possible. Such materials commonly are described as acid-free. It is important to be aware that not all paper-based materials are acid-free. Standard museum preservation practice maintains, however, that only acid-free materials should be used.

**Why Is pH Important?**

Knowing the pH of paper-based storage materials will tell you whether they are acid-free. The acidity and alkalinity of paper and paper-based materials are expressed by pH, a measurement on a scale of zero through fourteen. Seven is the neutral point, with measurements under seven indicating increasingly acidic, and over seven indicating increasingly alkaline conditions. Although the recommendation varies for what an ideal pH for storage enclosures should be, depending on the item to be stored, a pH of 7.0 through 8.5 is a good general range.
It is advisable to measure the pH of purchased storage materials to ensure that they are acid-free (pH over 7), because sometimes materials do not meet their advertised levels. There are several methods for measuring pH. The simplest is the use of a pH detector pencil or pen, which indicates the surface pH of the material being tested (never to be used on a cultural object). This method is suitable for most situations. These pencils and pens are relatively inexpensive and readily available from conservation suppliers. A more specific pH reading can be obtained by using pH indicator strips. The most accurate readings are those provided by pH meters. These latter two methods are used primarily by museums.

**WHAT IS AN ALKALINE RESERVE?**

Some paper-based storage materials contain a buffering agent, such as calcium carbonate, added during manufacture. This buffering agent is referred to as an alkaline reserve. The alkaline buffer neutralizes acids as they form in the storage materials and helps keep the materials acid-free long-term. Over time, however, the buffering agent may eventually be depleted.

**SHOULD BUFFERED OR UNBUFFERED MATERIALS BE USED?**

Buffered materials are appropriate for storing some American Indian items but not others, and you must know which to use. Museums keep supplies of both buffered and unbuffered materials and use whichever is appropriate for the item being stored. It is, however, expensive to keep both types of supplies on hand. Also, it is impossible to distinguish between them visually, so they must be clearly marked. The easier and safer approach for most people is to use acid-free unbuffered materials for everything.

**WHAT ARE MOLECULAR TRAPS?**

One relatively new type of storage material incorporates molecular traps to provide added protection from gaseous pollutants. Molecular traps, such as activated carbon or natural or synthetic zeolites, capture and retain pollutants. These are most suitable for storage materials that will be used in highly polluted areas or for items that are particularly sensitive to pollutants. Storage materials that contain molecular traps are available as paper or board and are sold under the trade name of MicroChamber.

**DURABILITY**

Items should be stored only in containers that are sufficiently durable to protect them. If containers are not sturdy, the items they contain may become
distorted or broken, or the container itself may become damaged or even fall apart. Needless strong storage containers may also present problems, adding unnecessary weight and bulk that can lead to handling and spatial difficulties.

ARE PLASTICS SAFE TO USE?

Plastics lend themselves well to constructing containers, supports, and mounts, but they vary greatly in chemical stability and should be used knowledgeably. Some plastics are unstable chemically and produce by-products as they deteriorate that accelerate the breakdown of many materials used in American Indian items. These should always be avoided, even though using them is tempting because they are easily obtained and inexpensive. Three types of plastic meet preservation standards. These are polypropylene, polyethylene, and polyester. These plastics come in many forms with different characteristics—planks or foam, rolls or sheets, hard or soft, thick or thin, opaque or transparent—and are sold under different trade names.

Polyvinyl chloride (PVC) should not be used in any form—not as sheeting, a photograph sleeve, or a tube—because of the damaging by-products it emits. The same is true of bubble-pack; do not use it, because of possible coatings, physical damage, or harmful by-products. Avoid polyurethane, like that commonly found in seat cushions; it turns to powder as it ages and gives off damaging by-products. Finally, do not use polystyrene, as this has a tendency to become brittle and yellow as compared to other acceptable plastics. Generally it is important to determine that the plastic materials you use for long-term storage are one of the three safe types.

FABRICS

Several factors determine a fabric’s safety for use. One is the fiber from which it is made. Certain fibers, such as silk, are by nature acidic and should not come in contact with items that are vulnerable to acid. Other fibers emit harmful volatiles, such as sulfur compounds. Fabrics and felts containing wool are an example. Wool is also a food source for insects. These fibers should be avoided.

In most instances the safest fiber choice is cotton or linen because these are by nature chemically stable. If these are not readily available, polyester is an acceptable alternative. An unsized fabric is best. Sizings and surface applications are used to stiffen fabrics or make them fire-, water-, or stain-resistant. All fabrics, regardless of fiber content, should be washed prior to use to remove any of these potentially harmful sizing or finishing compounds. The use of dyed fabrics is problematic because permanent damage can occur if the dye transfers or bleeds onto an item due to contact with high relative humidity or water. Preferably only undyed fabrics should be used. For more information about fabrics, see chapter 11.
Storage Furniture

WHAT MATERIALS SHOULD BE USED IN THE CONSTRUCTION OF STORAGE FURNITURE?

