Preservation Report:
The Stearns Collection of Musical Instruments

KT Lowe
Sanam Arab

SI 581
December 8, 2008

Contents

Executive Summary

The Stearns Collection of Musical Instruments began when Frederick Stearns donated his collection of musical instruments from around the world to the University of Michigan. Since then, the collection has nearly tripled in size, and multiple collectors have donated to this eclectic, highly unique collection. The Stearns Collection is housed at the Argus II warehouse, away from campus. Exhibition cases are located at the School of Music and Hill Auditorium, and serve the interests of both students and the general Ann Arbor community.

The following report will examine the current state of the collection, preservation policies, collection storage, electronic cataloguing, exhibition specifics and conservation. At the end of the report, we have made both short term and long term recommendations focused on improving maintenance of the collection, fundraising, future student interaction with the collection and staff education.

We gathered most of our data through interviews, specifically Suzanne Camino, the Assistant Director, Carol Stepanchuk, the Stearns Outreach Coordinator and Ted Lottman, the Preparator for many of the current exhibits. In addition, Carol provided us with a fantastic tour of the exhibit at the School of Music, and Suzanne was kind enough to allow us to walk through the storage room at the Argus Building as she described the storage methods and long-term preservation methods employed there. A detailed description of this storage area is provided in the report. We also looked at the database created by the former curator of the collection, Chris Dempsey, who also photographed all the instruments in the collection and initiated the electronic database in place today. In addition to observation and interviews, we also gathered data from the Stearns Collection website and flyers and newsletters provided by Carol.

The collection was found to be in stable but fragile condition, but some instruments showed more decay than others. The goal of restoration would be to bring instruments to a state in which they are suitable for display, but are not necessarily playable. Recommendations for the collection include but are not limited to acid free containers for the instruments, environmental controls and a maintenance schedule and disaster plan. The collection also includes piano scrolls, records and VHS tapes. Recommendations regarding the storage and long-term care of these other items are included in the report. Because the staff is more concerned with preserving the collection as a whole, we did not target any recommendations toward individual items.

Impacting the collection is a lack of monetary resources and a lack of trained staff. We recommend a few strategies for fundraising, some of which involve students. For staff, we urge the collection to take advantage of its unique situation as a member of a vast university network and forge connections with its colleagues.

Section I:
History and Overview of the Stearns Collection

In 1899, the Stearns Collection of Musical Instruments was donated to the University of Michigan by Frederick Stearns (1831-1907). Stearns, a successful pharmacist with no prior ties to the University, was also a world traveler, purchasing instruments as well as plant specimens to be used in his pharmaceutical studies. His donation to the University of Michigan contained 900 musical instruments.

Since then, over 1600 instruments have been added to the collection, including the first commercially available Moog synthesizer, the RCA theremin used during the WXYZ radio broadcasts of The Green Hornet from 1936-1952 and a Mellotron, a keyboard-like instrument used by numerous popular music groups from the 1960's and 1970's including the Moody Blues and the Beatles.

Today, the collection consists of over 2500 instruments as well as a storage cabinet full of piano scrolls, about 50 records (mostly 78 RPM), a very small amount of loose sheet music and three small cardboard boxes containing VHS tapes of previous Stearns lectures and presentations.

The collection has been stored in three different locations throughout its history:

Hill Auditorium
From 1914 to 1974, the collection was displayed and stored at Hill Auditorium, where it was exposed to direct sunlight, fluctuating temperatures and humidity and a heating system that damaged the collection. "Some of the wood instruments were nearly black as a result" of the heating system, according to one of our interviewees. These conditions rendered many of the instruments unplayable.

Stearns Building
In or around 1974, the collection's storage was moved to the Stearns Building on Broadway and Baits, which still stands, as a result of high heating costs at Hill. The building functioned both as storage and as a display area. The cases from Hill Auditorium were moved to this location as well. (Note: These old Hill cases are no longer used; the current cases at Hill will be discussed in detail later in this report).

Argus II
When Dr. Malm became director in 1980, he oversaw the construction and installation at the Argus II warehouse. At the time Argus II was built, it boasted a state of the art humidity control system for its time; however the system has since fallen into disrepair and two room dehumidifiers (unused on our visit to Argus II in late November) now serve as the humidity control system for the collection.

