Report of a Preservation Survey

Leverett Family Museum

Leverett, Massachusetts
Surveyed on July 15, 2013

Submitted September 19, 2013 by:

Lisa Lipshires, M.S.
Simmons Graduate School of
Library and Information Science
(413) 774-3501
lalipshires@yahoo.com

EXECUTIVE SUMMARY

The Leverett Family Museum in Leverett, Massachusetts, was surveyed for preservation planning purposes by Lisa Lipshires, a graduate of the Simmons Graduate School of Library and Information Sciences, on June 27 and July 15, 2013. This summary identifies the most important recommendations in the report and categorizes them as short-, medium-, and long-term preservation priorities. Explanations for and details of these recommendations can be found within the body of the report.

Short-term preservation priorities

This list includes tasks that should be addressed as soon as possible.

- **Move all items out of the built-in cabinet on the second floor where rainwater is leaking into the south wall.**
- **Request help from the Leverett DPW or volunteers to attach additional pieces to the gutter on the north wall, to the right of the front door, to guide water away from the building.**
- **Also request that the Leverett DPW look into the causes of the leak on the south wall of the building, which is affecting both the main and second floors.**
- **Reattach the loose pieces of the gutter on the south wall, to guide water away from the building.**
- **Ask the Town of Leverett or some volunteers to clean the gutters of the museum.**
- **Turn up the dehumidifier in the basement to the highest setting, to remove as much moisture from the air as possible.**
- **Contact Michele Barker, a Circuit Rider for Preservation Massachusetts, to arrange a visit to the Leverett Family Museum, with an expert on historic restoration and repairs. (Please see page 19 of this report for more information on Michele Barker.)**
- **Invite members of the Leverett Family Museum's Advisory Committee, the Leverett Historical Society, the Leverett Historical Commission, and the Leverett Preservation Committee, to be present at the museum during Michele Barker's visit.**
- **Update the mission statement for the museum to reflect its change of name to the Leverett Family Museum. Make the mission statement available to visitors.**
- **Install an air conditioning unit on the main floor of the museum to lower the room's humidity and temperature during the summer months.**

- **Install a similar air conditioning unit on the second floor of the building.**

- **Call the Northeast Document Conservation Center in Andover, Massachusetts, to learn how to safely remove mold from the Putnam Field military uniform. The main telephone number of the NEDCC is (978) 470-1010.**

- **Follow the advice of the NEDCC in removing mold from the Putnam Field uniform.**

Medium-term preservation priorities

This list includes tasks that may take longer to put into practice because of the time they require or the expense they may incur. They are as important as the short-term priorities.

- **Once the gutter on the north wall has been extended away from the building, check the cellar on a daily basis, to see if the leak on the north wall of the cellar has stopped. Keep a brief log of your observations, including whether the leak is more noticeable after a rainstorm.**

- **If the leak on the north wall of the cellar has not ceased, or if it reappears after a rainstorm, contact the Town of Leverett DPW to ask them to look into the causes of the leak.**

- **If your requests for help from the Leverett DPW do not result in repairs, and if Michele Barker has not yet paid a visit, apply for emergency funding. (Please see page 19 of this report for details.)**

- **If the leaks are ongoing, also request help from the Advisory Committee in deciding whether to temporarily move portions of the Leverett Family Museum's collections to other buildings (town buildings, private homes, or other libraries or museums) for safekeeping. Prime candidates for temporary removal would be textiles, paper items, and photographs, which are all particularly susceptible to mold.**

- **If a decision is made to temporarily move parts of the collection to other buildings, request volunteer help in creating an inventory of which items will be moved and where.**

- **If numerous interested volunteers can be found, consider asking them to join the museum's Advisory Committee.**

- **When the leaks have stopped, begin writing down the temperature and relative humidity on all three floors of the museum, on a regular basis. This documentation could be useful in obtaining a grant or grants for providing better climate control in the museum.**

- **For purposes of climate monitoring and recording, consider investing in a datalogger, such as the PEM2. Ideally, there should be a climate monitoring and**

recording device on each floor of the building. It is possible that a grant, such as the National Endowment for the Humanities Preservation Assistance Grants for Smaller Institutions, could be obtained to pay for three dataloggers, along with some storage furniture and preservation supplies.

- **In the interests of preventing unnecessary deterioration caused by light, it would be helpful to install UV film on the windows of the museum and to hang light-blocking shades.**

- **Continue inventorying the holdings of the museum, noting the history and provenance of items, when known.**

- **With a blunt knife or plastic spatula, remove the photographs from the photo album with sticky "magnetic" pages. These pages will deteriorate over time, trapping the photos beneath them. Keep the photos in the original order in which they were placed in the album. (Please see pages 48-49 for further details.)**

<u>Long-term preservation priorities</u>

- **Continue applying for grants to fund the museum's preservation-related activities and purchases.**

- **The fluorescent lights on the main floor and in the basement should be fitted with UV filters. UV light contributes to the deterioration and fading of many materials, including fabric, paper, photographs, and wood.**

- **Seal the wooden built-in shelving on the main floor to prevent emissions from the wood and/or place buffering barriers between the wooden shelves and the items displayed on them.**

- **Cycle different items through the exhibit areas in the museum, so that no one item is ever on permanent display.**

- **Read about the best storage furniture for long-term preservation and invest in furniture and archival enclosures that will extend the life of the museum's collections.**

- **If the museum receives a large donation of papers from one family, business, or organization, describe the materials according to archival principles of arrangement and description. (Please see page 12 of this report.)**

- **Advisory Committee members and other volunteers should receive support to attend workshops or other training on preservation, the storage and handling of archival materials, and on disaster preparedness and response.**

It is readily apparent that Leverett Historical Society President Edith Field is committed to preserving the collections in the Leverett Family Museum, and that the community also supported setting aside a special space for these materials. If some of the initiatives recommended in this report seem overwhelming, it is important to remember that the tasks can be accomplished as a step-by-step process, in concert with other people. It will be possible to implement some actions soon, but others may require additional training and funding efforts, over several years. Since the residents of Leverett are clearly enthusiastic about preserving their town's unusually rich history, the future of the Leverett Family Museum looks bright.

Respectfully submitted,

Lisa Lipshires, M.S.
Simmons Graduate School of Library and Information Science
(413) 774-3501
lalipshires@yahoo.com

September 19, 2013

CONTENTS

I. INTRODUCTION

The Museum

The charming Colonial Revival building of the Leverett Family Museum was constructed in 1916 as the Bradford M. Field Memorial Library for the inhabitants of Leverett, Massachusetts. The library replaced small lending libraries that had, since 1891, been scattered among Leverett's private homes. The main floor of the Field Memorial Library functioned as a lending library, while the second floor of the building was set aside for memorabilia of the Field family, one of Leverett's prominent families. Though the building was capacious for its original purposes, the land on which it was situated was a small parcel, backed by a marshy area. No plumbing was installed in the library.

In 2003, when contemplating a move of the greater part of the building's contents to a new public library a few miles away, the town's history-conscious residents debated how to use the Field building. They decided to utilize it as a museum, both for Field family memorabilia and for Leverett's other items of historical interest. The town would continue as the owner of the building, but the collections housed within it would be managed by the Leverett Historical Society. The museum, renamed the Leverett Family Museum, is overseen by an Advisory Committee, of which Historical Society President Edith Field is the most active member.

Leverett residents, aware of their rich architectural heritage, were able to establish their town center in December of 2008 as an Historic District in the National Register of Historic Places. The Leverett Family Museum is part of the Leverett Center Historic District and was described, in a 2010 Community Preservation proposal to restore the building, as possessing "architectural and historic interest" of its own, apart from its collections.

These collections, and the building that houses them, are the focus of this preservation survey. The collections contain papers, clothing, and artifacts related to Leverett residents. The collections include diaries, family histories, photographs—both framed and loose—records of local businesses and of the former Field Memorial Library, scrapbooks, one photo album, wills, deeds, women's clothing, military uniforms and weapons, stuffed birds, tools, farm implements, signs formerly displayed in the town, a cabinet of standard weights and measures, and DVDs of programs presented by the Leverett Historical Society.

.

The Preservation Survey

Lisa Lipshires, an Archives Management graduate of the Simmons Graduate School of Library and Information Science, surveyed the collections of the Leverett Family Museum and the building in which they are housed on June 27 and July 15, 2013. Observations and recommendations for preservation planning are based on the site visits, conversations with Leverett Historical Society President Edith Field, a telephone conversation with Michele Barker of Preservation Massachusetts, and general background and guidelines from the Northeast Document Conservation Center (NEDCC).

The purpose of a preservation planning survey is to:

- evaluate the building and environment as they relate to the preservation needs of collections, especially collections with long-term value.
- make recommendations for planned renovation or new construction, if appropriate.
- examine storage and handling procedures.
- assess the general condition of collections having long-term value.

Observations and recommendations formulated during the survey will be presented in this report.

This report is intended as an ongoing reference. General background information, compiled over time by NEDCC staff, appears at the beginning of each section, and provides a summary of the current standard preservation practices that underlie the observations and recommendations that follow. For clarity's sake, this background information is printed in standard type, while observations and recommendations specific to the collection are in bold. Each recommendation is preceded by a bullet.

Reference will be made to the Preservation Leaflets published by the Northeast Document Conservation Center, available electronically on NEDCC's website (http://www.nedcc.org) and which may be downloaded at no cost.

Archival and preservation supplies are recommended throughout the report. Most of these supplies are available from multiple vendors, and the Leverett Family Museum should select those that best meet their needs in terms of cost, shipment method, etc. Examples of particular items are intended as illustrations, not as recommendations of one supplier over another.

I hope that this report will prove useful to the museum's Advisory Committee, as well as to the residents of Leverett as a whole, in planning for the preservation of the materials in their care.

II. COLLECTION MANAGEMENT

A. Mission Statement & Collections Policies

Over the long-term, it is essential to sort, inventory and evaluate library, museum, and archival collections and to weed any out-of-scope material. Inventory and evaluation are most effective if performed in the context of a clearly defined institutional mission statement and collection policy.

A mission statement should articulate the reason for an institution's existence—usually to collect and make available materials about a particular subject area.

The collection policy should indicate the desired scope and depth of the collection, identifying particular subject areas and formats to be collected. It should also identify the target audience(s) of collected materials. Furthermore, it should include policies for maintenance and use and procedures for acquisition, deaccession (removal from the collections), and cataloging. While such policies may seem self-evident to those who work with collections, there are advantages to a formal document. The writing process itself clarifies what materials should or should not be collected; it also raises awareness about the value of consistent procedures.

Where resources are limited, it makes the most sense to limit collections to those that serve organizational needs and mission. Deaccessioning and gift policies must allow an institution to deaccession or refuse materials that do not fall within the parameters of the collection development policy or that present serious preservation problems.

Observations and Recommendations re: Mission Statement & Collections Policies

The Leverett Family Museum does not currently possess a collection policy. The mission statement of the Field Museum (now renamed the Leverett Family Museum) gives the reader a good sense of the purpose of the institution:

"The Field Museum preserves, collects, interprets, and displays historical artifacts, art, and documents through which the history of the Field and other local families can continue to play a vibrant role in the political and social culture of the Town of Leverett, Massachusetts. Special Collections, consisting of material culture from the 18th-21st centuries, will be available on a regular basis to educators, researchers, and the public in archives and through ongoing curated exhibitions. The institution will highlight accomplishments of local notables such as 19th century painter Erastus Salisbury Field and seek to become a repository of related research."

- **It would be helpful to update the museum's mission statement by referring to the institution as the Leverett Family Museum, rather than the Field Museum.** It would also be useful to remove the specific reference to the Field family from within the mission statement, since the museum's purpose is to be inclusive of all Leverett families.

- **Once the mission statement is updated, retype it on Leverett Family Museum letterhead or in a brochure, to make it available to visitors to the museum.** With the help of a future volunteer or fieldwork student, a web page for the museum, including its mission statement, could be created for the town's website. A museum's mission statement not only clarifies the institution's purposes, but makes clear to the public what types of materials can be found there.

- **Guided by the mission statement and the definition of a collection policy in the paragraphs above, create a collection policy for the museum.** It would be beneficial if the museum's Advisory Committee created this policy together. Pointers on what a collection policy should include can be found online in NEDCC's Preservation Leaflet 1.5, "Collections Policies and Preservation" at: http://www.nedcc.org/free-resources/preservation-leaflets/1.-planning-and-prioritizing/1.5-collections-policies-and-preservation

B. Staffing & Budget

Adequate staffing is crucial to maintaining and preserving library, museum, and archival collections, especially when collections are housed in multiple locations. Ongoing activities like environmental monitoring and stack maintenance do not require a large investment in equipment or supplies, but do require a commitment of time. In addition, someone on staff must be assigned the responsibility of being knowledgeable about preservation issues, and of making (or overseeing) preservation decisions. An investment in staff time to carry out collections care and preservation activities will result in a longer life for the records.

Another essential for effective preservation planning is the ability to earmark at least a small amount of money for staff training, supplies, and equipment. Effective preservation requires a dependable budget with active administrative coordination, even if the budget is not large at the beginning. A budget line for preservation should be part of the institution's annual budget, to ensure an ongoing commitment to preservation and allow better tracking of expenses.

Observations and Recommendations re: Staffing & Budget

Like many museums in small towns, the Leverett Family Museum currently lacks the funds to hire staff. The museum is run on a purely voluntary basis by its Advisory Committee. However, because of increasing family responsibilities, most of the Advisory Committee members have had to scale back on their work with the museum. Edith Field, the President of the Leverett Historical Society, has shouldered most of the tasks involved with processing and preserving the museum's collections. Edith also is in charge of opening the museum to the public every Saturday from 10:00 a.m. until 2:00 p.m.

