



The Library of Congress
Office of the Inspector General



**Library Services
Music Division**

*Statistical Measure of the
Condition and Accountability
of the Music Division's Holdings*

Attestation Report No. 2010-AT-104
August 2011

FOR PUBLIC RELEASE



UNITED STATES GOVERNMENT

LIBRARY OF CONGRESS

Memorandum

Office of the Inspector General

TO: Deanna B. Marcum
Associate Librarian for Library Services

August 16, 2011

FROM: Karl W. Schornagel
Inspector General

SUBJECT: *Statistical Measure of the Condition and
Accountability of the Music Division's Holdings*
Attestation No. 2010-AT-104

This transmits our final report summarizing the results of the Office of the Inspector General's statistical assessment of the accountability and condition of the Music Division's (MD) holdings.

This is the first in a series of assessments we plan to perform in the MD. We make no recommendations at this time because this assessment establishes a baseline for use in future assessments. We plan to continue testing in the MD periodically to confirm the existence of the baseline items and to assess any changes in their condition. The executive summary begins on page *i* and our results appear on pages 5 and 6.

We appreciate the cooperation and courtesies extended by the Music Division during this project.

cc: Chief of Staff
Associate Librarian for Library Services
Chief, Music Division
Director, Office of Security and Emergency Preparedness

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▶▶ EXECUTIVE SUMMARY

The Music Division (MD) has custodial responsibility for more than 20 million items, including thousands of scores, music histories, bibliographies, theory books, music journals, microforms, manuscripts (both music and literary), as well as ephemeral materials such as scrapbooks, programs, and photographs. Many of these items are priceless one-of-a-kind, irreplaceable treasures.

To measure the Library's progress in maintaining and improving its collection controls in the MD and all of the Library's other special collections, we contracted in 1998 with KPMG, a consulting firm, to develop a methodology for statistically measuring changes in both the condition and accountability (i.e., ability to locate items) of a collection over time.

This is the first assessment we have performed in the MD. Accordingly, this review establishes the baseline for materials known to be held as of the date of our report. We plan to continue testing in the MD periodically to confirm the existence of the baseline items and to assess any changes in their condition. While evaluating their condition, we also expanded our testing protocol by noting whether the test items had identification markings and attempted to locate a random sample of additional items we chose from the MD's inventory records.

Based on our testing, we determined the existence of the 150 items in our baseline sample and we project that nearly 96 percent of the MD's collection is in "good" or better condition. In addition, we confirmed that the MD is complying with the Library's policy for marking materials. Markings are important because it may be difficult to prove ownership in their absence.

Finally, we were able to physically locate 99.8 percent (432 of 433) of the additional items we randomly chose from the MD main entry card catalog and the Library's online catalog.

Management made some minor recommendations for changes not affecting the substance of this report. The full text of the response is included as appendix E.

» BACKGROUND

The Library of Congress estimates that it possesses over 147 million items in its collections. Some date back centuries, and many are priceless, or have prohibitively high replacement costs. The extraordinary value, size, and, in many cases, cultural and historical significance of items in the collections pose a wide array of risks which the Library must continuously address. The Library has carefully designed and implemented controls to effectively counter risks.

Given its stewardship responsibilities, the Library is continually instituting policy and procedural changes to reduce the risk of loss, theft, or degradation to its collections. To measure the Library's progress in maintaining and improving its collection controls, we contracted in 1998 with KPMG, a consulting firm, to develop a methodology for statistically assessing the strength of controls safeguarding some of the Library's collections.¹ This methodology was designed to measure changes in both the condition and accountability (i.e., ability to locate items) of a collection over time.

Specifically, the methodology entails selecting a random sample of items requested by and served to readers over a three-month test period. Each item's condition is assessed as excellent, good, fair, or poor. The assessment includes factors such as the extent of discoloration, brittleness, paper folds and tears, insect damage, cockling,² and foxing.³ The first year of testing establishes a statistical baseline for future evaluations of the condition of requested items, which are re-examined in subsequent years.

We have applied the methodology twice in the Manuscript Division (August 2002 and March 2005), four times in Prints

¹ KPMG is an international network of member firms offering audit, tax, and advisory services. KPMG consulted with Dr. Francis M. Ponti for advice on the statistical methodology used in this assessment. Dr. Ponti has substantial experience in the federal government as a statistician and has taught statistics at the university level for nearly 50 years. Dr. Ponti is currently Adjunct Professor of Statistics, Columbian School of Arts and Sciences, The George Washington University, Washington, D.C., where he has taught since 1980.