In 1986, the collection was integrated with the School of Music, and the bulk of the exhibit space is located in the Margaret Dow Towsley wing of the school. In 2004, Hill Auditorium installed some exhibit cases on the lower floor. These exhibits are only accessible during events. At various times, special exhibits in the Hatcher Graduate Library and the School of Music library will display instruments from the collection.

The mission of the Stearns Collection of Musical Instruments, located on the collection's website, is "to preserve musical instruments, advance organological knowledge, and to promote understanding of world cultures and musics." This mission is achieved through public lectures, rotating exhibits and performances. The Collection is very open to student involvement, especially on an independent study level. While the collection is located on campus property, its constituency is not limited to the student body or the University community. Admission to the exhibits is free, thus enhancing public contact with the collection.

Section II:
Present condition of collection

The collection is in varying states. Most instruments, especially those which are older and originally collected by Mr. Stearns, are not in playable condition but are still useful as study objects. Certain instruments, such as some of the acquisitions made by Dr. William Malm throughout his tenure as director (1980-1993) are still playable and, like the gamelan, are either used in classes or loaned out for performances. The number of playable instruments throughout the collection is relatively low, however.

A large number of instruments stored at Argus II show some level of neglect or decay, such as severe corrosion on the ornamentation of the bell of an Asian horn, accumulated dust on the player piano (and on many objects in general), acidification of the piano scrolls, a number of split drumheads and loosened hair on bows. Some items, like the 78 rpm records and the VHS tapes, are stored improperly. However, there are a few instruments which appear to have been recently restrung. Instruments in the cases at the School of Music appear to be in good condition. We were unable to see the display at Hill Auditorium.

About three years ago, Randy Raine-Reusch, a musician and artistic director of the Rainforest World Music Festival in Kuching, Malaysia and the Miri International Jazz Festival in Miri, Sarawak, Malaysia, spent two weeks in the collection restoring some items, mostly stringed instruments. Overall, the instruments show no signs of mold or insect damage, and any moisture damage (i.e. buckled and discolored wood) appears to be old.

As discussed earlier, the collection has been stored at three different locations in its history at University of Michigan, which has contributed to the current condition of the instruments. As a side note, the gamelan and the Frieze organ

are stored at the School of Music. The organ is in a chamber accessible on the lower floor and the gamelan is in a classroom on the main floor. Both are currently in use.

Preservation future plans and projects

Currently, the collection is without a curator. The previous curator, Chris Dempsey, created a list of priorities to preserve the collection, mostly consisting of improvements to the Argus II facility. The list included insulation, improved climate and temperature controls, an updated fire suppression system and new archival storage cases. Until a new curator is hired, however, it appears these plans are on hold.

As for individual instruments, a few are tuned and maintained fairly regularly – for example, the gamelan was recently tuned. There are a few instruments that are considered "in line for preservation". Our interviewees did not appear to know how the instruments targeted for individual preservation were selected. Instead of preserving individual instruments, however, the focus of the staff at this time is to preserve the collection as a whole. This means that instruments may be restored to a condition where they would display well, but would not necessarily be playable. A large part of the struggle, according to one perspective, was maintaining the collection as it is, preventing further decay.

Funding

Except for the Director's salary (part-time), all funding is through private donations. There have been no grants written or awarded within the last five years. It should be mentioned that, if anyone wishes to donate in instrument to the collection, a monetary donation must also be made in order to assist with upkeep of the instrument.

Personnel

The staff consists of six part-time employees. Only one at this time has any level of museum training; the rest, including the Director and Assistant Director, are musicologists by trade and are mostly untrained in museum best practices. None of the employees receive any level of training upon employment to the Stearns Collection, and there are no continuing education or refresher courses in place. A student employee updates the database twice a week. The Assistant Director visits the collection at Argus II about every two weeks. This staff, while probably adequate for day-to-day office functions and weekend tours, may not be enough for regular maintenance. The collection is fairly small at roughly 2500 objects; a trained staff member dedicated to the maintenance of the collection would be advisable, however.

Training

As mentioned above, only one staff member is trained in museum procedures. This employee received training outside of the collection. While technically not staff, there is a preparator who is well versed in museum display standards, but his current connection to the collection is not well defined. The Director is part time and holds the position in addition to teaching duties at the School of Music. The Assistant Director has no museum training. There are no training programs in place for current or future staff.