The museum does not have a set budget to support its preservation activities. The institution relies on donations for its funds. The Leverett Historical Society holds yearly fundraisers, from which some funds are usually donated to the museum. In the past, Edith Field has also spent her own money on purchasing preservation supplies. Recently, the museum's Advisory Committee approved an official checking account for the museum's monies. On June 27, 2013, that checking account contained $3,500.

- **Although the lack of set funding, and the resulting absence of paid staff, is a thorny problem, it is not insurmountable.**
    - Michele Barker, a Circuit Rider (traveling consultant) with Preservation Massachusetts, could be called upon for advice on how to increase funding for the museum. Michele's phone number is (617) 999-3256 and her email address is **mpbarker@preservationmass.org**
    - Another possible source of advice for increasing the museum's funding and staffing could be Kathie Gow, the curator of the Hatfield Historical Museum in Hatfield, Massachusetts. According to a *Daily Hampshire Gazette* front-page article on June 18, 2013, Kathie Gow has been able to use state and local grants to pay herself for 624 work hours this year. Here is a "Contact Us" page from the website of the Hatfield Historical Museum: http://hatfieldhistory.weebly.com/contact-us.html through which one could get in touch with Kathie Gow.

- **If a decision is made to temporarily move parts of the collection to other buildings, request volunteer help in creating an inventory of which items will be moved and where.** Possible sources of volunteer help:
    - Leverett residents.
    - Simmons College library school students. One can request the help of Simmons library school students through Terry Plum, the Assistant Dean of the Simmons Graduate School of Library and Information Science, who is in charge of the Simmons western campus at Mt. Holyoke College. Terry Plum's phone number is (413) 533-2400 and his email address is terry.plum@simmons.edu
    - Students in the Public History program at the University of Massachusetts Amherst. The UMass Public History program provides fieldwork (also called field service) experiences at local history institutions for students who work together in small teams. One can contact the Public History program by calling the UMass History Department at (413) 545-1330.

- **If numerous interested volunteers can be found, consider asking them to join the museum's Advisory Committee.** If subcommittees do not already exist, consider forming the volunteers into specialized groups to oversee building maintenance, security, disaster preparedness, collections maintenance, fundraising, exhibits and public programs, and publicity, including a website.

C. Intellectual Control

Some materials are more valuable than others because of rarity, monetary value, frequency of use, artifactual value, or legal value. The process of prioritizing items within a collection for preservation action is called selecting for preservation. This process can be difficult, since in practice, preserving one item often means not preserving another.

Effective selection of items for preservation requires good intellectual control (i.e., knowing what you have) since relative values and priorities cannot be assigned unless staff is familiar with the

content of collections. A relatively detailed collection inventory can also assist systematic comparison of an institution's holdings with those of other repositories.

Though museums generally create inventories of individual items, archives, by contrast, often organize inventories of archival materials (e.g., non-printed items, such as photographs, documents, handwritten ledger books, scrapbooks) into groups, since the individual items are often related. This means that instead of cataloging each individual item, archivists generally catalog materials that are related as one unit, or one collection. To the extent possible, these units should reflect the provenance of the materials; that is, materials created or accumulated by the same individual, family, business or organization, should remain an intellectual unit. This remains true even if materials with the same provenance are in different formats and must be housed separately. Within each group, original order—the order in which the records creator arranged materials while using them—should also be respected as much as possible.

The basic purpose of archival description is to enable researchers to find both the appropriate collection and the desired information within that collection by using various types of written guides. This prevents rummaging through large numbers of boxes and documents, which can cause handling damage and general disorder. It also means that the researcher is not solely dependent on the personal knowledge of the archivist or other staff member(s) to access the materials. Finally, it allows materials to remain intellectually linked even when they must be physically separated. Archivists generally prepare finding aids (which contain information on the scope and content of the collection as well as a listing of folder titles) and a summary catalog record in the MARC format for each collection (so that the summary records can be shared with other institutions via the standard bibliographic databases).

Observations and Recommendations re: Intellectual Control

It is Edith Field's goal to inventory everything in the museum. By taking work home, she has managed to add all of the wills and deeds in the museum's collections to an electronic spreadsheet inventory. She has also placed the physical wills and deeds in protective sleeves in three-ring binders shelved on the museum's main floor. Since most of the museum's donations of materials have been received in small batches, it is unlikely that any large archival groupings have been accidentally split apart.

- **Continue inventorying everything in the museum's collections. It is possible that student volunteers or fieldworkers could assist with this process.** When the donor or the history of an item is known, add that information to the inventory. It might prove helpful to consult with other museums and archives to see what types of information they aim to capture in their own inventories. Some cultural heritage institutions find it useful to take photographs of their items and to add these photos to their inventories.

- **If the spreadsheet of wills and deeds is not already in the museum, place a copy of it there, for the use of visiting researchers**. However, if there are items in the spreadsheet that are among the most historically valuable in the museum, you may wish to wait until you have better security in place, before advertising the presence of these materials.

- **Deaccession (remove from the museum's possession) items that are no longer wanted**. Edith Field has already identified some large framed prints, Currier & Ives calendars, bound art journals, and a collection of vital statistics books (in which the town of Leverett is not featured) for deaccessioning. All of these items are stored on the second floor of the museum and are taking up unnecessary space. As Edith has suggested, it would be useful to sell these materials to raise funds for the museum. Perhaps town or student volunteers could assist with selling and/or removing the unwanted items.

- **In the future, if the Leverett Family Museum receives any large donations of materials from a single source (such as an individual, a family, or an organization) it would be helpful to describe each of these collections as one group.** Such summaries are known as finding aids. If other items exist in the museum's collections related to the same individual, family, or organization, mention those materials in the same finding aid. To obtain some pointers on how to best create a finding aid, check with the archivists at UMass Amherst, Smith College, or Amherst College. Another source of useful tips on processing archival collections is *Organizing Archival Records: A Practical Method of Arrangement and Description for Small Archives* (2004) by David Carmichael.

III. PRESERVATION PLANNING

This preservation survey report may be viewed as the first step in creating a preservation plan, but it is not itself a plan. This report identifies preservation needs and provides an executive summary that offers some guidance in prioritizing these needs. However, it cannot take into consideration many other factors that must be considered when weighing the needs of collections against institutional resources.

Some factors change as institutional circumstances change; these include available funding for preservation, staff time and expertise and user demand for collections. Others require an in-depth understanding of the institution and its collections that only staff members possess, such as political considerations and the relative value of collections to the institution.

There is general consensus regarding the factors to be considered when prioritizing potential preservation actions:

- Use—materials that are used frequently, whether consulted by researchers or exhibited routinely, may be at higher risk than other collections.

- Storage—collections that are stored under adverse conditions, whether environmental or in damaging enclosures, may require prompt preservation action.

- Condition—items or collections in fragile condition may be at risk of loss unless they receive attention quickly.

- Value—either absolute value (rarity, monetary worth, intrinsic or associational value, etc.) and/or relative value of collections to an institution may influence preservation priorities. Whether collections have long- or short-term value to an institution will also influence decision-making.

- Format—whether or not materials need to be preserved in their original format will also influence priorities.

In general, the following preservation activities will have the highest priority:

- Those with high impact, which will result in dramatic improvement or that will affect the greatest number of items will often be the highest priority (for example, improving climate control, rehousing a collection or microfilming fragile materials).

- Those which are feasible, given practical considerations such as staffing levels and expertise, financial considerations (outside funding, capital outlay, operating costs, expenses for materials and services), policy and procedural changes required and political considerations. Even if the impact of a preservation action is high, it may be given a low priority if implementation is not feasible.

- Those which are urgent and require immediate action; collections may be damaged or lost, or an opportunity to act on a particular project may be lost, if action is not taken.

Observations and Recommendations re: Preservation Planning

Although no formal preservation plan exists for the museum, Edith Field is clear on some important preservation goals. She is most concerned about stabilizing the temperature and relative humidity within the building at the recommended levels, and she is also quite concerned about the museum's lack of a security system. In general, she would like to better preserve all of the most valuable items in the museum. She wishes to document the museum's most pressing preservation problems and find more funding and volunteers to address these issues. Edith reports that the museum's Advisory Committee shares her concerns and is committed to the protection of the collections entrusted to their care.

- **Using the recommendations in this report as a starting point, the Advisory Committee of the Leverett Family Museum may wish to create a preservation plan.** The plan does not need to be extensive or formal, but should identify the highest priority needs, and the actions to take in the short-, medium-, and long-term to begin addressing them. It is important that the preservation plan take into account all of the collections housed in the museum as well as the historic building itself.

- **The plan should also include a shorter list of high-priority actions that are achievable in the near future.** The Advisory Committee should create a timetable for carrying out these actions effectively.

- **The preservation plan must be periodically revised as circumstances change and preservation needs are addressed over time.** It may make sense to update the preservation plan in conjunction with an annual review of a strategic plan for the museum.

IV. BUILDING & ENVIRONMENTAL CONDITIONS

A. The Building

General Background Information

The most effective way to preserve large quantities of library and archival material is to control temperature, relative humidity, air quality and light; to provide routine housekeeping; and to use good storage and handling techniques. Installation of fire detection and suppression systems is also a high priority. In addition, protection from water damage, theft, and vandalism is critical for collections as a whole.

The building is central to all these efforts and must remain in good condition to provide the maximum protection. Regular preventive maintenance should be provided on a fixed calendar basis, with inspection of roof, gutters, skylights, flashings, drains, HVAC equipment, security systems and fire safety equipment. Cleaning and repair should be performed as needed. A log of building maintenance and problems should be kept.

Observations and Recommendations re: the Building

The Colonial Revival building of the Leverett Family Museum was constructed in 1916 as the Bradford M. Field Memorial Library. The main floor of the Field Memorial Library functioned as a lending library, while the second floor of the building was set aside as a museum for memorabilia of the Field family. In keeping with its former function as a library, the walls of the main floor are lined with wooden built-in shelving. In 2003, most of the contents of the building were moved to a new public library a few miles away, and the original building was rededicated as a museum for collecting and preserving the history of Leverett's residents.

Though the building was capacious for its original purposes, the land on which it is situated is a small parcel, backed by a marshy area. No plumbing was installed in the library, nor is there any running water in the museum, today. In Leverett, there is no town water system; each building must dig its own individual well.

Each floor of the museum's building, including the basement, consists of one large room, measuring approximately 32 by 40 feet. There is an oil furnace in the basement, with air ducts that bring heat to the main floor. The furnace is less than fifteen years old. The building underwent some renovations in around 2006, at which time ductwork was added to the cellar, to provide heat for that level. In the same year, a propane gas heater and additional electrical outlets were installed on the second floor. Before that, there had been no heat in the upstairs.

The wood-frame building, though solidly built, has suffered from a decline in maintenance, since it became a museum ten years ago. The Town of Leverett owns the building, reports Edith Field, but the town has felt the need to redirect its limited financial resources to those buildings that receive more frequent use. The town did formerly supply a janitor for the

museum, but that service came to an end two years ago. The Leverett Department of Public Works has been very helpful, when Edith has requested assistance, but there is only so much they can do, without town monies budgeted for the upkeep of the museum.

Despite the fact that Edith Field has been able to enlist the help of volunteers for some repairs, the exterior of the building shows signs of insufficient maintenance. Three years ago, volunteers from the Hampshire County jail painted the building, but Edith theorizes that they must have used a water-based paint, since the paint has peeled badly since then. The roof of the building appears to be intact, but the building's gutters are clogged with moss.

In 2010, the museum's Advisory Committee applied to Leverett's Community Preservation Committee for pre-development funds for the restoration and rehabilitation of the building. Because of the expense of the proposed project, and because the Leverett Town Hall had applied more compellingly for Community Preservation renovation funds at the same time, the museum's grant application was turned down. Other factors in the rejection of the museum' s application were low patron use of its collections and the impossibility of adding plumbing to the building. The museum's parcel of land is too small to allow space for both a well and a leach field.

B. Protection from Water Damage

General Background Information

Protecting library, museum, and archival materials from water is central to their preservation. Even a minor water accident such as a leaky pipe can cause extensive and irreparable damage to collections through mold, staining and physical distortion.

The best insurance against possible water damage is to perform regular inspection of roof covering and flashings, with repair and/or replacement as needed. Gutters and drains must be cleaned frequently. Storage of collections under water pipes, steam pipes, lavatories, air conditioning mechanical equipment or other sources of water must be avoided. Sprinkler pipes, which must undergo rigorous testing to meet fire code, may be located over collections, as the protection provided by a sprinkler system dwarfs the risk of leaks. Collections should never be stored on the floor, but should always be raised at least four inches from the floor on shelving or pallets. Storage in basements or in other areas where the threat of flooding is great must be avoided.

If collections must be stored in areas vulnerable to flooding, water-sensing alarms should be installed so that water is detected quickly. Staff should familiarize themselves with the location and operation of water mains and shut-off valves in case the water supply must be shut off during an emergency.

Observations and Recommendations re: Protection from Water Damage

The asphalt shingle roof of the Leverett Family Museum building is pitched and appears to be in good condition. The age of the roof is uncertain, though it is probably less than twenty years old. A system of gutters meant to drain water from the roof down the sloped land surrounding the building is clogged with moss. On the north wall, to the right of the front door, a gutter empties into a gap between the front porch and the building's front wall. In the rear of the building, a length of gutter extension lies on the ground, waiting to be reattached.

Figure 1: The gutter on the north wall, possibly causing the leak in the cellar.

Since the building has no plumbing, there is no danger of water damage from an internal source, but water from outside the building has infiltrated the structure in at least three places. Possibly because of porous bricks in the chimney that rises along the museum's south wall, or perhaps because the flashing between the chimney and the roof has deteriorated, water has leaked into the plastered wall on both the second and main floors. Peeling paint and stained, bubbling plaster provide visual evidence of the water's path. Two

volunteer handymen who looked at the chimney a few weeks ago told Edith that a mason should be called to determine the exact cause of the leaks.

