ANNOTATED SELECTED BIBLIOGRAPHY OF WORKS RELATING TO SOUND RECORDINGS AND MAGNETIC AND OPTICAL MEDIA

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The following publications were selected for this bibliography because they offer insights into the special nature and needs of sound recordings. They were written over a period of more than thirty years and offer a broad range of information from a variety of perspectives, not all of which are oriented toward archival purposes. Inclusion in this bibliography does not imply that the advice offered by the authors is authoritative. Archivists using these works should be careful in applying any suggested or implied treatments or remedies to sound recordings in their collections.

1. Association for Recorded Sound Collections. Associated Audio Archives Committee. *Audio Preservation: A Planning Study - Final Performance Report.* Silver Spring, Md.: Association for Recorded Sound Collections, 1988.

During 1986 and 1987 the Associated Audio Archives Committee (AAA) of the Association for Recorded Sound Collections (ARSC) carried out a survey of the state of audio preservation in sound archives in the United States and a few foreign countries. The survey found that there are currently no broadly recognized standards relating to audio preservation, and that the needs in this area are urgent and growing. The report contains the findings of the survey, the methodology employed, the raw data gathered, and the results of various related research projects carried out by the investigators. The report is a complex document that includes numerous appendixes and reports from individual investigators; nevertheless, archivists seeking current, reliable information relating to sound archives and audio preservation will find the publication very valuable. Includes a glossary and extensive bibliography. Copies are available from: Elwood McKee, 118 Monroe Street #610, Rockville, MD 20850.

2. ———. *Rules for Archival Cataloging of Sound Recordings.* Silver Spring, Md.: Association for Recorded Sound Collections, 1980.

These rules, which are based on the second edition of the *Anglo-American Cataloging Rules (AACR 2),* were developed by the Associated Audio Archives

Committee (AAA) of the Association for Recorded Sound Collections (ARSC) and represent the first known effort to adapt library cataloging rules and techniques to archival sound recordings. The publication includes complete rules for cataloging discs and cylinders and an outline of rules appropriate for other recording media (including magnetic tape). The rules are most readily suited to commercial disc and cylinder recordings as opposed to noncommercial, "instantaneous" recordings. In addition, the rules are more oriented toward item-level, library cataloging than toward the archival concepts of provenance, collection, record group, and finding aid. Nevertheless, archivists seeking guidance toward standards in a standard-less world will find the rules helpful. The AAA committee plans in the near future to revise the rules to reflect recent changes in *AACR 2*. Copies available from: ARSC, Executive Director —Publications Orders, P.O. Box 10162, Silver Spring, MD 20914.

3. Berger, Myron. "Record Cleaners and the Real World." *High Fidelity* 30 (July 1980): 43.

Berger critiques several commercial disc-cleaning products. Although the author does not write from an archival perspective, he describes each cleaning method clearly and compares and contrasts their strong and weak points. The editors of *High Fidelity* include an "afterword" on long-term effects of wet-cleaning. Archivists will want to exercise their own judgment in choosing which cleaning methods to use on their collections.

4. Bolnick, Doreen, and Bruce Johnson. "Audiocassette Repair." *Library Journal* 114:19 (15 November 1989): 43-46.

The authors clearly and succinctly describe the "anatomy" of cassette audio tapes and offer advice on repairing certain types of damage. They write from the perspective of librarians who care for a circulating collection of audio tapes that receive moderate to heavy use. The advice offered here may be useful in those cases where an archives receives mangled cassettes of possibly valuable material or where use copies become damaged. Archivists should keep in mind that cassette tapes are not archival.

5. Brock-Nannestad, George. "A Comment and Further Recommendations on 'International Rerecording Standards'." *ARSC Journal* 20:2 (Fall 1989): 156-161.

The author writes in response to recommendations on international re-recording standards proposed by William Storm in "A Proposal for the Establishment of International Rerecording Standards," *ARSC Journal* 15:2-3 (1983): 26-37. He discusses issues that engineers and archivists should consider in determining the desired goal of the re-recording process, and offers suggestions and recommendations on achieving accurate reproductions.