Disaster preparedness

The interviewees were unaware of a disaster plan. In the event of fire, an overhead sprinkler system would rain water onto the collection, but there seems to be no preparation for flooding (other than the fact that the collection is stored on the second floor of Argus II), roof leakage, broken pipes or any natural disaster such as a tornado.

Section III
Building and environment

The collection is primarily stored in the Argus II building, a warehouse that houses different collections from various departments of the campus, and is not dedicated to the storage of musical instruments. As a University of Michigan building, maintenance is performed through the University Facilities maintenance department, and is therefore similar to all other campus buildings. Special precautions for fire and pests are in place and there is 24-hour monitoring of the building.

The Argus II building is located west of campus, in a residential neighborhood away from most of the University buildings. Its location away from main streets and in a well-planted environment reduces the pollution level of the area. As a result, outside pollutants are not a major issue for the collection.

Information on the storage environments for display cases will be covered later in this report.

Security

The storage room for the collection is located well inside the building on the 2nd floor. The room itself can only be reached through a labyrinthine tangle of hallways and doors. The double door of the room is accessible through a keyed entry, and the room itself is alarmed. The alarms trigger an immediate response from the campus Department of Public Safety. Last, there are no windows in the

room, which make it inaccessible from directions other than the main alarmed entrance.

Light

The lack of windows in the room offers another advantage. There are no concerns about sunlight infiltration and therefore current damage resulting from ultraviolet light is minimal to none. Moreover, the fluorescent lights in the room are turned on only when staff members are working in the room, which occurs roughly twice a week.

Temperature and humidity

The temperature in the room is the same as the temperature of the building in general. Although there is an internal heating unit, there is no cooling unit for the room. Carol Stepanchuk, the outreach coordinator for the Stearns Collection, has informed us that the room suffers from too much heat in the summer and humidity and cold in the winter. However, environmental conditions are still much better than when the collection was stored at Hill Auditorium. There are five temperature gauges; two of them show humidity as well. They are located at different parts of the room: the center of the room, two along the far right wall, one near the top of the room and toward the center and one along the far left wall. All devices are small, analog and are not recent purchases, perhaps as old as the warehouse. Each shows different temperature and humidity. For the humidity gauges, the hygrometer in the center of the room read 32% and the one on the right read 40%. Neither of them have been calibrated in recent memory. Temperature gauges were more uniform, all within 55-60℉. There are two dehumidifiers in the room, but on our visit neither was operational.

Housekeeping

A part time student employee dusts the collection once in a while, but not according to a regular maintenance schedule. We noted a moderate amount of dust on the shelving. The floor, concrete covered with a rubber mat which has woven material within it, was in fairly good condition, although the mat showed damage in certain areas. At some point in the past, the pipes leaked onto the instruments, but the problem was fixed immediately.

Fire detection and suppression

There are no specific preventatives for fire other than ceiling sprinklers. These sprinklers would rain water down onto the collection. Presumably, the plastic sheeting, bags and boxes would protect the instruments from water damage.

Former curator Chris Dempsey outlined a plan for a revamped fire suppression system and insulation. Although we were not provided with a hard copy of the

document, the details appear to be sound and implementing it will almost certainly help the collection.

Section IV:
Collection Storage and Use

The collection is stored on metal and wooden shelves and in metal cabinets. The shelves have been used since the collection was moved to the Argus building 25-30 years ago. Flutes, woodwinds and similar instruments are stored in thick paper-board containers, often buffeted with foam cushioning. Non-PVC plastic bags, plastic sheeting and plastic containers (the last two may or may not be appropriate, although they appear to be sound) keep dirt away from the remaining individual instruments.

In general, the size of the instrument determines its placement on a shelf or in a cabinet. A color-coded chart attached to one of the shelves shows the general location of each instrument (by accession number). Location data is replicated in the electronic database. Instruments and other objects that are too large to be stored on shelves (most keyboard instruments, the Victrola floor model, the Pianola) must be stored on the floor. They are currently draped with plastic sheeting or cloth coverings.

VHS tapes are stored in three cardboard boxes, stacked atop one another on the floor. The records are not housed in any type of sleeves and are stacked in a leaning position on metal wire racks. Piano scrolls are in their original boxes (which are turning noticeably acid) and placed neatly stacked in a metal cabinet with a door. The sheet music that we found was simply lying on top of a metal bookcase, in a plastic wrapper with a fold-down enclosure.