Figure 2: Water damage to the south wall, possibly from a leak around the chimney. Water damage is also evident inside the wall of the adjacent built-in cabinet.

A water leakage problem also exists in the basement, along the building's north foundation wall. On July 15th, the fieldstone wall showed staining from a trail of water, and a standing puddle of water had pooled on the basement's floor. Despite the fact that a dehumidifier was running in the cellar that day, a strong odor of mold was present. It is possible that the abbreviated gutter on the north side of the building is responsible for this leak.

- **Move all items out of the built-in cabinet on the second floor where rainwater is leaking into the south wall. (Please see Figure 2.)**

- **Request help from the Leverett DPW or volunteers to attach additional pieces to the gutter on the north wall, to the right of the front door, to guide water away from the building.**

- **Reattach the loose pieces of the gutter on the south wall, to guide water away from the building.**

- **Ask the Town of Leverett or some volunteers to clean the museum's gutters.**

- **Also request that the Leverett DPW look into the causes of the leak on the south wall of the building, which is affecting both the main and second floors. At the same time, ask that the town inspect the roof for possible leaks.**

- **Once the gutter on the north wall has been extended away from the building, check the cellar on a daily basis, to see if the leak on the north wall of the cellar has stopped. Keep a brief log of your observations, including whether the leak is more noticeable after a rainstorm.**

- **If the leak on the north wall of the cellar has not ceased, or if it reappears after a rainstorm, contact the Leverett DPW to ask them to look into the causes of the leak.**

- **Contact Michele Barker, a Circuit Rider for Preservation Massachusetts, to set up an appointment for her to visit the Leverett Family Museum**, in the company of an expert who can give a free estimate on what it would cost to repair the leaks in the museum, replaster and paint the south wall, where needed, and do any other necessary repairs or restoration. Michele will contact an expert who can provide the free estimate. Michele's phone number is (617) 999-3256 and her email address is mpbarker@preservationmass.org Michele usually requires two weeks' notice to set up an appointment. She can offer professional advice on where to obtain funding to restore and repair the building.

- **Invite members of the Leverett Family Museum's Advisory Committee, the Leverett Historical Society, the Leverett Historical Commission, and the Leverett Preservation Committee, to be present at the museum during Michele Barker's visit.**

- **If your requests for help from the Leverett DPW do not result in repairs, and if Michele Barker has not yet visited,** apply for emergency funding to repair the leaks.

    - The Massachusetts Preservation Projects Fund. The person to contact for information about MPPF emergency funds is Paul Holtz. His contact information is paul.holtz@sec.state.ma.us or (617) 727-8470. According to a July 24th email message from Michele Barker, institutions can apply for this grant at any time of the year.

    - Michele Barker also suggested that the Leverett Family Museum apply to the National Trust for Historic Preservation for "emergency/intervention funding" to repair the leaks. The National Trust for Historic Preservation's describes these grants at http://www.preservationnation.org/resources/find-funding/special-funds/#.UfEz6Z3D85s and provides a "contact us" link for inquiring whether the leaks at the museum would qualify for this type of help.

- **If the leaks are ongoing, also request help from the Advisory Committee in deciding whether to temporarily move parts of the Leverett Family Museum's collections to other buildings (town buildings, private homes, or other libraries or museums) for safekeeping. Prime candidates for temporary removal would be textiles, paper items, and photographs, which are all particularly susceptible to mold.**

- **If a decision is made to temporarily move portions of the collection to other town buildings, request volunteer help in creating an inventory of which items will be moved and where.**

- **When purchasing future shelving for the museum, look for shelves with at least 4" of clearance from the floor.** Four inches is the recommended clearance for protecting historic materials from water on a building's floor.

C. Protection from Fire Damage

General Background Information

All other preservation activities become moot if collections are destroyed by fire. For this reason fire prevention and protection come under the purview of a preservation survey.

Arson factors in as much as 70% of library fires. Construction and renovation projects are responsible for an additional number of accidental fires. All repositories housing collections of value should therefore be equipped throughout with heat and smoke sensors, wired directly to the local fire department and/or to another central monitor. Fixed-temperature heat sensors by themselves are insufficient in that they will not detect smoldering fires; rate-of-rise sensors are better in that they are activated by a sudden, small increase in temperature. Smoke detectors alone are not ideal since they have a relatively high rate of mechanical failure. Therefore, both rate-of-rise heat sensors and smoke sensors should be used. All detectors should be tested on a regularly scheduled basis, preferably quarterly, and maintained regularly as recommended by the manufacturer.

All existing fire hazards should be eliminated and regular fire drills should be held. Repositories should be equipped throughout with portable fire extinguishers; these must be inspected annually. Most local fire departments will provide fire inspections and assist institutions in developing a fire safety program. This should include training staff in evacuation procedures and the use of portable fire extinguishers. If local firefighters are acquainted with the building and its collections before a fire, they may be able to take collection priorities into account in their fire-fighting strategies.

The preservation community's recommendations for automatic fire suppression have undergone significant changes in the past ten to fifteen years. Automatic Halon suppression systems were once considered ideal for special and sensitive collections. Unfortunately, Halon is roughly ten times more damaging to the earth's ozone layer than freon, so production of Halon gas has ceased.

The subject of automatic sprinklers in buildings that house library and archival materials has traditionally been controversial. In the past, there has been substantial anti-sprinkler sentiment on the part of conservators. However, modern wet-pipe sprinkler systems are increasingly recommended for libraries, archives and museums, due to their relative low cost, ease of maintenance and dependability. The rate of accidental discharge has been estimated at only 1 in 1,000,000 heads or better.

Studies indicate that 43% of fires are extinguished by only one sprinkler head and that 70% are extinguished by no more than three heads. The average sprinkler head discharges 20-25 gallons per minute in a relatively gentle spray. Such limited sprinkler action would cause water damage to a relatively small portion of collections, in contrast to the devastating damage resulting to both building and collections from the deluge of pressurized fire hoses during an uncontrollable fire. These statistics, combined with the fact that we now have technologically sophisticated methods of drying water-damaged materials, make the installation of sprinklers in libraries, archives, and museums much less ominous than it might once have seemed. It should be noted that the Smithsonian Institution and the National Archives have both installed wet-pipe sprinkler systems in their collections storage areas.

Pre-action sprinkler systems, in which the pipes are dry until a signal from an auxiliary smoke/heat detection system causes them to fill, are recommended by some preservation professionals. They may also be recommended for some museum artifacts. These systems are complex and more difficult to design and install than wet-pipe systems. They depend on proper maintenance and operation of the auxiliary detection system and there is thus slightly more chance of malfunction.

In making decisions about fire safety installations, it is important to work with an individual who is trained in fire safety and has experience protecting collections-holding institutions (which have very different requirements from residential or commercial buildings). Trained fire safety engineers are able to take broad considerations into account when making their recommendations, while vendors of fire equipment tend to know only the equipment they sell. Consultation with a fire safety engineer is of the utmost importance when designing a new system.

National Fire Protection Agency Publication No. 909 (Code for the Protection of Cultural Resource Properties - Museums, Libraries, and Places of Worship, 2013 edition) available from the NFPA, 1 Batterymarch Park, Quincy, MA 02169-7471, 1-800-344-3555, or for free on the Web at http://www.nfpa.org) provides useful guidance for fire prevention. See also "An Introduction to Fire Detection, Alarm and Automatic Fire Sprinklers," an NEDCC Preservation Leaflet, available at http://www.nedcc.org/free-resources/preservation-leaflets/overview

Observations and Recommendations re: Protection from Fire Damage

There are no smoke or heat detectors in the Leverett Family Museum, nor, without running water in the building, can there be an automatic fire suppression (sprinkler) system installed. Edith Field wishes that the museum had a fire alarm connected directly to the fire station, as do Leverett's other town buildings. There is one portable fire extinguisher in the museum, on the main floor, which is inspected annually and which Edith knows how to use. Fire drills are not conducted regularly. Smoking is not prohibited in the building, but Edith

states that no one has expressed an interest in smoking in the museum. The book drop, which could be used to start a fire in the building, is still in existence, but it is always kept locked.

- **Edith and other Advisory Committee members should show the town's firefighters where priority materials are located.** It may be possible to take these priorities into consideration during a fire. If it will not compromise the security of these materials, their location should be included in the disaster plan (discussed in the next section).

- **During or before the firefighter's visit, it would be useful to request that the Leverett Fire Department establish the same sort of fire alarm connection to the museum as the other town buildings enjoy.**

- **The Fire Department could also be asked to develop a fire safety program for the museum.**

- **The museum may wish to consider purchasing a fire extinguisher and smoke and heat detectors for each floor of the building.** Michele Barker of Preservation Massachusetts could be asked to provide some ideas for grants that might be used to pay for these important fire deterrents.

- **In order to avoid overloading the building's few electrical outlets, it would be helpful to add more electrical outlets to the main floor.** A professional electrician who evaluated the museum on a voluntary basis on July 15th stated that more outlets could be safely installed and used, on the ground (main) floor.

- **Closing procedures in the building should include a check that all appliances are unplugged or turned off.**

D. <u>Emergency Preparedness</u>

Preparing a written disaster plan before a disaster occurs is highly recommended. The plan should include the following:

- **Phone numbers and contact names** for providers of local freezing services, building dry out services and vacuum freeze drying services. For materials that become wet, quick freezing (within 24 hours) prevents mold growth and can keep damage to a minimum. A local supermarket or college food service may be able to provide freezer space, but it is a great advantage to have made arrangements ahead of time.

- **Sources for the purchase of disaster supplies**, such as fans, plastic milk crates, mops, blank newsprint, etc. Note that a source of emergency funds will be needed to purchase such items—how will money be accessed during the night or on a weekend? It is a good idea to

keep a few basic supplies on hand, but be sure to note their location so they can be easily found.

- **Identification of staff and volunteers** who will assist in case of a disaster, including home phone numbers.

- **Identification of proper procedures for drying books, documents and photographs.** A training session should be held so that Advisory Committee members and volunteers are generally familiar with first response procedures and are not expected to sit down and read detailed instructions as the disaster is happening.

- **Information about insurance coverage.** This should include evening and weekend contact information and specify what procedures the insurance company requires if a disaster happens.

- **Identification of priority items to be rescued in a disaster.** Priority items (both historical records and current administrative records needed for continuing operation) should be identified and their locations marked on a map of the building. If certain areas are normally locked, the location of the keys should be indicated. For security reasons, this section of the plan would be distributed only to a few Advisory Committee members or key volunteers. Also note that backups of collection records (e.g., a complete inventory) and administrative records (e.g., backups of computer files, etc.) should be stored offsite in case of disaster. It is also a good idea to keep microfilm copies of land records and vital records in off-site storage.

The information in the "Emergency Management" leaflets from NEDCC will be helpful in writing a disaster plan. See especially "Disaster Planning" and "Worksheet for Outlining a Disaster Plan" at http://www.nedcc.org/free-resources/preservation-leaflets/overview

Alternatively, the NEDCC, in conjunction with the Massachusetts Board of Library Commissioners, developed dPlan, an online disaster planning tool (www.dplan.org). You enter data an online template to create a customized disaster plan for your institution.

Observations and Recommendations re: Emergency Preparedness

There is no written disaster plan in place for the Leverett Family Museum. There are no basic supplies for emergency response on hand at the museum and, according to Edith Field, Advisory Committee members have not been trained in emergency preparedness or disaster recovery. The museum's collections are not insured, although the building itself is insured under the town's policy.

- **Using the resources mentioned above, the museum's Advisory Committee and other interested town committee members should draft a disaster plan.**

- **The museum may wish to consider purchasing insurance for its collections, especially for the rare complete set of standard weights and measures that is housed in its basement.**

- **Edith Field and other Advisory Committee members should receive support to attend disaster response workshops and training sessions.** It is possible that various funding sources would pay for such training**.** Hands-on sessions, in which participants respond to a mock disaster, are particularly effective. In addition, guidelines for the salvage of wet books, documents and photographs, as well as moldy books, are included in the "Emergency Management" leaflets from NEDCC. ("Emergency Salvage of Wet Books and Records," "Emergency Salvage of Wet Photographs" and "Emergency Salvage of Moldy Books and Paper," respectively) are available online at http://www.nedcc.org/free-resources/preservation-leaflets/overview

- **Planners should create a shortened emergency cheat sheet for disaster response, including only the information responders will actually need during a disaster.** Staff or volunteers will not have time to search through extensive documents to find vital information during a disaster. Planners should also create a panic sheet of important phone numbers and post it on each floor of the museum.

- **Planners must ensure that the plan remains up to date, and that all student workers and volunteers are familiar with it.** Anyone else in Leverett who has been identified as a disaster volunteer should also be familiar with the contents of the plan.

- **Planners should identify service providers to perform salvage operations, in case the scope of damage overwhelms local staff and supplies.** Providers should be notified that they are listed in the museum's disaster plan, as advance discussion will facilitate cooperation and save valuable time in the event of a disaster.

- **It is prudent that Edith Field is storing the museum's inventory of deeds and wills in a computer off-site. As a back-up, it would be useful to keep an electronic copy of those records stored in another location (a flash drive, perhaps). For emergencies in which the power goes out, it would also be helpful to keep a hard copy of the inventory on hand.**

E. Temperature, Relative Humidity & Air Quality

General Background Information

Paper is a hygroscopic material, absorbing and releasing moisture readily, so it is greatly affected by the environment in which it is stored. For library, museum, and archival collections, control of relative humidity is crucial. Seasonal and daily fluctuations in atmospheric moisture cause these materials to expand and contract, weakening cellulose fibers and accelerating deterioration. Excess moisture can cause or encourage foxing and mold. In winter, central heating often results in extremely dry conditions, causing materials to dry out and become brittle.