6. Carneal, Robert B. "Controlling Magnetic Tape for Archival Storage." *Phonographic Bulletin* 18 (July 1977): 11-14.

The author discusses the archival problems presented by the wide variety of audio recording formats that have developed over time, particularly those involving magnetic tape. He identifies particular problems in long-term storage of magnetic tape (including reel design, structure of storage boxes, aging of splicing tape, reel identification, print-through, and compatibility of recording and playback equipment). He identifies factors that archivists can control and recommends that archives begin to develop standards relating to archival stor-

age of magnetic tape. In the thirteen years since this article was written, some guidelines have been proposed and some of the problems identified by Carneal (such as archival use of slotted reels) have been addressed. Standards are currently being developed by the Preservation Committee of the Audio Engineering Society (AES), the United Nations Educational, Scientific, and Cultural Organization (UNESCO), and the American National Standards Institute (ANSI).

7. Colby, Edward E. "Sound Scholarship: Scope, Purpose, Function and Potential of Phonorecord Archives." *Library Trends* 21:1 (July 1972): 7-28.

The author posits that "the time has arrived" for examining the status and use of sound archives to scholarship and society, for developing systematic descriptive methods, and for promoting the uses of sound recordings for educational purposes. He discusses the ways in which sound archives originate and build their collections, he briefly describes several well-known U.S. sound archives, he discusses specific educational purposes best served by sound recordings, and he concludes with a list of long-range objectives for future development and maturity of sound archives.

8. Cuddihy, Edward F. "Aging of Magnetic Tape." *IEEE Transactions on Magnetics* v. MAG-16, n. 4 (July 1980): 558-568.

The author reports on an experiment that examined the effects of hydrolysis on magnetic tape. The experiment exposed samples of one type of back-coated polyester instrumentation recording tape to varying combinations of relative humidity and temperature in open air and nitrogen; other tape samples were hermetically aged. The author concludes that relative humidity, rather than oxygen, is the primary factor in oxide degradation, and infers that at a certain temperature and relative humidity tape does not chemically age. He notes in particular that it is the chemical age of tape rather than the calendar age that is most important in predicting tape life, since environmental conditions have such a profound impact on tape degradation. The experiment did not address lubricant breakdown or other forms of physical aging nor did it deal specifically with audio tape. The article, while technical in nature, is readable and provides archivists with a clear understanding of the experiment and its results.

9. Czerwinska, E., and R. Kowalik. "Microbiodeterioration of Audiovisual Collections." *Restaurator* 3 (1979): 63-80.

In the first part of this article, the authors report on the nature of fungi found in archival audiovisual materials and on their search for a suitable fungicide to inhibit mold growth in air-conditioned storage areas. They isolated and identified the particular fungi involved and tested tape and film reels and sealing tape for microbioresistance. They experimented with disinfecting audiovisual materials by fungicide delivered in vapor form and concluded that a fungicidal solution delivered via soaked filter paper discs placed in the top and bottom of sealed metal cans used for storing motion picture films and magnetic tape completely inhibited fungal growth. Tape and film reels were disinfected by wiping with the same solution. The authors do not speculate on the long-term effects of storing audiovisual materials in vapor-filled cans. In the second part of the article, the authors consider similar questions regarding microbial growth on black-and-white photographic prints.

10. De Lancie, Philip. "Sticky Shed Syndrome." *Mix* (May 1990): 148-155.

The author describes the condition he calls "sticky shed syndrome," which occurs when modern polyester tape sheds oxide and binder. The condition causes squealing during tape playback and buildup of sticky oxide on playback heads, and signals the beginning of the end of the useful life of the afflicted tape. De Lancie reports the recommended temporary solution for the syndrome: heating (or baking) the tape at a low temperature for several hours until the oxide re-adheres and then copying the recording to a fresh reel. He also describes a homemade "baking oven" made from a cardboard box and heated with a blow-dryer. Although the oven may work, archivists inexperienced with magnetic tape should seek professional advice when dealing with afflicted tapes. The article also includes an announcement from Agfa (a major tape manufacturer) describing a commercial restoration service offered by the company.