Photoduplication and circulation services

At this time, there is no photoduplication service available for the sheet music. There are high resolution digital photographs of each item in the collection, which may be requested. This is a non-circulating collection meant specifically for research and display purposes, although loans may be requested. Loans are discussed later in this report.

Education and public outreach

The collection hosts lectures and concerts, some of which have been quite celebrated. For example, the Indonesian gamelan performances have consistently been among the most memorable performances in recent School of Music history. The gamelan performances feature not only music but also shadow puppet plays based on traditional Indonesian texts. A Baroque organ located in the School of Music is also used for performances, and some of the usable instruments are occasionally played in public.

The lectures are the favorite events for the assistant director, who believes these are very useful as outreach tools. She described to us the effect of the music on the lecture attendees, and she was quick to note the connection between the instruments being performed at the lectures and the mute instruments located in the cases. She feels these lectures act as a particularly insightful way to open the collection up to the general public.

There are no seminars focused on playing any of the specific instruments.

Section V:
Replacement and Reformatting

None of the instruments appear to be replacements, and there is no schedule or procedure for replacing instruments already in the collection. As an interesting note, many of the instruments that Stearns collected were "tourist trade" instruments, made by local cultures explicitly for sale to foreign visitors. This is a common practice today, and was originally established in the wake of colonialism. Replacement as a result may involve tricky ethical issues with regard to authenticity, which is beyond the scope of this report.

Because the entire collection is made of objects, reformatting of the collection is not applicable. Data formats for the digital photographs and database will be covered later in this report.

Section VI:
Electronic Records

The collection's records are stored both as paper cards and as a database created in FileMaker Pro. It should be noted the computer used for the database was still operating Windows 98, suggesting the FileMaker Pro program version is not current. One of our contacts indicated that "the entire electronic database is not older than ten years, I think" and was updated from an older version of FileMaker (note the name difference).

FileMaker, the company which makes FileMaker Pro, is a subsidiary of Apple, Inc., and was established in 1998. FileMaker Pro is still being made and is available for purchase. Its parent company reports profitability in every quarter since its inception, suggesting the software will be supported for the immediate future at the very least.

The FileMaker website's FAQ stated that FileMaker Pro allowed data to be exported as ASCII text, comma-delineated fields or as an Excel file, and the date of the FAQ was 2006. This makes for easy exportation and reformatting of data should the need arise. FileMaker Pro has its own proprietary format for storing its data; our interviewees were unable to tell us how they were saving their data.

The previous curator took photographs of all the objects in the collection, often taking multiple views. The photographs are 300 dpi TIFF files, which are non-proprietary files with excellent color information, and can be accessed through a number of different programs and utilities. 300 dpi is suitable for a number of purposes, including websites, print and some research.

The FileMaker Pro database showed 2534 entries, which agrees with the size of the collection. A student employee updates the collection twice a week, and nearly all the data is current.

Database fields include

- Catalog number, following Stearns' original classification system
- Name of object (the objects that Stearns collected occasionally feature incorrect or phonetically spelled names. Part of the curator's responsibility is to track down the correct names of objects that are suspected of this issue)
- Condition (playability and whether or not the instrument is intact)
- "Coverage" (whether or not the instrument can be loaned)
- "Activation" (how the instrument is played)
- Classification (idiophone, membranophone, etc.)
- Description
- Photographs
- Purchase information (where, when, how much and by whom)
- Appraisal information
- Exhibition data
- Repair data
- Loan data
- Documentation
- Bibliography
- Catalog changes

Backups

The database is backed up via the paper-based card catalog or with hard copies.

Section VII:
Exhibition

There seems to be no preferred criteria for selecting instruments for exhibition, other than suiting the needs of a particular exhibit. Because there is no curator on staff at this time, we were unable to get much information about the process of conceiving an exhibit idea, selecting instruments, writing and editing label copy or rotating certain instruments. We did learn that exhibits tend to remain on display for about a year before being rotated.