² Cockling - Puckering of paper caused by moisture and non-uniform drying and shrinkage.

³ Foxing - Rust colored spots which occur on paper resulting from oxidation.

and Photographs (January 1999, December 2000, August 2002, and March 2005), once in Geography and Maps (March 2006), and once in Rare Book and Special Collections Division (July 2010). Subsequent tests can track changes in condition and availability of items in each tested division. Appendix A lists each of the above cited reports.

The Music Division (MD) has custodial responsibility for more than 20 million items, including thousands of scores, music histories, bibliographies, theory books, music journals, microforms, manuscripts (both music and literary), as well as ephemeral materials such as scrapbooks, programs, and photographs. Many of these items are priceless one-of-a-kind, irreplaceable treasures.

Concurrently with this audit, we conducted an audit of the policies and procedures for protecting collection items managed by the MD (*Music Division Needs to Implement Key Collections Security Controls*, Review Report No. 2011-PA-101, to be issued in August 2011).

This assessment, along with future evaluations, will allow us to evaluate the effectiveness of the MD's collection security controls by measuring changes in both condition and accountability of the collection over time. Based on similar statistical analyses we conducted in the Manuscript Division and the Prints and Photographs Division, we concluded that these divisions significantly reduced the exposure of their collections to high risks of loss, theft, or degradation by implementing safeguarding controls and increasing security measures.

This report provides the results of the first in a series of assessments we plan to perform in the MD. We make no recommendations at this time because this assessment is intended to establish a baseline for use in future audits.

►► OBJECTIVES, SCOPE, AND METHODOLOGY

The objectives of our review were to: 1) establish a baseline for materials in the MD for future audits, 2) assess the condition of a representative sample of items in the MD, 3) determine the existence of LC markings⁴ on each of the items in our sample, and 4) evaluate the reliability of the MD card catalog and the Library's online catalog and the accuracy of placement of items on the shelf (i.e., whether the MD can locate the items listed in these catalogs).

To accomplish our objectives, we used the KPMG methodology to sample items the MD served to researchers. Using a 90 percent confidence level and an expected error rate of less than 5 percent, we determined that we needed to randomly sample 150 items. We drew our sample by randomly selecting 15 business days over a three-month period on which to conduct testing. Our statistical expert consultant, Dr. Ponti, advised us that staggering the sample over a longer period would make our results more reliable.

The MD Reading Room personnel assisted us by sequestering all items viewed on the previous day so we could easily isolate the day's test population. To establish the sample population, we counted the number of items requested and served to researchers the previous day and randomly selected 10 items from the sample population (10 items based on evenly distributing the 150 total sample items over the 15 test dates).

We worked with MD staff to assess the condition of items using condition assessment guidelines agreed to by MD management and the Library's Preservation Directorate. To help us assess changes in the condition of items over time, we took a digital photograph of each of the 150 items we sampled. While evaluating their condition, we also noted whether the test items had identification markings.

⁴ LC markings could include LC perforations, embossing, stamps, gold gilded lettering, divisional markings (e.g., Rare Book, Copyright, and Cataloging), and affixed bookplates.

Finally, we traced from inventory records to the shelf, a sample of 433 titles randomly selected from the MD card catalog and the Library's online catalog (universe) of approximately 2,130,459 titles. The MD card catalog is a hardcopy card file of all titles acquired and cataloged before the suspension of the card catalog in 1980. The online catalog contains records for all materials acquired since 1980. Additionally, roughly half of the card catalog records have been input into the online catalog. Our sample provided a 95 percent confidence level with an expected error rate of 4 percent.

We conducted this attestation engagement from November 2, 2010 through July 12, 2011 in accordance with generally accepted government auditing standards and LCR 211-6, *Functions, Authority, and Responsibility of the Inspector General*. Those standards require that we plan and perform the engagement to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our objectives. We believe that the evidence we obtained provides a reasonable basis for our conclusions based on our objectives.

▶▶ RESULTS

This is the first assessment we performed in the MD to assess the accountability (i.e., ability to locate) and condition of collection materials over time. It establishes the baseline for materials known to be held as of the date

of our report. We plan to continue testing in the MD periodically to confirm the continued existence of the baseline items and to assess any changes in their condition. While evaluating the baseline items, we noted whether the item had identification markings as detailed in the following sections.