Control of temperature is also very important. Heat speeds deterioration; the chemical rate of deterioration in paper doubles with every 18° F increase in temperature.

Although there is no national environmental standard for storage of paper collections, the scientific evidence is clear. Low temperatures and a moderate, stable relative humidity greatly extend the useful life of paper-based collections. The National Information Standards Organization (NISO) has issued a technical report (William K. Wilson, *Environmental Guidelines for the Storage of Paper Records,* NISO Technical Report [NISO-TR01-1995]. A free PDF version of the report can be downloaded from NISO's website at http://www.niso.org/publications/tr/ . This publication recommends the following values for temperature and relative humidity for storage of paper records in libraries:

Situation	**Temperature**	**Relative Humidity**
Combined stack and user areas	70° F maximum*	30-50% RH**
Stacks where people are excluded except for access and retrieval	65° F maximum*	30-50% RH**
Optimum preservation stacks	35-65° F***	30-50% RH**
Maximum daily fluctuation	±2° F	±3% RH
Maximum monthly drift	3° F	3%

* These values assume that 70°F is about the minimum comfort temperature for reading and 65°F the minimum for light physical activity. Each institution can make its own choice.
** A specific value of relative humidity within this range should be maintained ±3%, depending on the climatic conditions in the local geographic area or facility limitations.
*** A specific temperature within this range should be maintained ±2°F. The specific temperature chosen depends on how much an organization is willing to invest in order to achieve a given life expectancy for its records.

From *Environmental Guidelines for the Storage of Paper Records*, p. 2

These conditions should be maintained 24 hours a day, 365 days a year. The climate control system should not be turned off, nor should settings be altered, when the building is unoccupied.

In most buildings in the northeastern United States, mechanical systems for both humidification and dehumidification are required to maintain the specified relative humidity. Air conditioning equipment alone does not usually provide adequate humidity control.

Air Quality

Dirt and dust particles can soil and abrade collections. Gaseous pollutants, such as sulfur dioxide and nitrous oxides from automobiles and industry, combine with the water normally found in paper to form acids. Therefore, exposure of collections to particulate and gaseous pollutants should be controlled to the extent possible. Particulate filtration equipment varies in size and complexity from individual filters attached to vents, furnaces or air conditioners, to building-wide systems. Filters should match the needs of the equipment and the environment and should be cleaned or replaced regularly. Good air exchange should be provided and replacement air should be as clean as possible. Air intake vents should be located away from sources of pollution such as loading docks where trucks idle.

Electrostatic precipitators should not be used since they produce ozone that aids the deterioration process. Photocopiers, which produce ozone, should not be located in collection storage areas.

Exterior windows should be kept closed and valuable collections should be housed in archival-quality enclosures. Routine vacuuming and dusting are the first defense against particulate pollutants.

Monitoring the Environment

Temperature and relative humidity where collections of permanent value are stored should be systematically monitored and recorded. This data will serve to:

- establish existing environmental conditions
- support the need for environmental controls, should the need exist
- indicate whether climate control equipment is operating optimally, if such equipment is already in place.

Monitoring devices vary greatly in their complexity and efficacy, so institutions should take care to choose the instrument most appropriate to their needs. See the NEDCC preservation leaflets on "The Environment" at http://www.nedcc.org/free-resources/preservation-leaflets/overview for further information about monitoring environmental conditions.

Sometimes, a good choice for small institutions just beginning a monitoring program is the digital "min/max" thermometer/hygrometer. This instrument provides a record of the highest and lowest readings for temperature and relative humidity since the user last reset it. This time period can range from one hour to several days.

The "min/max" does not provide continuous measurements, nor is it as accurate as a recording hygrothermograph, but it will give a broad sense of environmental problems. If funding allows, the use of recording hygrothermographs or of dataloggers should be considered.

Modifying the Environment

Once conditions are known, remedial measures that can be taken to improve environmental conditions for library, museum, and archival collections might include one or more of the following:

- installing central environmental controls
- using portable air conditioning units, attic fans, humidifiers and dehumidifiers (preferably connected to a drain)
- removing collections from attics, which tend to be hot, and basements, which are usually damp
- improving insulation with weather-stripping, caulking or storm windows
- reducing sunlight in order to control heat in summer

- providing good routine maintenance for mechanical equipment (including radiators and air registers)
- decreasing moisture by installing vapor barriers.

Since temperature and relative humidity are related, correcting one factor may affect the other. It is essential to have the advice of an experienced climate-control engineer before making major changes; monitoring must continue after changes are made.

New Directions in Climate Control

As the economic and other limitations faced by most collections-holding institutions have become increasingly clear, scientific research has focused on designing tools that will help librarians and archivists manage existing storage environments and convince those who hold the purse strings that improvements in climate control are a worthwhile investment.

A few years ago, the Image Permanence Institute in Rochester, NY developed the Preservation Environment Monitor (PEM). The PEM calculates and displays, in real time, values that reflect the decay rate of organic materials stored in that location. These values, known as Preservation Index (PI) and Time-Weighted Preservation Index (TWPI), show how temperature and humidity combine to influence the rate of decay processes such as paper discoloration, dye fading, deterioration of plastics, and textile embrittlement. The PEM displays PI and TWPI values alternately with temperature and RH on a 15-second cycle. Thus, no computer is needed to immediately determine the overall quality of storage conditions with respect to the 'natural aging' rate of all types of organic objects in collections.

PI and TWPI measurements can be readily used to compare different storage areas to determine which is best for storage of valuable collections. TWPI measurements might also be used to determine that none of the existing storage areas can provide the desired lifespan for collections and to argue for improvements in climate control systems. In lieu of purchasing a PEM, an institution can download the "Preservation Calculator," to a computer for free. This software will analyze the temperature and relative humidity data you input manually (see http://www.imagepermanenceinstitute.org/shtml_sub/dl_prescalc.asp).

Observations and Recommendations re: Temperature, Relative Humidity & Air Quality

The basement and main floor of the Leverett Family Museum are heated with forced hot air, powered by an oil furnace in the basement. In the winter, the furnace stays on all the time, keeping the temperature on the main floor, if there are no people there, at around 55 degrees Fahrenheit. If there are people in the building during the winter, Edith Field will raise the thermostat to 65 degrees. The second floor has a propane gas heater, which Edith says is never switched on. She estimates that the temperature on the second floor hovers, in the winter, at around 45 degrees. During the winter months, the museum places an inner storm window on every window in the building.

On a hot and humid July day, this observer estimated the temperature on the second floor to be around 85 degrees. The temperature on the main floor felt like around 78 degrees, with very high humidity. Edith says that the temperature in the basement stays at approximately 65 degrees.

There is a dehumidifier in the basement, and there are two pedestal fans on the main floor, which Edith uses for drying and cooling, on humid days. There is no equipment to monitor temperature and humidity in the building, although, on a July 15th visit, both the main floor and the basement smelled of mold. Unfortunately, a Civil War uniform exhibited on the main floor that day showed spots of mold on its breast. In an attempt to reduce the humidity on the main floor, Edith reports that she brought up the dehumidifier from the cellar, but the heat it threw off made the room uncomfortably warm. Naturally, Edith is very concerned about the inadequate climate control in the museum, and she cited temperature and humidity control as the institution's most serious preservation problems.

- **Some of the difficulties with climate control in the museum might be alleviated by fixing the leaks.** Without water infiltrating the building, it is probable that the humidity inside the building would decrease, at least a little. Please see pages 18-20 for suggestions on repairing the leaks.

- **Turn up the dehumidifier in the basement to the highest setting, to remove as much moisture from the air as possible.**

- **Since placing dehumidifiers on levels higher than the basement level causes an uncomfortable increase in room temperature, during the summer,** install either an air conditioning window unit or a mobile air conditioning unit, on each of the main and the second floors. Before purchasing the units, request an on-site visit from an experienced environmental engineer or a heating and cooling specialist.

- **When the leaks in the building have been brought under control, begin writing down the temperature and relative humidity on all three floors of the museum, on a regular basis. This documentation could be useful in obtaining a grant or grants for providing better climate control in the museum.**

- **Consider consolidating the museum's collections onto two floors, thus eliminating the need to monitor and control the climate in either the basement or the second floor.**

- **For purposes of climate monitoring and recording, consider investing in a datalogger, such as the PEM2.** Ideally, there should be a climate monitoring and recording device on each floor of the building. It is possible that a grant, such as the National Endowment for the Humanities Preservation Assistance Grants for Smaller Institutions, could be obtained to pay for three dataloggers. Information on the NEH Preservation Assistance Grants for Smaller Institutions is available at: http://www.neh.gov/grants/preservation/preservation-assistance-grants-smaller-institutions

- **Once a reasonable set of environmental data has been collected, if you have yet to achieve your target temperature and humidity in the museum,** consult an environmental engineer to determine if your goals can be achieved by adjusting your heat sources, the dehumidifier, and air conditioning units. Show them the chart above, indicating desirable targets and tolerance for daily fluctuation and monthly drift, as well as the data you collected. A professional might be able to stabilize conditions in the museum, using your existing equipment (and possibly a humidifier during the dry winter months).

F. Protection from Light Damage

General Background Information

All light accelerates the deterioration of paper by providing energy to fuel oxidative changes. This can cause paper to fade, yellow, or darken and other media, such as cloth and wood, to fade or change color. Damage is cumulative and irreversible. The intensity of the light and the length of exposure determine the total damage. Most destructive is the ultraviolet energy associated with natural light and with artificial fluorescent, mercury vapor or metal-halide lamps. However, the visible light spectrum also damages paper. Collections of permanent value are best stored in areas with no natural light under low levels of incandescent illumination.

A great deal can be done to control natural light through careful use of shades, drapes or blinds. Simply covering windows at times of direct sunlight will protect collections from light damage; it can also help minimize the amount of heat that builds up inside during the day.

Filters made of special plastics can control ultraviolet energy in both artificial and natural light. Incandescent light contains relatively little UV energy and does not require UV-filtering. Fluorescent lamps emit significant UV light and should be covered with UV-filtering sleeves wherever collections of special value are kept. Filters for fluorescent lamps are available in the form of soft, thin plastic sleeves or hard plastic tubes.

UV-filtering plastic film or Plexiglas can also be applied to windows and exhibit cases, in order to control the amount of damaging ultraviolet energy. It should be noted, however, that these filters do not provide complete protection against light since they do not protect against damaging rays in the visible light spectrum. Blinds or curtains must therefore be used in conjunction with UV filters. See "Protection from Light Damage" in the NEDCC preservation leaflets for further information about measures to prevent damage from light. http://www.nedcc.org/free-resources/preservation-leaflets/overview

Observations and Recommendations re: Protection from Light Damage

There are medium-sized multipaned windows on all four sides of the building on the main floor, and smaller windows on three sides of the building (all but the north side) in the basement and on the second floor. The second floor features two hanging incandescent lights, while fluorescent lights provide overhead illumination in the basement and on the

main floor. Edith Field is aware of the possible damaging effects of sunlight on the museum's objects and tries to keep items that could be susceptible to sun damage out of direct sunlight.

Figure 3: A view of the exhibits on the main floor of the museum, with two of the windows on the outside wall and two of its overhead fluorescent light fixtures.

- **In the interests of preventing unnecessary deterioration caused by light, it would be helpful to install UV film on the windows of the museum and to hang light-blocking shades. The shades should be kept down at all times, except when the museum is open to the public.**

- **Adding UV film to the glass of the exhibit case would help prolong the life of the items within it. Change the display from time to time, returning the items from the exhibit case to protective dark storage.**

- **Lights should be turned off when rooms are not occupied.**

- **The fluorescent lights in the basement and on the main floor should be fitted with UV filters. Make sure that the filters are not accidentally thrown out when the bulbs are routinely replaced.**

- **All light causes damage, including visible light. To limit light damage to the museum's collections, do not keep any items on permanent display.**

- **When materials are not on display, store them in archival boxes or in closed furniture.**

G. Pest Management & Housekeeping

General Background Information

Library, museum, and archival collections are appealing to insects and rodents, who may cause permanent damage. All possible steps should be taken to control these pests. Because food remains attract insects and rodents, eating and drinking should not be allowed in repositories, especially not where collections of long-term value are stored. Clutter should not be allowed to accumulate for the same reason. Moist conditions may also encourage pests. Consuming food and drink in the same room where valuable archival materials are kept can result in staining of collections materials through spills.

Staff should rigidly restrict their own consumption and storage of food and beverages to a staff room. All food should be refrigerated or kept in tightly sealed glass or metal containers. Even facilities too small to permit a staff room should provide tightly covered metal containers for food and food remains. All organic garbage should be removed from the building every day.

Current preservation practice does not recommend extermination for pest problems except as a last resort, due to the toxic nature of pesticides. Instead, a strategy termed "integrated pest management" is suggested. This involves removing pests' habitats and food sources and regularly monitoring the space for their presence. For more information on IPM techniques, see NEDCC Preservation Leaflet "Integrated Pest Management" at http://www.nedcc.org/free-resources/preservation-leaflets/overview. Another excellent resource for information on prevention, monitoring, identification and treatment is www.museumpests.net, developed by the Integrated Pest Management Working Group.

Droppings, insect bodies, unusual deposits and damaged paper are obvious clues to the presence of pests. If problems do not respond to preventive measures, direct treatment for insect infestation may be necessary. Non-chemical treatments are preferred and might include controlled freezing or use of modified atmospheres.

Observations and Recommendations re: Pest Management & Housekeeping

Food and drink are not prohibited in the museum, but Edith Field is the only person who consumes food there, and she always takes her food trash away with her. Since the town stopped providing a janitor for the museum two years ago, there has been no regular housekeeping, but Edith organizes occasional workdays during which volunteers dust and vacuum the museum and wash the windows.