We were able to contact the preparator who built many of the current displays, including the “Fancy Fiddles” exhibit located on the lower floor of the School of Music. The exhibit is well-designed, informative without being text-heavy, colorful and easy to understand. The exhibit panels were built from Medex, a low-formaldehyde particle board. According to the preparator, since all wood has formaldehyde in it, he coated the Medex with Camger, a non-petroleum based sealer. The formaldehyde can outgas from the wood, and the sealer prevents this. The objects are supported by Optix acrylic stands. Acrylic is inert and may touch the objects, and was selected because the exhibit cases do not contain additional photographs or display materials. The shine of the acrylic added a unique artistic touch to the display. Additional support, where required, was provided by brass wire. The brass was covered with shrink tubing to prevent any reaction from the metal.

Exhibits are held in two areas on campus:

The School of Music

In the Margaret Dow Towsley wing of the Earl V. Moore School of Music building, located on North Campus, there are a number of display cases located on the main floor, the stairway landing and the lower floor. The Fancy Fiddles display is located in a locked room on the lower floor. The collection shares the ambient conditions of the building. The cases date from the move to the Argus II building (roughly 35 years old). Each has its own internal fluorescent tube lighting, which is timed to shut off at night. All cases are locked and difficult to open or access instruments. They are not air or watertight, and insects can get into the cases. When we visited the School of Music, one of the displays recently experienced water damage from an unknown source. None of the cases have temperature or humidity gauges, and no protection from humidity or light is in place. The Fancy Fiddles exhibit is kept mostly in the dark under ambient temperatures, and can be accessed via a key located at the desk in the lobby on the main floor. When we visited, the room was quite chilly, although we could not see a temperature or humidity gauge.

Hill Auditorium

We were not able to see the displays at Hill for ourselves. These display cases date to 2004 and are among the best in modern museum case technology. The cases, known as Gunschel cases, are from Germany and feature MR-16 lighting fixtures, a sealed environment for the instruments, a descant chamber underneath the main exhibit area for storing silica gel (for humidity control) and large glass doors treated to filter out UV light. Heat from the lights is contained and vented out of the case. They provide the best available conditions for the instruments in the collection, as well as a nearly ideal exhibit space.

Collection loans

The loan policies are fairly informal. Contact with a member of the collection staff initiates the process. A form is filled out by the loan recipient. The condition of the instrument is examined, and a checklist is followed to determine the condition. Some instruments are marked as "not loanable" in the database. Loans must be accompanied with a written explanation of the purpose of the loan. If a student is borrowing an instrument, the loan must be overseen by a faculty member. Instruments can also be made available for study on-site.

Section VIII: Conservation

According to one of our interviewees, "the organizational placement of instruments seemed to be of primary concern for the collection as a whole with selected instruments chosen for conservation". Also, plans for future preservation are directed at the collection as a whole, as opposed to single instruments. However, a number of individuals have worked on the collection over the years, including Ann Arbor luthier and music store owner Herb David, violin repair expert David Orlin and the aforementioned Randy Raine-Reusch. Students have also attempted to clean and repair instruments from time to time, as evidenced by Post-It notes on some instruments. Some instruments had been recently strung and appeared to be in some state of restoration.

Some small repairs are done at Argus II, where there is a workshop. We saw boxes of spare parts such as bridges and knobs. Instruments may also be sent out for conservation if the condition is too severe for in-house work.

Because of the diverse materials that make up the instruments, conservation is a particularly thorny challenge. A Japanese taiko drum, for example, may be made of wood, metal and animal skin, and may be painted. Each of these materials has different properties, and perfect conditions for some materials may not work as well for others. Thus, the question for some instruments may involve prioritizing what part of the instrument to conserve.

Also, since some of the instruments contain parts that are difficult to acquire or may no longer be available, questions of authenticity arise. If an African drum has a split drumhead, should it be replaced with skin or artificial materials? Skin drumheads, which are made of beaten, scraped and dried animal hide, are prone to drying out and may contain biological vectors that may further damage the instrument. Yet, while an artificial skin does not possess these issues, it cannot claim to resemble the original drumhead. This dilemma does not appear to be resolved, as the large number of drums with split skin heads attests.