11. Dick, Ernest J. "Through the Rearview Mirror: Moving Image and Sound Archives in the 1990s." *Archivaria* 28 (Summer 1989): 68-73.

Dick explores the advent and proliferation of audiovisual documentation in the twentieth century. He notes the increasingly complex conservation problems that the newer formats present, especially since magnetic audio and video tape came into common usage. He also discusses implications of new documentation formats on archives collecting policies, and the need for archivists to understand the context (technological as well as historical) within which a moving image or sound document was created, and not just its technical quality, when making appraisal and accessioning decisions.

12. Eckersley, Timothy. "The Selection of Recordings for Permanent Retention in the BBC Sound Archives." *Phonographic Bulletin* 9 (1974): 9-12.

The author discusses appraisal criteria (or "selection" criteria, in the parlance of sound archivists) used by the sound archive of the British Broadcasting Corporation. He notes the main purposes of the archive (to document radio broadcasting and to build an audio collection for use by producers in the future), discusses sources of materials and how the archive operation is financed, and then describes the primary selection criteria used by the archive selector.

13. Eilers, Delos A. "Polyester and Acetate as Magnetic Tape Backings." *Journal of the Audio Engineering Society* 17:3 (June 1969): 303-308.

In this article, written when polyester film was first coming into use as a base material for magnetic tape, the author compares the physical properties of the two types of film. He examines tape smoothness, reactions to environmental change, tape strength and tear resistance, and aging characteristics. The article offers archivists specific information not readily available elsewhere in such a concise format.

14. "Emergency Restoration for Rosengarten Tapes." *Sounds of the South* 2 (July 1990): 1-2.

Archivists at the Southern Folklife Collection received forty-eight valuable oral history tapes damaged with mud, sand, and salt water by Hurricane Hugo and devised a way to clean the tapes sufficiently to allow re-recording. The article describes the condition of the tapes, the cleaning apparatus designed and built by the archivists, and the washing procedure they used, and includes a photograph of the cleaning machine.

15. Foreman, Lewis. "Living History: The Preservation and Dissemination of Unpublished Sound Recordings." *State Librarian* 24:1 (March 1976): 4-5.

Foreman briefly traces the development of recording and playback technology, and then focuses on the difficulties that a researcher faces in trying to find and gain access to noncommercial and out-of-print commercial recordings. He discusses the existence of "networks" of home recording enthusiasts and collectors who make and preserve unauthorized, often illegal, recordings of important events and performances. Such recordings, the author notes, are rarely available through libraries or archives. Foreman recommends moving to legalize these recordings, so that they might eventually be cataloged and rendered accessible to researchers.

16. Fox, Barry. "Master Tapes Come to a Sticky End." *New Scientist* 22 (September 1990): 31.

The writer describes the now well-recognized phenomenon of oxide shedding and binder breakdown as it affects modern audio tape.

17. ———. "Tests Prove CDs Can Self-Destruct." *New Scientist* 7 (July 1988): 37.

The author cites evidence that some compact discs may be short-lived, and quotes various manufacturers regarding the likelihood of deterioration and possible causes of CD flaws.

18. Gagnon, Ronald. "Keep Record Collections in Tune." *Library Journal* 110:19 (15 November 1985): 56-58.

This author writes about basic record care from the perspective of a librarian working with a circulating collection of phonograph records (primarily commercial vinyl LPs). He notes the importance of regular, thorough, and safe cleaning in enhancing and prolonging the life of commercial sound recordings, and discusses particular cleaning methods and products. Although most of his comments and recommendations reflect accepted safe cleaning practices, he is not writing about archival sound recording collections, and archivists should be cautious in applying some of these procedures to their archival holdings. In particular, the recommendations regarding use of a homemade alcohol cleaning solution or a detergent and water bath should be studied carefully before implementation.

19. Gelatt, Roland. *The Fabulous Phonograph, 1877-1977*. 2nd rev. ed. New York: MacMillan Publishing Company, Inc., 1977.

A readable, enjoyable history of the invention and development of the phonograph and related recording and playback devices. The second revised edition covers this subject through the development of 8-track cartridge, audio cassette, and quadraphonic sound.