Other than an infrequent wasp, Edith has seen no signs of pests, and she has never found any wasp nests in the museum. There are some rodent teeth marks on the inside windowsills of the basement windows, but these markings predate the building's conversion to a museum. There is no extermination performed in the building.

- **If the museum grows in popularity, it may become necessary to create an official "no food" policy for patrons and volunteers.**

- **Continue to remove any food trash from the building on the same day that it has been created.**

- **Consider using insect detector traps to monitor the presence of pests.** The traps will help determine the extent of any existing problem. If specific types of pests are identified, they can be more effectively targeted. Traps are available from a number of vendors, including University Products of Holyoke, Massachusetts.

H. Protection from Theft & Vandalism

General Background Information

Repositories that house collections of permanent value must be well-secured during hours when the building is closed to the public. It is best to install perimeter intrusion alarms and internal motion detectors, wired directly to the local police department and/or to another outside monitoring agency. These detectors must be correctly positioned to detect intrusion and must be tested regularly and frequently.

For the purpose of controlling access during working hours, as well as controlling loss of materials, it is desirable to have only one entrance for patrons and staff alike. All other doors should be alarmed so that unauthorized use can be detected. Local fire regulations may require crash bars on emergency exits.

Collections-holding institutions should not use master key systems. Building keys or access codes to areas where special collections are kept should be strictly controlled. A list of keyholders or people with access codes should be kept current and staff members should be required to return keys or cards when they leave the employ of the institution.

Use of valuable or historical materials by researchers must be carefully controlled and strictly monitored. Ideally, researchers should use special collections in a room adjacent to the locked storage area in which those materials are kept. Researchers should never have direct access to stacks or other storage areas and there should be no browsing. Researchers should enter the reading room without personal possessions—coats, bags and books should be left in a locker provided. They should bring only pencils and paper into the room. Laptop computers are also acceptable. Researchers should fill out and sign a register, present photo identification and leave an identification card or personal key in the hands of the staff person who retrieves materials. The card or key should not be returned until materials have been returned intact.

Staff should give researchers one item at a time. If several objects need to be examined at one time, the staff member should carefully count them out in front of the researcher before and after use. Staff should check materials visually before and after use for evidence of vandalism (for example, cutting out of plates, etc.). The institution should retain call or request slips to help identify the last date of use or the last user in case of loss.

Institutions must have some way of demonstrating ownership of unique or otherwise valuable objects. Difficult-to-remove cataloging or ownership marks on an object are undesirable because of their disfiguring effect. Detailed written descriptions and/or photographs of identifying details are essential to proving ownership.

Observations and Recommendations re: Protection from Theft & Vandalism

There are two doors to the building: the basement door, which is always kept locked, and the front door, which is always locked, as well, except when Edith Field is in the building. There exist two keys to the front door: one is in Edith's possession, and the other belongs to Leverett's Rattlesnake Gutter Land Trust. The Land Trust stores their records in the upper floor of the museum.

The public is not allowed on the second floor of the museum, since that is where Edith stores the paper items that she considers to be the most valuable in the museum's collections. When researchers are in the building, Edith supervises them at all times. Researchers are not asked for identification, nor are they required to fill out registration forms or call slips. Visitors are invited to sign a guest book, however.

- **It is an excellent practice to keep both doors to the building locked, when the building is not in use, and to unlock only the front door, when the building is occupied.** It is also a good practice to keep the windows locked.

- **Researchers at the museum should continue to be supervised at all times. It is wise to not allow researchers onto the second floor of the building,** which is essentially a storage space. If researchers wish to see items in the basement, they should be accompanied by a staff member or volunteer.

- **It would add an extra layer of security to the museum's collections if the most historically valuable books and documents, such as the ledgers of Leverett businesses,** were stored in a locked cabinet, such as a metal filing cabinet. It would be ideal if such a cabinet was also fireproof.

- **Edith Field and the other members of the museum's Advisory Committee should reassess which materials in the museum's collections are the most historically and financially valuable and make security decisions based on this evaluation.** In this observer's opinion, the following items should be considered among the museum's most valuable possessions:
    - The diaries of Israel Taylor and photographs of the Taylor family.
    - Any original papers or photographs related to Erastus Salisbury Field.
    - The aforementioned ledgers of Leverett businesses.
    - The records, including circulation records, of the Field Memorial Library and of earlier Leverett lending libraries.
    - Any original documents, such as deeds, wills, sales agreements, and marriage agreements.
    - Photographs, especially those of Leverett residents, organizations, businesses, and scenery.
    - The minutes of the Leverett's Men's Club.
    - Artifacts from Leverett businesses and residents.
    - Signage, such as the L. Field's Tavern sign.
    - The cabinet of standard weights and measures.
    - Of less value, but still of considerable historical worth, are the binder of clippings and poems by Horace Wiley Field, the scrapbooks of Ethel Woodward, and the two sets of the two-volume Field family genealogy.

- **The Advisory Committee should consider establishing and enforcing rules for researchers who wish to use the museum's materials.** Perhaps a distinction should be made between visitors who are just looking around and researchers who want to handle and take notes on the museum's collections. Those visitors who are just looking could be asked to simply sign the guestbook, while serious researchers could be required to provide some form of identification and to fill out a registration form. If you made these rules available in a printed format in the museum, possibly in tandem with an inviting description of the museum's collections, visitors and researchers would quickly become familiar with the new policies.

- **Any security policies you create should be formalized in writing and applied equally to all researchers.** Unfortunately, it is often trusted researchers of long standing, with a particular interest in a subject, who pose the greatest risk to collection security. To avoid unnecessary conflicts or charges of favoritism, it is important to apply security policies consistently.

V. STORING & HANDLING LIBRARY & ARCHIVAL MATERIALS

A. Storage Furniture

The choice of shelving and other storage furniture is important for preserving collections of long-term value. Most new furniture releases chemicals that react with moisture and oxygen to form acids and other damaging compounds. This poses a serious problem in closed furniture such as map cases, file drawers, locked bookcases or exhibit cases, where pollutants can build up. Archival materials stored in closed cabinets should always be protectively enclosed in order to mitigate this problem.

Wood has traditionally been used in the manufacture of furniture, but it contains numerous reactive chemicals. Modern curing and finishing processes introduce additional hazards. Modern construction materials (e.g., plywood and particle board) contain ubiquitous formaldehyde-based resins that can produce formic acid. Phenol formaldehyde-based products are more stable than urea formaldehyde. The American Plywood Association (APA) is reported to use only phenol formaldehyde in its products.

If wooden shelving, map cases, or file cabinets must be used, the wood must be sealed—moisture-borne polyurethane or latex or acrylic paint are the best choices, although they will not completely prevent off-gassing of chemicals. Oil-based paints or polyurethanes should not be used since they can be damaging. It is important to line wood shelves and drawers in addition to sealing them. Mylar and ragboard are no longer thought to be sufficient barriers by themselves. Inert metallic laminate (such as Marvelseal, available through conservation suppliers), box board containing zeolites that will absorb damaging chemicals (called MicroChamber, available from Conservation Resources, Inc.), glass, or Plexiglas are among the materials now recommended. Ragboard can be used in addition for aesthetic purposes. For the best protection, all exposed wood surfaces should be completely covered (e.g., sides, tops and undersides of shelves and drawers). Mat board and folder stock should be tested annually and replaced when their pH begins to rise. Since these strategies provide only limited protection, wood storage furniture should not be used for unboxed collections of lasting value.

Standard open metal library shelving with a baked enamel finish has generally been recommended for storing unenclosed books or boxed collections. It is possible, however, that baked enamel coatings may give off formaldehyde and other damaging chemicals, if the coating has not been baked long enough at high enough temperatures. This is primarily a concern when collections are stored on bookshelves in an area that is enclosed or has poor air circulation, or are stored in closed furniture such as map cases, file cabinet drawers and bookcases with solid doors. The only way to be sure that baked enamel furniture is not harmful is to have it tested.

Alternatives that appear to avoid the problems of baked enamel are powder-coated or anodized aluminum furniture, but be aware that these are somewhat more expensive. Open chrome-plated steel shelving, made of heavy-gauge, chrome-plated steel wire, can also be used, but only for boxed materials. The wires can leave permanent marks on items that are not protected with boxes. See

NEDCC Leaflet "Storage Furniture: A Brief Review of Current Options" at http://www.nedcc.org/free-resources/preservation-leaflets/overview for more information.

Observations and Recommendations re: Storage Furniture

Unfortunately, the wooden built-in shelving that provides charm and historical authenticity on the museum's main floor could be causing harm to the items resting on it. The plywood tables or pedestals (cubes) on the main floor, used to display various artifacts, are even more problematic. It should be noted that the wooden shelving and the plywood pedestals are not storage furniture, so much as they are exhibit furniture. However, because the materials resting on them are on semi-permanent display, these furnishings are being considered in the storage category.

Aside from a metal filing cabinet that is used to store vertical files of photographs, wooden storage furniture predominates upstairs. Some framed items are standing on the floor. In the basement, there is little storage furniture, other than the original wooden cabinet that houses the standard weights and measures.

- **On July 26, 2013, the Northeast Document Conservation Center provided the following information on how to handle possible emissions from wooden shelving.** The reference to the Local History Room (LHR) is for another institution, but the NEDCC's basic guidance is also applicable to the Leverett Family Museum.

- **Take steps to reduce the exposure of paper-based materials to off-gassing from wooden storage units.** Given the large number of wooden shelving units, the LHR should choose a method that offers the best protection while taking into account aesthetic concerns, overall costs, and the labor involved. Options include:
    - MarvelSeal 360, a chemically inert metallic laminate, as supplied by Talas: http://bit.ly/VxUi2X (item TFM005001), provides significant protection from harmful acids. Alternately, there is a Do-It-Yourself version. Instructions are available from Canadian Conservation Institute's CCI Notes 1/9, found online here: http://www.cci-icc.gc.ca/publications/notes/1-9-eng.aspx.
    - A less visually obtrusive option for lining wooden shelving is buffered box board such as this from Gaylord: http://bit.ly/RHAoIN (item WW-61-575-24).
    - Water-based latex-paint or water-based polyurethane varnish will reduce emissions from woods, and can be a cost-effective and aesthetically pleasing option; however, it is important that all collection materials are removed from the area where painting/varnishing is performed. Collections should not be returned to the shelves until the paint or varnish has cured for at least three weeks.
- **As funds become available, it is recommended that the Local History Room continue replacing any wooden units holding materials of lasting value with steel shelving.** Ideally, new shelving would be powder coated steel. 16"deep shelves should be considered to fully support document boxes, records storage cartons, and oversize items. See, for example, shelving options offered by Brodart (http://bit.ly/VPikIL).

- **Further information on storage furniture that supports long-term preservation is available from the NEDCC at** http://nedcc.org/free-resources/preservation-leaflets/4.-storage-and-handling/4.2-storage-furniture-a-brief-review-of-current-options

- **If the plywood pedestals on the main floor will continue to be used for the museum's exhibits, they should be sealed with moisture-borne polyurethane.** Barriers such as glass, Plexiglas, or boxboard containing zeolites should be placed between the items on display and the wooden pedestals.

- **Consider replacing any wooden storage cabinets on the second floor with powder-coated or anodized metal storage shelves.** A grant, such as the National Endowment for the Humanities Preservation Assistance Grants for Smaller Institutions, could perhaps be obtained to pay new storage furniture. Information on the NEH Preservation Assistance Grants for Smaller Institutions is available at: http://www.neh.gov/grants/preservation/preservation-assistance-grants-smaller-institutions

- **Storage options for framed objects should be explored.** After the unwanted framed artworks have been deaccessioned, any remaining framed items standing on the floor upstairs should either be moved to a shelving unit with tall vertical dividers or hung on a museum storage rack. Once the leak has been stopped in the south wall of the building and the plaster repaired, it is possible that standing framed items could be stored in the built-in shelving there.

Figure 4: A piece of storage furniture that should not be replaced: the museum's rare complete cabinet of standard weights and measures.

B. Handling Procedures

Damage to collections through carelessness is perhaps more common than theft or vandalism, but it often goes unrecognized. It is essential to educate staff and users in the proper ways to handle collections. Careless handling—whether during shelving, retrieval, photocopying or researcher use—can cause significant damage to collections over the long-term.

Handling procedures can also cause unnecessary damage to books. Books should not be pulled off the shelves by the headcap, a practice that can cause the headcap to fail and tear the spine. Instead, books on either side of the desired book should be pushed in and the desired book gripped gently on either side of the spine. Books should not be stacked too high when they are moved or carried, to minimize the chance of dropping them. Photocopying can damage book spines and should be done on an edge copier whenever possible.

Documents should be handled carefully to avoid tearing, folding or accidentally marking them. Researchers and staff must not be allowed to use pens, tape, glue or scissors near historical materials. They should not take notes on top of collection materials, as the pressure can emboss the paper. Staff should always photocopy fragile documents.

There has been considerable debate about the use of cotton gloves when handling paper. In most cases, the loss of dexterity is more damaging to paper than are oils from the skin, so gloves should not be used. However, staff and researchers should wash their hands immediately before handling collections. They should not apply moisturizing lotions before handling materials.

In contrast, dirt and oils from fingers are disastrous to the emulsions of photographic materials, so cotton gloves should always be worn. Wherever possible, Xerox copies or copy prints should be used for general research purposes to reduce handling of originals.

Sufficient workspace is essential to proper handling. Aisles and work surfaces where oversize materials are used must be large enough to allow them to be handled without damage. A work surface large enough to support items should be close to the storage area.