Excellent	Readable and in pristine or nearly pristine condition. There are no spots but may have a crease or two. There is no fading, mold, insect, water, or light damage. There is no stiffness when opening a book, playbill, serial, or scrapbook.
Good	Readable, but may have a spot or crease on a page or two. Slight evidence of mold, insect, water, or light damage. A few pages may stick, but very minimally. There is no stiffness when opening a book, playbill, serial, or scrapbook.
Fair	Readable, but has significant spots, creases, or marginalia (writing in the margins). May have evidence of mold, insect, water, or light damage, but not to the extent that it affects readability. A few pages may be missing or stuck.
Poor	Portions may not be readable. Contains significant spots, creases, fading, mold, insect, water, and/or light damage. Pages may be brittle so that it disintegrates on touch and/or portions are missing. There may be stiffness when opening a book, playbill, serial, or scrapbook.

I. Condition of Materials

Based on our sample testing, we project that nearly 96 percent of the MD’s collection items are in “good” or better condition. Specifically, we conclude with 90 percent confidence that 68 percent (+/- 6 percent margin of error) of the items are in “excellent” condition, and that 28 percent (+/- 6 percent margin of error) are in “good” condition. Table 1 details the criteria we used to assess

the condition. We make no opinion on when damage, if any, occurred. Our condition assessment results are summarized in Table 2 and in detail in Appendix B.

Appendix C provides pictures of selected test items chosen to illustrate the conditions we found.

Condition	Result (Percentage)	Margin of Error (Percentage)
Excellent	68.0	6.3
Good	28.0	6.0
Fair	4.0	2.6
Poor	0.0	0.0

II. Markings

We tested our sample of materials to determine if they were properly marked as Library property. See Appendix D for examples of LC markings. Of the 150 items we tested:

- 109 items had ownership markings, and
- 41 items were unmarked

It is Library policy not to mark non-book items such as sheets within a container. Additionally, it is a challenge to mark physical objects such as the MDs' musical instrument holdings. As an alternative to marking, we note that the MD uses high-resolution photography for the musical instrument collection, including the stringed instruments in the Cremonese Collection.⁵ High-resolution photography is useful in proving ownership if a valuable item is stolen and subsequently recovered.

We cannot project how many of the MD population of more than 20 million items may be unmarked because not all items are books. In a previous audit report (*Improvements Needed to Secure and Preserve Rare Library Collections Material*, Report No. 2010-AT-102, issued in January 2011) we recommended that Library Services consult with the Preservation Directorate to develop and implement procedures creating a positive means of establishing Library ownership of rare materials. This recommendation applies equally to all divisions in Library Services, including the Music Division.

III. Test of the Total MD Holdings

Our final test was intended to examine the reliability of the MD card catalog and the Library's online catalog and the accuracy of placement of items on the shelf. For this test, we chose a random sample of items from both catalogs (card catalog and the online catalog) and physically traced each item to the shelf. The MD staff successfully located all but one of the items in our sample (432 of 433), including those in remote storage.

Given the MD's total holdings of approximately 2 million titles,⁶ we commend its staff for locating 99.8 percent of the items in our sample. MD management believes the missing item may have been part of a batch of items pulled from the shelf for reclassification, and possibly misshelved following the task.

⁵ The Cremonese Collection contains six string instruments by Antonio Stradivari, one Amati violin, and two Guarneri violins.

⁶ The MD collections include titles listed in the online and card catalog records, plus finding aids for its archival collections – posters, correspondence and other literary manuscripts, business records, scrapbooks, playbills, drawings, citations, etc.

» CONCLUSION

We concluded that most of the MD collection items are in “good” or better condition. In addition, MD items are properly marked, to the extent practical, and division staff are ensuring that 1) the catalog record and call number label are accurate and in agreement, and 2) each item is shelved in the correct shelf location. This helps ensure that items requested by readers will be easily located. Finally, we wish to commend the MD for its outstanding Not-On-Shelf rate of only 0.2%.

We will follow up on this first assessment of the MD with continued reviews in future years.

We believe this statistical assessment together with similar assessments in other Library special collections provides Library management with an added tool to assess and improve its security and preservation efforts.

Major Contributors to This Report:

Nicholas Christopher, Assistant Inspector General for Audits

Patrick Cunningham, Senior Lead Auditor

Cornelia Jones, Auditor

Sarah Sullivan, Management Analyst

▶▶ APPENDIX A: LIST OF ASSESSMENTS PERFORMED OF OTHER LIBRARY COLLECTIONS

Prints & Photographs Division, *Statistical Measure of the Effectiveness of Collection Controls* (KPMG), January 1999.