Many of the currently available furniture choices contain materials that produce by-products that contribute to the deterioration of the items housed in the furniture. Opinion on what constitutes acceptable storage furniture is changing rapidly. If you are considering the purchase of furniture, you may want to consult a preservation professional for the most up-to-date information. Also, appendix 2 provides additional information.

Steel storage furniture with various powder coatings is a safe choice, and many different types of furniture are available in this material. Museums often choose this material. Anodized aluminum storage furniture is another option and is considered by many to be the best choice, especially for highly sensitive items, but this tends to be the most expensive. Open chrome shelving, made of heavy-gauge, chrome-plated steel wire, is another suitable option, but because the wires can leave permanent marks on items that are not protected, boxing is required.

Until recently, furniture with a baked enamel finish was the recommended choice. Lately, however, questions have been raised about the possibility of the baked enamel coating off-gassing (giving off) formaldehyde and other harmful substances if it has not been properly baked. Note 2 in appendix 2 provides information on how to test for off-gassing. If you have this type of shelving, contact a preservation professional to see if this is a problem in your particular situation.

WOOD

One of the most commonly used materials for furniture is wood. Unfortunately, storage of valuable items in direct contact with wooden storage furniture is discouraged because of acids and other harmful substances exuded by wood and some wood sealants. Even though some woods and wood composites are less damaging than others, all are problematic. Also, questions regarding how long various woods and sealants give off harmful substances still need to be answered. One solution to the problem is to coat wooden furniture with safe modern sealants. In addition to coating, shelves and drawers made of wood can be lined with an effective barrier material. See the section on wood display cases in chapter 11, and also appendix 2 for information on wood and the use of sealants and barriers.

The use of laminate and particle wood furniture is tempting because it is readily available and inexpensive. Furniture from these woods, however, is especially problematic because the wood warps under weight and contains many additives that off-gas, and because the brackets and joining hardware are often inadequate to provide sufficient support. Closed storage cabinets made of
wood are even more of a problem because the closed environment intensifies the concentration of acidic and other vapors. If this type of cabinet is used, all inner surfaces of the unit should be effectively coated. If possible, the use of wooden furniture should be avoided.

ARE ANY OTHER MATERIALS A CONCERN?

Some storage furniture has gaskets in the doors or drawers to provide an airtight seal. If the gaskets are rubber, damage, such as corrosion or tarnishing, may occur to some items, especially those made of metal, due to sulfur vapors emitted from rubber. The preferred gasket material is silicone, preferably food-grade that has been heat-cured to remove solvent vapors.

WHAT CONSTRUCTION FEATURES ARE IMPORTANT?

Regardless of the construction material chosen, storage furniture should have a smooth, nonabrasive finish. If steel furniture is painted or coated, the finish should be resistant to chipping, for chips will leave steel exposed and susceptible to rust. The furniture should be free of sharp edges and protrusions; exposed nuts and bolts are particularly hazardous. The furniture should be strong enough so that it will not bend or warp when filled. To protect collections from water damage in the event of a flood, the lowest storage area within the furniture should be at least four inches above the floor.

WHAT TYPES OF STORAGE FURNITURE ARE AVAILABLE? HOW DO YOU CHOOSE?

Several types of furniture are available that are suitable for the storage of American Indian items. The most common ones are described below. Specialty furniture, such as racks to hold canoes horizontally or lances vertically, or supports to brace totem poles, are not covered here. A preservation professional should be contacted to deal with the special needs of items such as these, taking into account your particular situation. Choice of furniture is based on the types, sizes, and quantities of items you have. Remember to take into account the size (particularly the thickness) and shape of items after they have been fitted with supports and mounts. This may cause them to require greater storage space.

The choice of furniture can be influenced by conditions in your storage space, such as a lack of security or HVAC equipment. Issues of use, access, and staffing levels also are important considerations when selecting furniture. For example, if you have standard museum closed storage, where the space is often kept locked and public access is only by appointment and when accompanied by a staff member, your needs will be different than if you have open storage, especially where visitors are free to walk about, handle items, and study them within the storage area itself. With open storage you should avoid the use of cabinets with doors, and store items on open shelving instead. On the other hand, if you have closed storage and you anticipate having many visitors re-
questing to see the smaller items in your cultural center or museum, it may be
easier to accommodate them if the items are in a drawer than if they are on a
fixed shelf, particularly if you are understaffed. Items can be seen more easily,
quickly, and safely when they are in a drawer that can be pulled out for viewing
and retrieval than on a fixed shelf, which may require that the items be moved.
This facilitates access even when staffing is limited.