All staff members who work with historical collections should learn proper handling procedures.. Staff should also review the information in "Storage Methods and Handling Practices" in the Storage and Handling" section of the NEDCC's Preservation Leaflets at http://www.nedcc.org/free-resources/preservation-leaflets/overview In addition, the Library of Congress offers some valuable tips on the "Care, Handling, and Storage of Audio Visual Materials" at http://www.loc.gov/preservation/care/record.html

Staff must explain proper handling techniques to researchers on their first visit and as needed throughout their research. Often, proper procedures are described in writing on the registration form, which all researchers must sign before using historic collections. This helps emphasize researchers' individual responsibility for handling materials carefully.

Observations and Recommendations re: Handling Procedures

Edith Field is careful in handling the museum's collections, though neither she nor the volunteers who occasionally assist her have been formally trained in handling procedures.

The museum does not have any rules or instructions governing the handling of its research materials.

With a photocopier at the museum, Edith makes all of the copies requested by researchers. Edith never attempts to photocopy the business and library ledgers, as they are too fragile.

Edith handles photographic prints and negatives only when absolutely necessary, and always uses cotton gloves when doing so.

- **The current practice of restricting patrons from making their own photocopies is appropriate and should remain in place.**

- **Establish some basic rules for researchers, such as using only pencils for taking notes, and not bringing food or drink into the museum.**

- **It would be helpful if Edith and any other volunteers who work in the museum would review some videotapes, slide programs, or literature on proper handling procedures, mentioned in the background material above.**

- **After acquainting herself with appropriate handling techniques, Edith can instruct researchers on how to safely handle the museum's materials.**

- **Periodic refreshment of handling procedures is advised, particularly when processing new donations, since constant handling of archival materials may make a person too comfortable and therefore somewhat careless.**

C. Storing & Processing Bound Volumes

1. Books

Shelving practices often cause unnecessary damage to books. For example, when oversize books are shelved with the spine up, the weight of the pages will pull the text block away from the cover. Such books should always be shelved spine down or stacked horizontally. Books should not be allowed to lean because this too causes unnecessary strain on covers and binding. They should instead be shelved upright, standing on their tails, supported by each other and by bookends.

Broad-edged ("non-knifing") bookends are safer than the knifing variety, which allow books to be cut by a sharp edge. Staff can modify knifing bookends by slipping a piece of acid-free foam-core covered with bookcloth over the sharp metal edge. A brick covered with bookcloth fastened with PVA adhesive also makes a good book support.

Heavy, oversize volumes should not be shelved upright. Instead, they should be stored flat on shelves, giving them the overall support they require. They should be stacked no more than two or three high in order to facilitate safe handling. This may necessitate inserting additional shelves at narrow intervals. Shelves must be wide enough to support oversize volumes completely and books must not be allowed to protrude into aisles where they will likely be bumped. Books should not be shelved so tightly that retrieval requires force. This causes abrasion of covers as the books are removed and reshelved.

Care should be taken to remove all acidic inserts like bookmarks, scraps of paper, etc., from books so that the acid they contain does not migrate to the book pages and cause staining.

Books of enduring value should be shelved by size. Very small volumes will not support large bindings and can be crushed by the weight of larger books. Small hard-covered volumes may be shelved. Soft-covered volumes should be laid flat in piles or boxed together by size.

Call numbers should not be painted on books that have special value, nor should they be typed on labels that are taped to the volumes with pressure sensitive tape. Paint is unattractive and disfiguring; tape may discolor and stain the binding. Instead, call numbers should be typed onto heavy, buffered paper flags placed inside the volume. The flags should be about two inches wide and two to three inches longer than the book is high. Commercially available "notched" flags have a tendency to break brittle paper.

Damaged bindings should not be held together with rubber bands, which will deteriorate and cause further damage. If detached covers must be tied onto books as temporary protection, ties should be made of undyed cotton or linen tape or undyed polyester ribbon. Any knots should be at the top or fore edge of the text block to prevent damage from pressure against other books.

Volumes with artifactual value, where the fragile binding is to be retained in its present condition, should be boxed. Fitted boxes support a volume and protect it from dirt, dust, light and mechanical damage. They may also slow a book's response to climate changes. Permanent or decorative boxes (clam-shell or drop-spine) can be custom-made for books of very special value by conservation facilities. A simpler, less expensive option is called a "phase box" (so-named because enclosure in these boxes is the first phase of treatment for volumes at the Library of Congress).

Volumes that have low value or are rarely used and do not warrant binding repair may also be candidates for boxing. "Easy rare book boxes" (which are really wrappers made of pre-scored, acid-free cardstock) are available from conservation suppliers. They are a good choice for such volumes.

2. Pamphlets & Booklets

Pamphlets and small booklets can be stored in custom-made enclosures, in folders and boxes or in hanging folders in file cabinets. Pamphlets of the same cover size can be stored together in drop-spine or phase boxes.

Pamphlets may also be housed vertically, in boxes or file cabinets. In this case, they should be sorted by size and organized into folders. Pamphlets more than one-quarter inch thick should be stored spine down in individual folders. Pamphlets that differ in size may be stored according to guidelines given for manuscripts and documents.

If individual pamphlets must be shelved between books, they should be boxed individually. Groups of pamphlets shelved between books can be boxed together if the guidelines above are followed.

If pamphlet binders are used for pamphlets of special value, they must be of preservation quality throughout. They should never be glued directly to pamphlets. Instead, pamphlets should be placed in envelopes or four-flap enclosures, which should then be attached to the binder. Where stitching is used to join pamphlet and binder, it should be done through the fold or in original fastener holes where possible.

Observations and Recommendations re: Storing & Processing Bound Volumes
Books, Pamphlets & Booklets

There are several books in the Leverett Family Museum's holdings. The museum owns five to six scrapbooks, a few ledgers, and around a dozen bound diaries of Israel Taylor, who served as Leverett's Town Clerk from 1906 through 1926. Taylor's diaries are stored in individual clear sleeves, side-by-side and with their spines up, within an archival box. The ledgers are appropriately stored flat in archival boxes from University Products, but the scrapbooks are not kept in enclosures. A small number of printed volumes are stored on the second floor or are displayed on the wooden shelving on the main floor. A few modern pamphlets are also exhibited on the main floor.

- **Purchase appropriately sized archival boxes for any bound manuscript volumes or scrapbooks that are currently stored without an enclosure.** Boxes should be large enough to allow a volume to be removed and replaced easily, but not large enough to allow it to slip from side to side

- **When storing or displaying books, do not place them with their spines facing toward the ceiling, as that will cause unnecessary strain on their text blocks (the pages).**

- **Ensure that all books that are displayed or stored upright have adequate support, in the form of "non-knifing" bookends, such as those that can be purchased from a library or archival supplier.**

- **Pamphlets on exhibit also require support.** One way to support exhibited pamphlets is to place them on acrylic display easels or in brochure holders, both available from University Products and other archival suppliers.

D. Storing & Processing Unbound Archival Materials

When processing library, museum, and archival collections, staff should keep in mind that some papers are inherently acidic due to the papermaking process. Much of the paper produced since the mid-nineteenth century was made with wood pulp, which contains an acid called lignin. Other papers have been sized with alum-rosin size, which combines with the water normally found in paper to form acid. Unfortunately, acid will migrate from inferior quality paper to other materials with which it comes in direct contact. For this reason it is important to use non-acidic storage materials that will not contaminate the collections materials they hold. These storage materials should also resist the formation of acids.

"Acid-free" or neutral enclosures are chemically neutral (pH 7.0-7.5) and therefore do no chemical damage to the objects they are designed to protect. It should be noted, however, that acid-free materials have a limited capacity to absorb acid-producing chemicals before they themselves become acidic and begin to decay. "Lignin-free" paper is either produced from cotton or linen or it has had lignin chemically removed. Lignin-free buffered paper enclosures (pH 8.5 or above) have been treated with a buffer, an alkaline substance that absorbs and/or neutralizes acid as it forms. These

enclosures actively reduce the amount of acid in the storage complex and are therefore recommended for storage of most paper with enduring value. However, acid-neutral **un-buffered** enclosures are recommended for art on paper, blueprints, color photographs and albumen photographic prints, all of which can be damaged by alkaline chemicals.

Because acid will migrate from poor quality paper to any other papers with which it comes in direct contact, it is very important to separate poor quality papers from those that have a high rag content. News clippings and other obviously inferior papers must be removed from direct contact with historical documents and manuscripts. Informational news clippings should be photocopied onto buffered paper and the originals discarded.

Plastics used for storage enclosures vary greatly in chemical stability. Conservation grade polyester (Mylar D or equivalent), polyethylene and polypropylene are stable. Many common plastics contain plasticizers or vinyl, including polyvinyl chloride (PVC), which react readily with many other materials. They are therefore considered unstable.

The terms "archival-quality" and "acid-free" are sometimes misused, so suppliers' catalogs and product descriptions must be read carefully. Firms that specialize in conservation supplies have usually developed their reputations based on their willingness to provide information and dependable products.

Storage materials must also protect objects physically from the damaging effects of environment and handling. Enclosures that fit properly and provide good support can reduce abrasion, tearing, breakage and other physical and mechanical damage.

Librarians, archivists and other records custodians should be careful to store objects with like objects. Because of differences in bulk and weight and the potential for physical damage, it is not advisable to store single-sheeted documents in the same box with books or booklets. Generally speaking, heavy objects should be stored separately from light objects, as should bulky objects that cause uneven pressures inside boxes.

Paper with permanent research value should be mended using only conservation-safe methods and materials. Pressure sensitive tapes have not been sufficiently tested to determine their long-term effect on paper. Many adhesives have proven to cause permanent damage.

1. **Documents & Manuscripts**

Documents and manuscripts should be unfolded for storage if they can be unfolded without resistance, splitting or breaking. If unfolding threatens the integrity of the paper, a conservator should be contacted. All foreign objects such as staples, paper clips and pins should be carefully removed since fasteners produce physical damage.

Documents should be stored in low-lignin, buffered file folders, each containing no more than fifty sheets. The folders should then be placed in document storage boxes, as close to the size of the folders as possible. All folders in a single box should be the same size. Boxes should be full enough to prevent slumping of the contents. Boxes should not be stuffed too full, since this can cause

damage when folders are removed or refiled. Partially empty boxes can be filled with document spacers available from conservation suppliers.

An alternative to boxed storage is a baked enamel file cabinet equipped with hanging racks and hanging folders. Materials should always be placed inside an acid-free file folder, then into a hanging file. Several file folders may be placed into each hanging file, provided that they do not extend above the top of the drawer. Archival-quality hanging folders are available from some general conservation suppliers, but conventional "Pendaflex" folders are acceptable if materials are protected from direct contact by acid-free folders.

Observations and Recommendations re: Storing & Processing Unbound Archival Materials Documents and Manuscripts

The majority of the museum's documents are stored individually in protective sleeves and placed within three-ring binders. These documents consist mainly of wills, deeds, sales agreements, marriage agreements, and "memorials," which were anti-liquor-selling petitions. The sleeves in which the documents are stored are from University Products or Staples. There are no boxes of paper-filled folders in the museum.

- **Although Staples states that its letter-sized clear sleeves (called sheet protectors) are archival quality and are PVC free, latex free, and acid free, it would be useful to know the exact composition of these sleeves.** Perhaps a Staples "product concierge," reachable at **1-800-796-0800,** could find out whether these sheet protectors are made of one of these approved materials: conservation grade polyester (Mylar D or equivalent), polyethylene, or polypropylene.

- **If the content of the Staples sleeves cannot be determined, it would be advisable to switch to using page protectors sold by an archival supply company, such as University Products, Gaylord Archival, or Hollinger Metal Edge.**

- **If the museum receives any sizeable donations of loose documents in the future, consider using only archival document boxes and buffered folders, for storing them. Document boxes and folders would be less expensive than individual sleeves, when storing a large amount of documents.**

- **Make sure that boxes of foldered material are not under or overfilled.** As noted in the background information, above, both under-filled and overfilled boxes can cause damage to their paper contents.

- **Folded papers should be unfolded, and placed in oversize housing if necessary**. As paper weakens, it is prone to break along fold lines. If papers cannot be unfolded without damage, the materials should not be made available to researchers and a conservator should be consulted before proceeding. Staff might contact the Conservation Center for Art and Historic Artifacts (CCAHA). Other local conservators may be located through the

American Institute of Conservation's online database of conservators at http://aic.stanford.edu .

2. Oversize Materials

Prints, maps, broadsides and other oversize objects are best stored flat in the drawers of flat file cabinets or in large covered boxes of preservation quality. The objects should be placed in neutral or buffered folders cut to fit the size of the drawer or box. Blueprints, cyanotypes and hand-colored objects should not be stored in alkaline (buffered) folders because some pigments may react and change color. Lignin-free, neutral folders should be used for these materials.

Folders should be as large as possible, since small folders tend to shift position inside boxes or inside drawers as they are opened and closed, thus allowing objects to get jammed at the back of the drawers. Several objects may be placed in a folder. Interleaving with neutral or buffered paper is desirable, especially if the object has special value.

Oversize materials may be rolled if they are too big for the largest boxes or for the drawers of flat file cabinets. Several items may be wrapped around a wide diameter acid-free cardboard tube (4-8" wide) or around an ordinary wide diameter cardboard tube that has a sheet of Mylar wrapped around it as an acid barrier. Once items have been rolled around the tube, the entire package should be wrapped with acid-free wrapping paper and tied at both ends with cotton tying tape. This will serve to protect maps from physical damage by giving them internal support; it will also protect against light and dust. Adhesive tape should never be used to seal the package.

Any prints, drawings or other objects that have been matted or backed with acidic materials or wood should be removed from those mounts. They may be reframed in their original frames using museum-quality materials. These objects may also be safely stored unframed—matted or unmatted—in folders inside boxes or drawers, as described above.