Section IX:
Recommendations

After examining the collection at Argus II and the School of Music, we have formulated some ideas to improve storage, preservation and the long term health of the collection. Our proposed recommendations are restricted by a shortage of funds and a lack of trained staff. We present short term and long term solutions for the collection as a whole. Our recommendations are not strictly focused on maintenance of the collection; rather, we took a holistic approach and looked at the root causes of some of the collection's issues, and attempted to address those as well. We have attempted to arrange the recommendations in order of importance with regard to the needs of the collection.

Many of our recommendations utilize the resources available on campus. The University has a highly regarded museum studies program and a number of museums located in close proximity to the Stearns collection. Here, outreach is key, but outreach in this case is not specifically targeted toward those outside of the collection. Staff would do well to make connections with their colleagues in their sister museums on campus.

We have included two appendices for your reference. Appendix A covers references for museum collection maintenance, management and preservation, while Appendix B is a list of suppliers for preservation-specific materials.

Short term recommendations (focused entirely on maintenance and upkeep)

1. Invest in acid free housings for the instruments. Some plastic housings have already been purchased, but most of the instruments in the collection would benefit from some type of enclosure, if for no other reason than to act as a barrier for the fluctuating temperatures and humidity of the warehouse. If humidity is extremely high, consider adding silica gel packets to the boxes. While plastic housing seems to be desirable because of its water repellant properties, unless leaks are a major issue with the warehouse this is an unnecessary precaution. If plastic is selected, it should be made of polyester or polyethylene, never PVC.
2. Purchase some dye-free cotton gloves specifically reserved for handling instruments. Buy enough pairs for all the employees and students and researchers. Touching the instruments with bare hands can cause damage to the instruments by introducing oils and microbes.
3. Purchase new humidity gauges, also known as hygrometers, for the warehouse. If hygrometers are beyond the means of the collection, then a hygrometer calibration kit should be purchased. Hygrometers should be calibrated every six months.
4. Remove all instruments from the floor and store them appropriately. All shelving should be lifted at least six inches from the floor and removed

about three inches from the walls. Move all instruments from around pipes. Moisture and heat from pipes can cause damage to instruments.

5. Raise large instruments such as pianos from the floor at least six inches. Make sure the pedals are supported and also lifted. This is to prevent damage in the event of a flood.
6. A disaster plan should be devised, addressing issues such as fire, flooding, leakage, acts of nature, severe rodent or insect infestation and intentional damage to the collection *a la* invasion and theft or mass intentional destruction.
7. A regular maintenance schedule should be put into place. The schedule would include tasks such as dusting off pianos and other large instruments with soft, non-abrasive cloths or dusters, using compressed air to clean electronic instruments and checking the warehouse and the collection for leaks, mold growth, insects and rodents and other forms of damage. This schedule should be adhered to closely.
8. Sleeves and archival boxes for the piano scrolls. The scrolls should be removed from their current boxes and label information should be typed or printed with a laserjet printer onto acid-free paper, stored with the scroll. Plastic or acid-free archival boxes that fit the scrolls should be purchased as well. The current storage conditions for the scrolls is adequate.
9. Plastic sleeves and acid-free housings for the records. Records should be cleaned with a commercial record cleaner before placing in sleeves, and records should either be removed from their current wire rack or stored upright and flush together.
10. Examine the current storage shelving for rust, peeling paint and structural stability. Replace rusting or unstable cabinets and shelves with powder-coated steel or enamel baked steel shelving. Make sure the enamel completely coats the steel.
11. Invest in an electronic backup system for the database. A tape backup with multiple storage tapes is a very good investment. When not in use, tapes should be stored in either a fireproof box or in a location away from the warehouse.
12. Videotapes should be re-housed in acid-free containers and stored flat in a cabinet, away from light and heat.

Long term recommendations

Fundraising:

1. Team up with students in grant writing classes to help acquire funds for the museum. The School of Social Work is offering SW 663 in the Winter 2009 term.
2. If the collection has a friendly relationship with the School of Music, perhaps a yearly or twice-yearly benefit to raise money could be held. Students and staff could be asked to perform (with or without instruments

from the collection), and the museum could hold special tours or set up targeted exhibits to promote the event.

Museum Staff Education:

1. Staff should meet informally, perhaps socially, with other museum professionals on campus to discuss best practices and to be kept aware of developments within each museum. The Stearns Collection is fortunate enough to be located within a thriving university community with other museums within a very close proximity.
2. Consider assigning a staff member to take a museum studies course (or courses) on campus, specifically courses geared toward understanding the properties of materials and storage of a collection.