Prints & Photographs Division, *Statistical Measure of the Effectiveness of Collection Controls* (KPMG), December 2000.

Manuscripts Division, *Statistical Measure of the Effectiveness of Collection Controls* (KPMG), August 2002.

Prints & Photographs Division, *Statistical Measure of the Effectiveness of Collection Controls* (KPMG), August 2002.

Manuscript Division, *Assessment of the Accountability and the Condition of the Manuscript Division Collections*, March 2005.

Prints and Photographs Division, *Assessment of the Accountability and the Condition of the Prints and Photographs Division Collections*, March 2005.

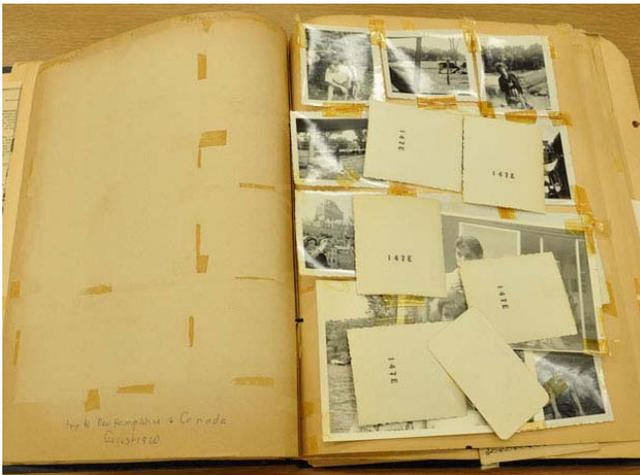
Geography and Map Division, *Statistical Assessment of the Accountability and the Condition of the Geography and Map Collections*, March 2006 (Not for Public Release).

Rare Book and Special Collections Division, *Statistical Assessment of the Accountability and the Condition of the Rare Book and Special Collections Holdings*, July 2010.

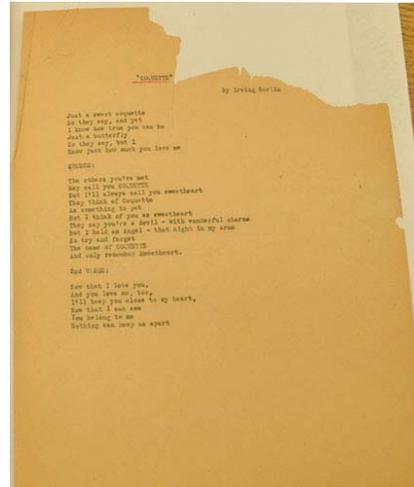
►► **APPENDIX B: CONDITION OF 150 SAMPLED ITEMS**

Condition Assessment of 150 Sampled Items								
					Condition Assessment Per Category			
Test Day	Date	Total Population*	Percent of Total	Number Sampled	Excellent	Good	Fair	Poor
1	12/01/10	62	8	10	9	1	-	-
2	12/03/10	47	6	10	4	5	1	-
3	12/29/10	49	6	10	8	2	-	-
4	01/05/11	53	7	10	5	4	1	-
5	01/18/11	51	6	10	3	7	-	-
6	01/27/11	30	4	10	7	3	-	-
7	01/31/11	108	13	10	7	3	-	-
8	02/03/11	22	3	10	7	2	1	-
9	02/07/11	37	4	10	6	4	-	-
10	02/15/11	48	6	10	8	1	1	-
11	02/23/11	33	4	10	7	2	1	-
12	02/28/11	78	9	10	8	2	-	-
13	03/02/11	92	11	10	9	-	1	-
14	03/04/11	63	8	10	8	2	-	-
15	03/08/11	38	5	10	6	4	-	-
Total		811	100	150	102	42	6	0
Point Estimate (Percentage)					68.0	28.0	4.0	0.0
* items served to researchers the previous day								