In general, the furniture selected should be as flexible and adaptable as
possible to accommodate changing needs. Styles that stack or are adjustable
are preferable. Nearly any type you need is available commercially from sup-
pliers of museum, library, and office furniture.

**Wardrobes**

Several wardrobe designs are available. These storage units are useful when
only a few items need to be stored and when items are still in sound enough
condition to be hung on padded hangers. Some of these units have shelves or
drawers built into the lower or upper sections of the wardrobe, which are useful
for small items such as moccasins, sashes, or personal bags and pouches.

**Cabinets**

When security and protection from dust are special concerns, cabinets with
doors are often preferred. Cabinets are available in many different sizes and
configurations. These are available with shelves or drawers (see below). Other
variable features include glass doors for easy visual access, solid metal doors for
reduction of light, gasket seals for reducing air flow, and shelves or drawers
that are adjustable, sliding, permanent, or removable. The use of piano hinges
for the attachment of the doors is advisable if opening them flat will facilitate
safe removal of items from the cabinet. If cabinets are made of *uncoated* steel,
rusting and mold growth can be a problem in areas with high humidity or
fluctuating conditions. Mold growth can also be a problem in cabinets with
doors. Unless the cabinets are well ventilated or the relative humidity is closely
controlled and monitored, it may be better to avoid using these.

**Shelves**

Shelving is one of the most frequently used types of storage furniture. It can be
open or in cabinets with or without doors. Care should be taken to select
shelving that is strong enough that it will not sag from the weight of the items
stored on it. It should be easily adjustable so that the distance between shelves
can be changed to suit the sizes of a variety of items, making maximum use of
storage space.

Open shelving units that fit together so that shelves can be placed side by
side or end to end to accommodate oversized items provide the most flexibility.
The shelves should fit snugly in place so they do not move when items are
placed on or removed from them. Shelving units should be bolted to the floor
so they will not wobble or topple, and they may require additional reinforcement by attachment to the walls and ceiling as well. Shelf uprights and supports should never obstruct the removal and replacement of items, and cross-bracing should be kept to a minimum beyond structural requirements to allow easy access to oversized items.

Open steel shelving, frequently used in the restaurant industry, has shelves made of rigid parallel wires or mesh. They allow for maximum air circulation and minimum dust or moisture buildup but also permit light to penetrate. These shelves work well for boxed storage of light- to medium-weight items. Solid steel shelving systems have traditional sheet metal shelves. They offer greater support for heavy items and have the advantage of blocking illumination from ceiling fixtures.

Shelves within cabinets can be either fixed or sliding. Sliding shelves are preferred by museum professionals because items on them are easier to see and access. They are particularly well suited to the storage of fragile items such as shields that are usually brittle and have feathers and other attachments that dangle. Sliding shelves enable items such as these to be seen fully without being touched. Sliding shelves, however, are very expensive, and most museums have fixed shelves.

A variation on this is a unit that has large trays, instead of shelves, that slide out easily for viewing or transport. The trays can be constructed of the same material as the cabinet, or they can be made from an aluminum frame that is covered with stretched fabric. The fabric allows for light-weight trays and also increased air flow. This is optimal for hygroscopic material, such as

*Left:* Sliding and adjustable fixed shelves to hold porcineles of different shapes and sizes. *Below:* Sliding shelves in a powder-coated steel cabinet with doors, demonstrated by Jodell Meyer (Ojibwe), assistant site manager, Mille Lacs Indian Museum, Onamia, Minnesota. Note the polyethylene supports holding the wooden bowl.
buckskin. Large cabinets with shelves can be fitted with brackets for storage of rolled items on tubes. Many sizes of items can be stored rolled in this manner, although flat storage is preferable for most American Indian items.

Shelves are most suitable for the storage of items that are tall and dimensional and need to be viewed that way, such as woven food baskets, ceramic pots, birch-bark wastebaskets, cradle boards, and models or dioramas. They also are suitable for collections of large or heavy items. Examples are snowshoes, antler rakes, scapula hoes, and troughs. A disadvantage of shelving is that it is not as efficient a use of space as drawer storage in most situations. Drawers can be filled more tightly with items than shelves can, because items can be safely removed simply by lifting them. With shelves, on the other hand, items must be widely spaced, or you are forced to reach between items on a shelf and move items around others to remove them. This increases handling and the potential for damage.

**Dustcovers for Shelves**

When open shelving is used to house uncovered items, hanging dustcovers can be attached to the outside of the shelving unit. Hook and loop fasteners such as Velcro work well for this, as do small magnets and binder clips. Dustcovers can be made from a variety of materials depending on your needs:

- Polyester film or polyethylene sheeting are sometimes preferred because one can see items through these materials, but they have a static charge that attracts dust.