Collection maintenance:

1. Implement former curator Dempsey's plan for an updated fire suppression system and humidity control.
2. If funds are available, a preservationist should be invited to examine the collection. Each instrument should be evaluated and a status report written, with guidelines for future care for the more damaged or decayed instruments.
3. Invest in a data logger, which records humidity and temperature information for an extensive period of time. Collect information for a year, then reassess the current environmental controls at the warehouse. His will help ascertain the exact conditions of the warehouse.
4. Consider working with the Museum Studies Program to help maintain collections, especially items at Argus II. Museum studies students may also be helpful in assessing conditions once the data logger information is gathered.

Other long term considerations

This collection could be the focus of numerous student projects. For example, an SI 501 Project Management class could help develop a disaster plan and analyze the current office procedures to increase the effectiveness of the current staff. SI 644, Preservation Management, may also consider similar projects.

This collection is also in need of basic museum training for all staff members. A focus on conservation and preservation is desired, although any information would be useful. The references in Appendix A may be of great use, and all except the book are free of charge.

Appendix A: Recommended Readings

Buck, Rebecca, and Allman Gilmore, Jean. *The New Museum Registration Methods.* American Association of Museums, 1998. An excellent all-purpose reference for collections handling, care and storage, security, ethics and a host of other topics.

CALIPR: A Collection Needs Assessment Instrument for Preservation Planning. U.C. Berkeley Library for the California Preservation Program. California State Library. 1991-2007. http://sunsite.berkeley.edu/CALIPR/
The collection should be assessed on a regular basis by staff. This will be a useful tool to set up assessment guidelines.

Northeast Document Conservation Center (NEDCC) Preservation leaflets, http://nedcc.org/resources/leaflets.list.php
In particular, leaflets 2.1 (Temperature and Humidity), 2.6 (Low cost/no cost climate control), 3.1 (Protection from loss), 3.2 (Guide to fire prevention), 3.3 (Disaster planning), 3.4 (Worksheet for disaster planning) and 4.2 (Storage furniture) may be particularly helpful. Although these leaflets are geared toward paper preservation, they can be applied to a number of different collections, including the Stearns collection.

Museum Handbook, Part I: Museum Collections. Washington, D.C.: National Park Service, 2000.
http://www.cr.nps.gov/museum/publications/MHI/mushbkI.html
Browse the entire site for useful information on collections, preservation, security, housekeeping and many other subjects.

Appendix B: Preservation Materials Suppliers

Storage boxes: http://www.genealogicalstorageproducts.com/. All boxes are made of acid-free materials, with an acidity of 8.5 (slightly alkaline) and a 3% calcium carbonate buffer to neutralize acidic airborne pollutants. Some items may be too large for standard boxes; Custom Manufacturing offers a custom box design wizard on their website, http://archivalboxes.com/.

Hygrometers and calibration equipment: Jon-Don offers a large range of hygrometers and humidity measuring devices. Their website: http://www.jondon.com/catalog/default.php?cPath=82_2475. Recommended item: The Hobo Data Logger, which both measures and stores humidity and temperature information over a year. Replacement hygrometers and hygrometer calibration tools are also recommended.

Silica gel (dessicant, helps prevent condensation on objects and normalize humidity in an enclosed environment): http://www.silicagelpackets.com/ this retailer offers bulk discounts. All silica gel packets are housed in Tyvek, an inert material.

Storage sleeves for audio/visual materials: the records have neither jackets nor sleeves. Conservation Resources offers storage boxes for records without jackets (http://www.conservationresources.com/Main/S%20CATALOG/default.htm#_Audio_Visual_Materials). Recommended: Hinged lid boxes (10”), lignin-free. We prefer the polyester sleeves offered by Bags, Unlimited (http://www.bagsunlimited.com/cart/browse.asp?subcat=40, second selection, Mylar Museum Quality). In our searches, it was difficult to find record sleeves that did not incorporate paper and adhere to a high preservation standard. These sleeves have passed the Photo Activity Test, meaning that the mylar will not damage the record or its label.

Many of these resources offer multiple preservation materials, such as plastic and acid-free sleeves which may be suitable for the piano scrolls, boxes for VHS tapes and fire-and moisture-proof storage for backup tapes.