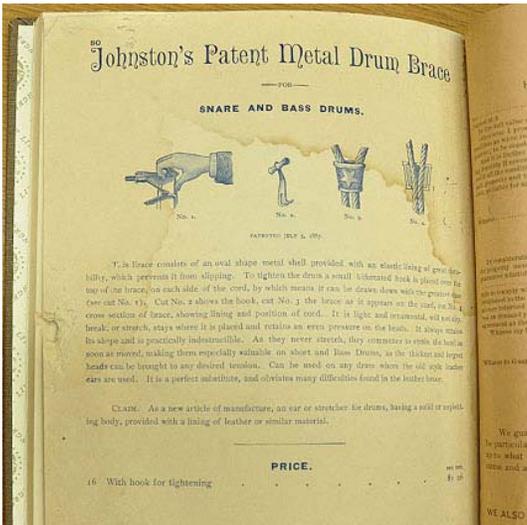
APPENDIX C: EXAMPLES OF VARIOUS CONDITIONS



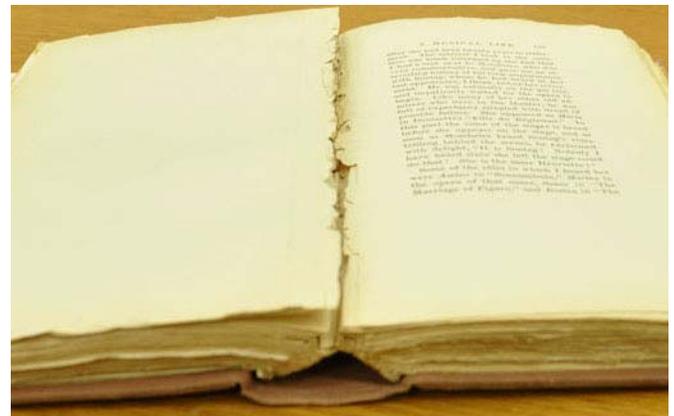
Discoloration and Tape Residue



Discoloration and Torn



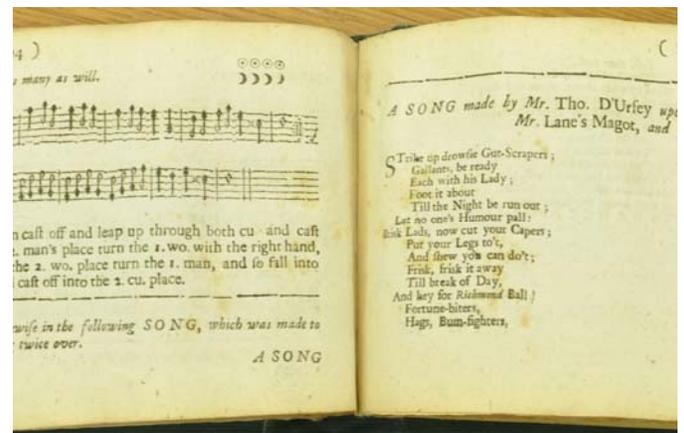
Paper Rot and Stained



Broken Binding

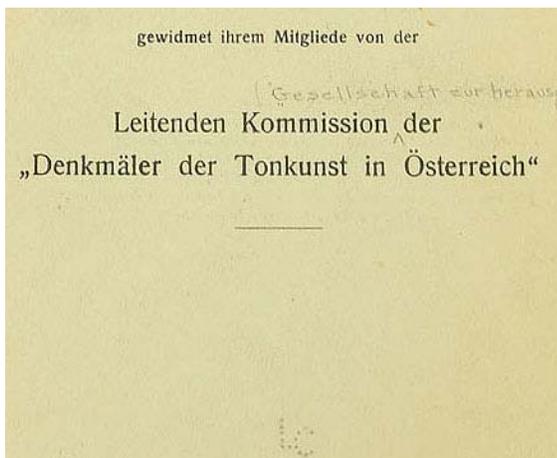
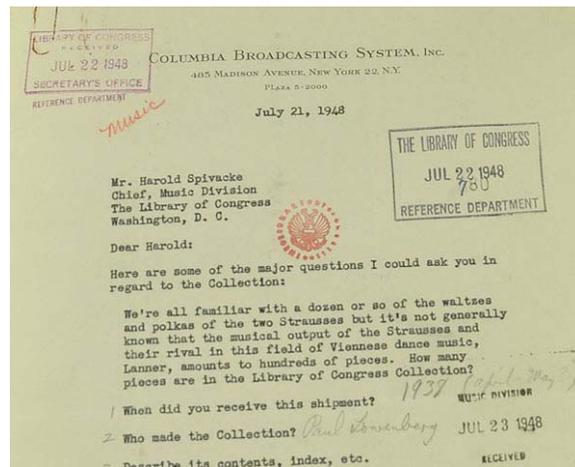
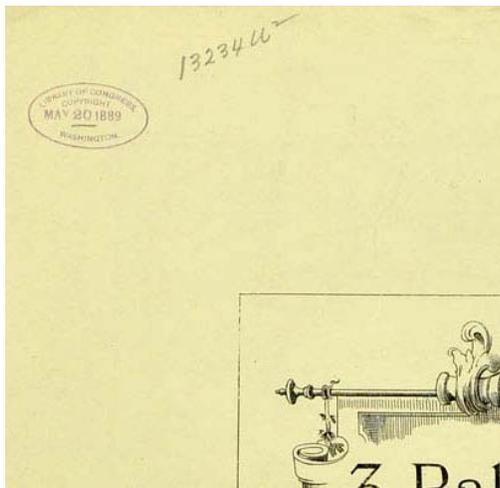
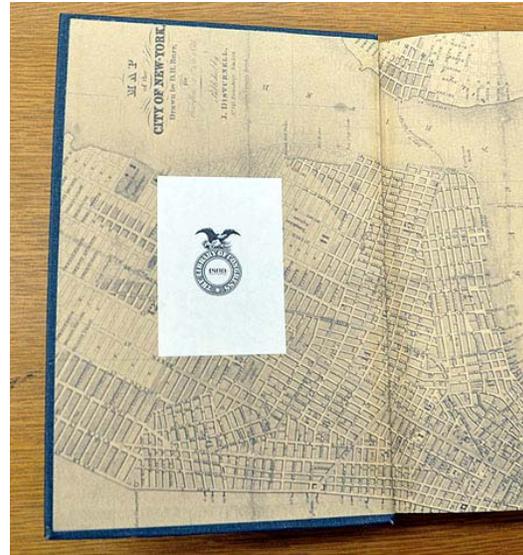
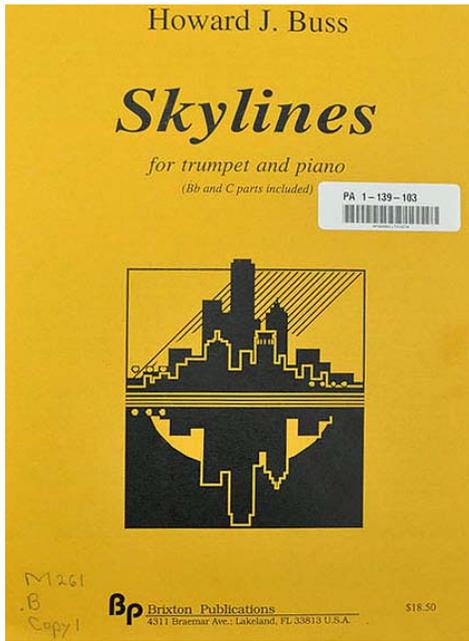


Detached Binding Board, Leather Rot, and Cockling



Foxing

▶▶ APPENDIX D: EXAMPLES OF IDENTIFICATION MARKINGS



▶▶ APPENDIX E: MANAGEMENT RESPONSE

**Library Services**
Associate Librarian for Library Services

August 12, 2011

To: Karl W. Schornagel
Inspector General

From: Deanna B. Marcum 
Associate Librarian for Library Services

Subj: Statistical Measure of the Condition and Accountability of the Music Holdings
Attestation No. 2010-AT-104

Thank you for your draft report summarizing the results of the Office of the Inspector General's statistical assessment of the condition and accountability of the Music Division holdings. I appreciate the careful work that went into preparing this important report.

I have only a few corrections and suggestions, as submitted to me by the Chief of the Music Division, Susan Vita.

1. It would be helpful, in interpreting the results, to have an appendix showing how the confidence levels and expected margins of error were calculated. I realize this might be a standard statistical formula, but seeing it might aid the reader in gaining an overall understanding of the methodology. The same applies to the formula for projecting the percentage of the collection in equal or better condition than the baseline sample.
2. On page 6 -- the Library's Cremonese collection includes all of the stringed instruments created by Stradivari, Amati and Guarneri, not only the Strads donated by Mrs. Whittall. The footnote can be revised as follows:

The Cremonese collection contains six stringed instruments made by Antonio Stradivari, one Amati violin, and two Guarneri violins.
3. On page 11 -- the photograph in the lower right corner is reversed.

Thank you for your excellent work in insuring that the Library documents the condition and accountability of the Music Division's holdings.

cc: Jeremy Adamson
Susan Vita
Sandra Lawson
Mike Handy