Framed objects must be stored in a manner that ensures their physical safety. Storage solutions include construction of a unit with vertical dividers where framed objects can be stored upright and separate from each other. Alternatively, framed objects may be hung on a museum storage rack.

Aisles and work surfaces where oversize materials are used must be large enough to allow the objects to be handled without damage. A work surface large enough to support the objects should be close to the storage area.

Observations and Recommendations re: Storing & Processing Unbound Archival Materials Oversize Materials

The Leverett Family Museum has no oversized materials, except for framed photographs and works of art. Several framed pictures are standing on the floor on the second floor. Some of these are the prints that Edith Field intends to deaccession, but others are part of the collections that the museum plans to retain.

- **If not displayed on the wall, framed items should be stored upright**, either in a shelving unit with tall vertical dividers or hung on a museum storage rack. Once the leak has been stopped in the south wall of the building and the plaster repaired, it is possible that framed items could be stored within the built-in shelving there.

- **For those framed pictures that the museum wishes to keep, either replace their mats** with archival quality materials or remove the pictures from their frames and store them flat, inside large buffered folders, within preservation quality boxes.

3. Newsprint

Newsprint produced after 1840 usually contains groundwood and may be highly acidic. Long-term preservation of this paper is difficult at best. It is possible to treat newsprint by deacidification and reinforcement, but this is generally not considered practical for large quantities of material; in addition, deacidification will not make yellow, brittle paper white and flexible again.

Most news clippings are important because of the information they contain, not because they have artifactual value. For this reason, either preservation photocopying or microfilming are considered to be the most practical options for collections of news clippings. All photocopying should be done on low-lignin, buffered paper using an electrostatic photocopier with heat-fused images. Originals may be deaccessioned after photocopying at the discretion of the curator. News clippings with photographs that do not photocopy well may be retained. News clippings that are to be retained in their original form should be stored separately in a folder or in a polyester enclosure.

Observations and Recommendations re: Storing & Processing Unbound Archival Materials
Newsprint

The Leverett Family Museum does not have any loose or bound newspapers in its holdings, but the museum owns a few scrapbooks that contain newspaper clippings. Among these are scrapbooks created by Ethel Woodard, a former town librarian who collected clippings about Leverett. Horace Wiley Field, a Leverett poet, also gathered clippings about the town, along with copies of his published poems. Field's newspaper clippings and poems are stored in a binder on the main floor.

- **The newspaper clippings in the scrapbooks and binder should be checked periodically for changes in color. If the clippings begin to turn brown, consider photocopying them for preservation purposes.**

4. Photographic Materials

Photographic prints and negatives are best stored separately from other collections materials and in individual enclosures. Enclosures reduce damage to these materials by giving them physical support

and protection. Acceptable enclosures can be made of either paper or plastic. Paper enclosures require photographs to be removed for examination; plastic enclosures allow the researcher to view the image without handling the object, thereby reducing the danger of scratching or abrasion. Oils from human skin damage emulsions. People who handle original or valuable prints and negatives should always wear cotton gloves; such gloves are available at low cost from many industrial suppliers.

The storage of photographs and negatives poses an exception to the general desirability of buffered enclosures. Buffering material can react with color pictures, cyanotypes or albumen prints to cause damage. For this reason, neutral lignin-free or plastic enclosures are usually preferred. Buffered storage enclosures should be used for cellulose nitrate (nitrate film) and cellulose acetate (early safety film), both of which deteriorate to produce acids. Since these negatives are highly susceptible to deterioration, they should be identified and stored separately from other types of photographs. They are high-priority candidates for photoduplication. Buffered enclosures are also recommended for brittle prints and photographs on brittle mounts.

Polyester, polypropylene and polyethylene are currently the only plastics acceptable for photo storage. Uncoated transparent polyester (i.e., Mylar D) is the material of choice, but it is also the most expensive. Plastic enclosures can be either envelopes or two-sided sleeves. An envelope is an enclosure with one open end; it may or may not have a protective top flap. The seams in paper envelopes should be located at the sides and, if unavoidable, across the bottom. With seamed envelopes, the photograph should be inserted emulsion side away from the seam.

Seamless envelopes do not have any adhesive. The envelope is formed with three or four flaps that fold over to produce a pocket. The fourth flap closes the envelope completely and protects the object from dust and dirt.

Plastic sleeves are enclosures that open at two opposite sides. Often they are a one-piece construction held together with a fold-over lip that can be opened. This fold provides for easy insertion and removal of the photograph without abrading the image.

Once they have been individually enclosed in paper or plastic, photographs are best stored flat in acid-free drop front boxes that fit the size of the photographs as closely as possible. Boxes for the standard photographic formats are widely available. Boxes should be housed on shelves or in metal cabinets. All enclosures within a box should be the same size. Neutral file folders may be used to help organize photographs within the box.

Horizontal storage is preferable to vertical storage since it provides over-all support and prevents mechanical damage such as bending or slumping. However, vertical storage can be used successfully. With vertical storage, protected photographs should be placed in neutral file folders, which are themselves placed in hanging file folders. Several photographs may be stored in each folder and several folders may be placed in each hanging file. The use of lightly filled hanging file folders will prevent photographs from sliding down under each other and will facilitate handling.

Glass plate negatives should be stored in boxes made for this purpose by conservation suppliers. Individual glass negatives should be enclosed in paper enclosures like those described above and placed inside boxes designed to stand upright on the shelf. Glass plate negatives should not be stacked flat on top of each other, since the weight of large glass negatives can damage those on the bottom.

Special care must be given to the storage of oversize photographic prints that have been mounted on cardboard. This cardboard is often acidic, causing the mounts to become brittle with age. Embrittlement of the support can endanger the image itself, should the cardboard break in storage or during handling. Such prints must therefore be carefully stored; they should be placed in individual folders inside preservation-quality boxes of appropriate size, labeled to lie flat on shelves. They should be handled with great care.

Observations and Recommendations re: Storing & Processing Unbound Archival Materials
Photographic Materials

The Leverett Family Museum has several hanging folders of photographic prints in its collections, stored on the second floor in a metal filing cabinet. Most of the prints are enclosed in clear sleeves within the file folders. The majority of the photographs have been identified and most are in good condition. A few photographs have been framed and are on display on the main floor of the building.

The museum also possesses one photo album, comprised of the "magnetic" sticky pages that gained popularity in the 1980s.

- **Determine whether the hanging file folders that house the photographs are neutral (acid-free). If not, consider purchasing new folders.** Also, check the quality of the clear sleeves in which the photographs are encased. If the composition of the sleeves cannot be determined, consider purchasing uncoated transparent polyester (i.e., Mylar D) sleeves. NEH Preservation Assistance Grants for Smaller Institutions could possibly cover the costs of these supplies.

- **It is good that the museum's loose photographs are being stored in individual sleeves.** Individual enclosures can give photographs a degree of protection from adverse environmental conditions. Periods of high humidity may cause photographs to curl and the emulsion layer to become sticky, and airborne pollutants can also cause degradation.

- **It is therefore especially important that humidity and temperature be controlled, throughout the building.** Air conditioning units on the main and second floors should help lower the humidity.

- **With a blunt knife or plastic spatula, remove the photographs from the photo album with sticky "magnetic" pages.** These pages will deteriorate over time, trapping the photos beneath them. If the photographs resist removal, call the NEDCC to get advice on how to safely remove the photos. Place the removed photos in sleeves or in an acid-free, archival quality album

available from a reputable supplier, such as University Products. To preserve original order, it would be best to keep the photographs in the same order in which they were arranged in the photo album.

5. Slides

Slides are generally considered unstable for archival and preservation purposes. In contrast to black and white photographic materials, the major factor in the deterioration of color slides is not the support, but the emulsions that carry the image. Fading, which affects virtually all color photographic materials even in the dark, is responsible for color shift and changes in contrast, the major problems for this medium.

The expected life span of color slides depends on the original film type and brand and storage conditions. Darkness, temperature of 75°F or lower and RH of 40% or lower are minimum requirements. Slides that have long-term value to a collection should be stored in an appropriate frost-free refrigerator at a temperature of 35°F and relative humidity between 20-30%.

The use to which slides are put is also critical for preservation. Dirt and oils from fingers are disastrous to color emulsions. Slides in research use should be encapsulated for protection. Slides that have archival value should never be projected, since heat and light exposure are destructive. Duplicates of important slides should be made for copying, projection and extensive light box research.

Observations and Recommendations re: Storing & Processing Unbound Archival Materials Slides

There are currently no slides in the collections of the Leverett Family Museum.

6. Magnetic and Optical Media

Research collections frequently include recorded sound media, videos, computer records and other non-traditional materials. Unfortunately, none of these is "archival," that is, capable of surviving with minimal deterioration for long periods of time.

Video- and audiotapes (along with computer tapes and some computer disks) are magnetic media and as such they have a considerably shorter life expectancy than do paper-based materials. The binders used to couple magnetic media to their film base break down quickly. Damage from playback equipment and the susceptibility of magnetic media to migration and abrasion add to the difficulty of preserving video and recorded sound. Stringent handling procedures are essential. The best predictions for the life expectancy of these materials extend only twenty to thirty years. The estimated life expectancy of magnetic media that are in active use is only about ten years.

There is little consensus on the ideal climate for preservation of magnetic media, but desirable conditions would be within the range given for paper-based materials. Cold storage can significantly increase the life expectancy of magnetic media, so long as temperatures remain above freezing. Videotapes should be stored in an area with the coolest possible temperatures and the most tightly controlled conditions. As with paper, fluctuations in climate should be avoided as much as possible.

An equally important preservation activity for magnetic media is regular copying. A master should be created of each recording, which will be stored in a stable environment (in cold storage if possible) and restricted from use. Only duplicate copies should be used for viewing. In addition, all tapes should be copied onto new tape about every ten years. All playback machinery should also be kept clean and in good condition to minimize damage to the tapes from playback. Even with the most careful use, some damage is inevitable.

It was hoped that optical media—that is, CDs and DVDs—would solve the life expectancy problems posed by magnetic media. Unfortunately, while CDs and DVDs are more stable than floppy disks, they are still far from stable, over the long-term. The window of opportunity to preserve the information these materials contain must be considered in years—not decades, as for paper-based materials.

Although some researchers estimate that CDs and DVDs will last for ten to fifteen years, custodians of these materials should be aware that estimates of media life expectancy vary greatly, and generalizations are difficult. Due to variations in the manufacturing process—both from one company to another, and from one disc to the next in the same production facility, the only way to know for sure whether a particular disc is suitable for long-term storage is to test it individually. These tests are highly specialized and cannot be performed without the proper equipment. Anecdotal evidence suggests that average, untested CDs and DVDs may begin to fail within three to five years. As for magnetic media, a regular program of copying is necessary. Alternatively, files may be stored on a server and backed up regularly, as are files in active use.

Further complicating preservation of all digital files—whether stored on magnetic or optical media—are the twin problems of hardware and software obsolescence. To combat the former, files must be migrated to new media—for example, moving files from floppy disks to CD or DVD—while equipment capable of reading older media is still available. Saving files on a server will also solve this problem. Addressing software obsolescence is more difficult, as simply resaving files in the newer format (before backwards compatibility is lost) will sometimes cause the loss of important metadata.

A discussion of optical media longevity can be found online at http://www.thexlab.com/faqs/opticalmedialongevity.html . The National Institute of Standards and Technology and Council on Library and Information Resources have recently published *Care and Handling for the Preservation of CDs and DVDs - A Guide for Librarians and Archivists.* The guide is online at http://www.itl.nist.gov/iad/894.05/docs/CDandDVDCareandHandlingGuide.pdf (scroll down to view the complete text).

Observations and Recommendations re: Storing & Processing Unbound Archival Materials
Magnetic and Optical Media

The Leverett Family Museum possesses five or six cassette tapes of local oral history and a small collection of DVDs of filmed programs that have been presented by the Leverett Historical Society. The Historical Society presents programs several times per year; this past April, the Historical Society presented a program at the town hall about Leverett Pond.

The DVDs are encased in jewel cases, and both the DVDs and the cassettes are stored on the wooden bookshelves on the museum's main floor. Someone in the Leverett Historical Society owns a DVD player that can be used to play the DVDs for programs or presentations. It was not clear to this observer if anyone in the Historical Society owns playback equipment for the cassette tapes.

- **Because of the danger of obsolescence, it would be a boon if the owners of the aforementioned playback equipment would donate their equipment to the museum.** It would also be helpful if they would donate the instruction manuals that came with the equipment. Once in the museum, keep the playback equipment clean and in good working order.

- **A master and duplicate use copy should be made of each cassette tape kept in the collection.** The tapes should be recopied at least every ten years. If and when Edith Field anticipates she will no longer have access to appropriate playback equipment, the data from the audiocassettes should be migrated (copied) to another format.

- **Store the DVDs upright in their jewel cases, for greatest longevity. Avoid fluctuations in climate, keeping both temperature and humidity low.** Within five years, migrate the data on the DVDs to an open source format. Request the advice of one of the museum's more tech-savvy volunteers on how to migrate the data.

E. Cleaning and Maintenance

Collections storage areas should not be used to store old equipment, supplies, or extraneous materials. The space should be orderly, aisles should be kept clear, and materials should be housed appropriately in appropriate storage furniture.

Staff should perform a general cleaning of books and archival storage boxes at least once a year to prevent soiling and abrasion. Feather dusters should not be used since they just rearrange the dust. Instead, heavy dust and dirt should be carefully vacuumed, preferably with a three-stage-filter vacuum to prevent recirculation of dust through the exhaust.

Books and boxes are best cleaned with a magnetic wiping cloth, which attracts and holds dust with an electrostatic charge. This cloth is sold commercially under the names Dust Bunny and Dust Magnet. If dust is not heavy or sooty, chemically treated dust cloths may be used safely on storage boxes and on books with no artifactual value. Two options are One Wipe, a cloth chemically treated

to hold dust and a soft, lint-free dust cloth sprayed with Endust or similar product and allowed to dry overnight. These products are available in local stores.