- Muslin provides partial protection from dust and light without static. A low-cost alternative to this is the use of bedsheets. Both should be washed first to remove sizing.

- For optimal protection from dust, muslin covers topped with polyethylene sheeting are recommended.

- For complete protection from light, covers made from opaque blackout cloth are recommended. The cloth should be washed first to remove sizing.

**Drawers**

In many museums drawers are the preferred type of storage furniture for American Indian items. As already mentioned, this is because access to items in closed storage can be accomplished more quickly, easily, and safely, especially when the museum is understaffed. A disadvantage of drawer storage is that items tend to move as drawers are opened and closed, particularly those
that are heavy or rounded. This problem can be solved, however, by the creative use of mounts and supports or the creation of "wells" in drawer linings (see below).

Many types, sizes, and depths of drawers are available. Drawers should be sturdily constructed so they will not buckle from the weight of their contents when full, or otherwise become difficult to open and close. They should be equipped with stops to prevent them from accidentally coming out of the cabinet. They should have ball bearings rather than slide-in grooves because these will allow them to open and close more smoothly, causing less vibration to items and eliminating the risk that the drawers will fall out of the grooves and become stuck. To reduce jarring, vibration, and sliding of items, drawers can be lined with polyethylene foam in roll form for cushioning. Smooth items, however, will slide, even on the polyethylene. This can sometimes be avoided by using two or more layers of polyethylene and cutting out an area from the lower layer(s) that is the shape of the item. This allows the item to sink down into a "well" and prevents it from sliding. This can be abrasive to some items such as those with loosely bound paints. In these situations, lining the well with an appropriate smooth material may be desirable. Depending on what is stored in the drawers, dustcovers or rear hoods may be advisable to prevent items from being damaged at the back of the drawer.

Drawers come in cabinets of various heights, which can be stacked. When security and protection from dust are special concerns, cabinets with doors are often preferred. Drawers work for the storage of a wide variety of items. They are particularly suitable for the storage of items that need to be stored flat, such as sashes, jewelry, beaded panels, beaded bands, bandolier bags, loin cloths, leggings, and vests, shirts, and dresses that are too heavy or deteriorated to be hung. Drawers also work well for such items as moccasins, arrows, quivers, personal bags and pouches of many types, wall pockets, small toys such as dolls and miniature cradle boards, war clubs, and projectile points.

**Oversized Flat Storage**

Selecting drawers for oversized items requires special attention to the functioning of the drawers. They should be lightweight and should open and close easily and smoothly without binding. They should also be suitable for the viewing of items within them if the items are too large and cumbersome to be removed for a brief examination. Drawers for extra-oversized cabinets can be specially made of lightweight honeycomb aluminum panels if a particularly large size is required. The flat tray storage mentioned earlier works well for oversized items; the trays slide in and out of a cabinet so the item can be transported as well as stored and examined on the tray. For the best strength to weight ratio, the frame of the tray is made of aluminum, and the bottom of stretched fabric or Coroplast. Examples of items that one museum has stored
in such a cabinet are a shoulder blanket and a buffalo hide. All these cabinets for oversized items are available commercially in standard or custom sizes and tend to be very expensive.

**High-Density Storage Systems**

Many museums with space limitations and large collections use high-density storage systems, often referred to as compact or movable shelving. These systems minimize the amount of space needed by compacting ranges of open shelves and cabinets tightly together. The ranges slide along tracks so they can be moved apart to retrieve items on a particular range, and then moved back together again. By eliminating most of the distance between the ranges, more ranges can fit into a given area, and overall spatial requirements are reduced substantially.

These storage systems can be operated automatically by pushing a button to separate the ranges, or manually by using a hand crank to separate them. Manual systems are usually preferred because it is assumed they can be operated more smoothly, avoiding jolts that jar items, they require relatively little maintenance, and they can be used during power outages. Note, however, that moving systems, even the hand-operated ones, can be damaging to some items because of the vibrations to which they subject them. Furthermore, items can be jostled off shelves, causing additional damage. Items that hang or are suspended in storage, such as garments, probably should not be stored in a movable system. If a high-density storage system must be used, a design should be chosen that minimizes these hazards for the types of items you need to store in it.

**Things to Remember**

Several suppliers of preservation-quality storage materials and furniture are available. It is best to obtain catalogs from a number of suppliers so you can make comparisons of cost and assess the full range of available products. If you have questions about the composition of a product, ask the supplier for details. This information should be readily available. Also, call places that have installed the type of wardrobes, cabinets, or shelves in which you are interested and ask how they like them. If you require further assistance, contact a preservation professional.