Books should be held tightly closed during cleaning so that dirt will not migrate into the pages. When cleaning storage boxes and books, staff should work from the top to the bottom of each shelf range. Materials should be removed from each shelf in shelf order to a book cart. The shelf and its contents can then be cleaned and the contents returned to the shelves in shelf order.

Since cleaning has the potential of damaging collections, staff or volunteer assistants assigned this task must be taught careful handling techniques.

Observations and Recommendations re: Cleaning & Maintenance

Considering that Edith Field has been able to organize workdays for cleaning on only a sporadic basis, the Leverett Family Museum is remarkably neat and clean.

- **Deaccessioning (removing from the collections) unwanted items will help make housekeeping at the museum more manageable**.

- **Stabilizing climate control will make cleaning tasks more pleasant and appealing for volunteers (no one likes to clean in a hot and humid environment).**

- **Using the information above, all volunteers for cleaning tasks should be trained in how to support, not accidentally undermine, the long-term preservation of the museum's collections.**

- **Request that the Town of Leverett reinstate its former janitorial service for the museum.**

VI. EXHIBITION OF BOOKS & PAPER ARTIFACTS

Exhibition of books and paper artifacts complicates their long-term preservation. The materials displayed have special value, almost by definition. The environment in which they are displayed is often more difficult to control than the storage environment and preservation needs are often secondary to exhibition design. At the very least, exhibited objects are exposed to higher light levels than they would normally experience in storage.

Light levels in exhibit spaces should be limited to 50 lux. There should never be direct sunlight from windows or skylights in exhibit spaces; all windows should be provided with ultraviolet filters and shades. Original artifacts should be exhibited for no more than two or three months; regular rotation of objects in an exhibition will help to prevent damage.

Exhibit cases should be built of stable, pollutant-free materials and coatings; mounts, supports and other exhibit materials should be made from inert materials like Plexiglas and polyester or from neutral paper. Exhibit cases should not contain lights, since these cause significant changes in temperature and relative humidity.

Documents should be completely supported by mats and museum-quality framing and hinging techniques or by polyester slings, bands or coversheets. Books must be well supported to protect their bindings from strain. Supports can be made from neutral mat board or Plexiglas. A stand or mount should support the covers of a book as well as the spine. Reasonably good Plexiglas supports are currently available from conservation suppliers. Most books and all oversize books should be exhibited at no more than a gentle angle. If the book will not remain open naturally, a polyester band closed with 3M double-sided tape #415 can be used to hold the book open. Books can be structurally damaged by long-term exhibition in an open position and exhibit periods must therefore be limited.

A standard for exhibition of paper-based collections has recently been issued; ANSI/NISO Z39.79–2001 Environmental Conditions for Exhibiting Library and Archival Materials provides guidelines for light; temperature; relative humidity; pollutants; exhibit case materials, design and construction and methods used to display items. Appendices provide lists of materials that are and are not recommended for use in constructing exhibit cases or supports for exhibiting particular items. A free PDF version of the standard can be found on and downloaded from NISO's website: http://www.niso.org/standards/index.html .

For further information, consult the NEDCC Leaflets "Protection from Light Damage" and "Protecting Paper and Book Collections During Exhibition" at http://www.nedcc.org/free-resources/preservation-leaflets/overview .

Observations and Recommendations re: Exhibition of Books & Paper

One of the greatest strengths of the Leverett Family Museum is its many interesting exhibits. It is a pity that more people have not found their way to the museum's welcoming door; the museum receives only around six to eight new visitors each month, and only

around six visits per year by someone who is looking for something specific. Edith Field's primary goal for the museum is to make more people aware of the richness of its collections.

- **It is imperative to balance the desire to share the museum's riches with a need to preserve its resources for generations to come.** As discussed in the section in this report on "Protection from Light Damage" (please see pages 29-31) the life of the museum's holdings can be extended by placing a UV film on the building's windows and covering them with light-blocking shades. Exhibits housed in the glass case can also be better protected by applying a UV film to the glass.

- **All light causes damage, including visible light. To limit light damage to the museum's collections, do not keep any items on permanent display.**

- **Another way to protect the museum's treasures is to create facsimiles for any paper-based materials used in semi-permanent exhibits.** It is possible to make high-quality color copies that accurately reproduce the look of originals. Displaying facsimiles of framed images and loose papers can enhance the overall look and feel of a museum's displays while preserving the originals from the hazards of environmental factors and potential theft associated with extended exhibition in an area that may have limited security.

VII. REPLACEMENT & TREATMENT STRATEGIES

A. Reformatting: Photocopies, Microfilm & Digitization

Reformatting strategies like photocopying or microfilming should be considered when the value and condition of collections materials make it necessary to limit their handling or when only intellectual content needs to be preserved. In the case of original photographs, unique or valuable materials or fragile items, a copy is preferable for researchers' use, at least for initial examination.

Preservation Photocopying

In-house photocopying onto permanent durable paper is an excellent way to preserve information from acidic paper materials such as news clippings. Electrostatic copiers that fix an image with heat ("Xerograph") produce long-lived copies when durable paper is used. Paper used for preservation photocopying should meet the ANSI Z39.48 1984 or 1992 standards for paper permanence. Such paper is available from preservation suppliers and some traditional office supply sources. The label will say "low-lignin" or "lignin-free" and "buffered." The Library of Congress has a handout available on the Web that gives more detail on preservation photocopying: http://www.loc.gov/preserv/care/photocpy.html (revised 10/18/2006).

For frequently used local history books that are damaged, brittle, and out-of-print, preservation photocopying—also called facsimile reproduction—can provide a copy for the use of researchers. It is not the best choice for a book that is valuable as an artifact, since the photocopying process can be damaging, but it is a good option for books that are only valuable for their content. A number of facilities specialize in facsimile reproduction of brittle books on buffered paper; one such company is Acme Bookbinding, located in Charlestown, MA (www.acmebook.com).

Unfortunately, the photocopying process itself can seriously damage collections. Copiers with flat or curved platens may not readily copy text at the gutter of a tightly bound book. Materials of enduring value should never go through a roller feed. Careful handling during the photocopy process is essential. Historical materials and volumes with permanent research value should only be photocopied by staff members, not researchers and then only if it will not damage the objects themselves. Staff must not press down on the spine of a book or the cover of the copier to insure a good quality image. Sometimes positioning a book gutter perpendicular to the edge of the platen will reduce the shadow. Edge copiers protect the spine by allowing book to be copied without being entirely opened.

Preservation Microfilming

Despite increasing interest in new technologies, preservation microfilming remains an established and valued preservation strategy. Properly produced and properly stored preservation microfilm has a lifespan of about 500 years. Filming can provide a use copy for artifacts that are too fragile to be used and can provide a preservation copy for materials that are badly deteriorated and valuable only for their informational content. In most cases, preservation microfilming is contracted out. High-volume commercial operations usually lack equipment, time, and expertise to process fragile materials without damage. A special service filmer should be employed.

An institution should develop standards for the production of its preservation microfilm and should include them in each contract for services. If possible, museum personnel should visit the filmer to make sure housekeeping and security meet the needs of collections. Microfilming should produce three copies: an archival master (serving as the permanent security copy), a preservation master (used to generate copies), and at least one access copy. Archival and preservation masters should be made on silver gelatin polyester film, and archival masters stored in a cool, dry environment, with a temperature at or below 68°F, and RH between 30 and 40%.7

For more information on microfilm production and storage standards, see ANSI/AIIM MS14-1996, "Specifications for 16mm and 35mm Roll Microfilm," available at http://webstore.ansi.org; and ISO 18911:2010: "Imaging materials - Processed safety photographic films - Storage practices," available at www.iso.org.

Digitization

Administrators and staff must be aware that some segments of the preservation community do not yet consider digitization to be a means of preservation. Those conservation and preservation professionals who do accept digitization for preservation have begun to do so only recently, and have not yet agreed on the best strategy to preserve digital materials. More conservative members of the conservation and preservation communities still recommend that digitization be partnered with microfilming to ensure long-term preservation of the information.

Among those who do believe digitization may be used for preservation, consensus is developing around several likely strategies. A good place to start—particularly for digital images—is Cornell University's online tutorial, "Moving Theory into Practice," at http://www.library.cornell.edu/preservation/tutorial/contents.html. Any digital preservation strategies will require a significant on-going commitment of time and resources, which may be beyond the means of smaller institutions acting independently; it is likely that consortia and other cooperative efforts will be required.

Leaving aside the question of digitization as a direct means of preservation, digitization can definitely improve preservation indirectly, by reducing handling. It can also be an effective means of increasing access, particularly for off-site users.

Observations and Recommendations re: Reformatting

As the most fragile and valuable items in the Leverett Family Museum's collections continue to age, the museum may wish to consider microfilming these materials. In addition, as digitization practices become more standardized and more technologically sound, the museum may also wish to join with other institutions in experimenting with digitization for preservation. As noted above, however, digitizing an item involves a financial commitment more extensive than the commitment usually required for the preservation of paper materials. This is because museums, libraries, and archives must provide ongoing technological support for anything created and stored in electronic form.

- **In weighing which items, if any, to eventually microfilm, the Leverett Family Museum should consider both the physical condition and value of the material.** If valuable items are becoming too delicate to handle, the benefits of preservation microfilming may outweigh the expense.

- **If the museum is interested in digitizing items for either preservation or access, it would be useful to attend a comprehensive training program on digitization**. Several excellent programs are offered by a variety of institutions, including Cornell University in Ithaca, NY, the George Eastman House and the Image Permanence Institute, both in Rochester, NY, as well as NEDCC. In the interim, partnering with colleagues with experience in digitizing materials would be a great option.

B. In-House Repair

Historical Collections

Book repair procedures for general collections should never be used on historical materials with artifactual or permanent research value. However, some appropriate techniques can be used safely by non-conservators with proper training.

In the context of historical collections, "safe" in-house techniques include rehousing; simple cleaning of books and some kind of paper; simple repairs of book pages or documents and polyester film encapsulation of documentary materials. Paper that has artifactual or permanent research value should only be mended using conservation-approved methods and materials. Pressure-sensitive tapes and many other adhesives have proven unstable over the long-term and many will cause permanent damage.

Other treatments must be performed by professional conservators who have the experience and equipment to ensure that the treatments are performed safely and effectively. If you are unsure whether an object is appropriate for in-house treatment, consult a conservator before proceeding.

Observations and Recommendations re: In-House Repair

The Leverett Family Museum will most likely have its hands full for some time to come, addressing and correcting problems in the building, creating an optimum climate for long-term preservation, and rehousing its collections in appropriate furniture and archival enclosures.

- **Due to these priorities, item-level repairs should not be attempted, at this time.** The focus of the museum needs to be on remedying problems with the building and creating an environment in which its many collections will enjoy the longest possible life.

- **The one exception to this approach should be the Civil War uniform of Putnam Field.** Call the Northeast Document Conservation Center (NEDCC) to learn how to safely remove mold from the uniform. The main telephone number of the NEDCC is (978) 470-1010.

    - **Follow the advice of the NEDCC in removing mold from the uniform.**

C. Professional Conservation Treatment

Repositories typically have a small but significant body of historical or other special materials that need the attention of a professional conservator. Because improvements in environment and physical storage benefit every object in a collection, most people in the field emphasize these measures. Treatment of individual objects by professional conservators is costly.

There are times when it is appropriate and desirable to have individual objects treated by a professional conservator. Treatment of individual objects should be determined by their value to the collections and the availability of funds for conservation. Criteria to consider include:

- condition (is the object endangered now because of its fragile condition?)
- monetary, historical or artifactual value of the object
- importance for research or exhibition
- expected use.

When objects have unknown value or when they will only be handled rarely under good supervision, boxing or placement in another enclosure is sometimes the best treatment.

Preservation Leaflets on "Conservation Treatment Options for Works of Art and Artifacts on Paper," "Conservation Treatment Options for Bound Materials of Value" and "Choosing and Working with a Conservator," all found on the NEDCC website at http://www.nedcc.org/free-resources/preservation-leaflets/overview provide additional information on conservation treatment.

Observations and Recommendations re: Professional Conservation Treatment

As far as is known, no items in the Leverett Family Museum have received professional conservation treatment.

- **It is appropriate that the museum's materials have not received conservation treatment.** At this time, limited funds are better spent paying for repairs to the building, stabilizing climate control, and rehousing the museum's collections in appropriate furniture and enclosures. In the future, specific items within the collection may be deemed worthy of professional treatment.

- **Damaged items which may need conservation treatment in the future should be examined by a conservator before any decisions are made**. Conservators can be located

through the American Institute of Conservation's online database of conservators at http://aic.stanford.edu .

- **When items receive conservation treatment, be sure to inspect them for the quality of the work.**

- **In addition, when materials receive conservation treatment, be sure to keep a copy of the treatment reports for all items.** This will document the treatment performed in case problems arise in the future. These records should be retained permanently.

VIII. CONCLUSION

It is readily apparent that Leverett Historical Society President Edith Field is committed to preserving the collections in the Leverett Family Museum, and that the community also supported setting aside a special space for these materials. If some of the initiatives recommended in this report seem overwhelming, it is important to remember that the tasks can be accomplished as a step-by-step process, in concert with other people. It will be possible to implement some actions soon, but others may require additional training and funding efforts, over several years. Since the residents of Leverett are clearly enthusiastic about preserving their town's unusually rich history, the future of the Leverett Family Museum looks bright.

Respectfully submitted,

Lisa Lipshires, M.S.
Simmons Graduate School of Library and Information Science
(413) 774-3501
lalipshires@yahoo.com

September 19, 2013