20. Geller, Sidney B. "Erasing Myths About Magnetic Media." *Datamation* 22:3 (March 1967): 65-70.

Geller describes tests undertaken by the National Bureau of Standards (NBS) to determine the effects of magnetic and electromagnetic fields on magnetic recording media. NBS tested computer tapes, digital cassettes, and credit cards bearing magnetic stripes with exposure to possible sources of erasure. The tests determined that magnetic recordings are not easily damaged by exposure

to most magnetic fields except large permanent magnets, and that fears of accidental erasure have been over-emphasized. Archivists should note, however, that these tests involved, for the most part, digital computer media, and the testing criteria allowed up to 50 percent loss of signal before considering a tape damaged. Smaller signal losses, which could damage audio tapes, were not considered significant, although they are reported in the article.

21. Goldman, Abe A. "Copyright and Archival Collections of Sound Recordings." *Library Trends* 21:1 (July 1972): 147-155.

The author describes the aspects of copyright law that pertain to sound recordings and to the underlying works on the recordings and discusses how archivists might apply the laws that pertained to copyright of sound recordings in 1972. At the time the article was written, copyright protection had just recently been extended to include recorded sound materials but the Copyright Act of 1976 had not yet been adopted. Despite changes in the applicable laws since 1972, archivists seeking basic information on copyright issues will find this article helpful.

22. Griffin, Marie P. "*The IJS Jazz Register and Indexes:* Jazz Discography in the Computer Era." *Annual Review of Jazz Studies* 1 (1982): 110-127.

Griffin discusses development of a model cataloging system for jazz recordings. The cataloging procedure is designed to be acceptable to national utilities and to produce registers for use by Institute of Jazz Studies (IJS) researchers. The IJS catalog contains very full documentation of each recording; some archivists may lack the time and staff to create such detailed discographical entries. Details of the process are available from the Institute of Jazz Studies.

23. ———. "Preservation of Rare and Unique Materials at the Institute for Jazz Studies." *ARSC Journal* 17:1-3 (1985): 11-17.

Griffin describes a project carried out at the Institute of Jazz Studies to clean and re-record aging and fragile archival jazz recordings and preserve the information in the institute's clipping files. She discusses in detail the cleaning and re-recording process and the equipment used by the institute. This is one of only a handful of articles that describes the use of a record-cleaning machine for archival disc recordings.

24. Greenfield, Amy. "The Case of the Vanishing Videotape." *American Film* 6 (July-August 1981): 17-18.

Greenfield describes the impermanence of videotape as a storage medium, and discusses problems of changing technology and new formats that exhibit short lifespans. She points out particular problems with the medium (such as physical degradation over time and questions regarding the impact of repeated playback on longevity) and notes preservation research efforts that were underway at the time she wrote.

25. Hagen, Carlos B. "The Struggle of Sound Archives in the United States." *Library Trends* 21:1 (July 1972): 29-52.

The author discusses the problems that U.S. recorded sound collections face in their struggle for recognition of sound recordings as legitimate research materials and library resources. He also notes and describes the holdings of several major recorded sound collections at institutions across the U.S.

26. Hall, David. "Phonorecord Preservation: Notes of a Pragmatist." *Special Libraries* 62 (September 1971): 357-362.

The author's remarks are addressed primarily to librarians in charge of circulating collections of phonograph records. He discusses safe storage, handling and use practices, and the legality of copying recordings on tape for use by library patrons. Despite the library orientation, archivists will find the basic advice sound, although, since the article is twenty years old, some of the information is out of date. For example, few archives today make a special effort to shelve magnetic tapes on nonmetal shelving, and the copyright advice offered by the author is based on the 1909 law rather than the 1972 amendment relating to sound recordings or the current law that took effect in 1978. Archivists will want to read this article for basic background information, and then turn to more recent works to bring their readings up to date.

27. Hammar, Peter. "Jack Mullin: The Man and His Machines." *Journal of the Audio Engineering Society* 37:6 (June 1989): 490-512.

The author briefly recounts the history of recorded sound technology, using as a framework the John T. (Jack) Mullin collection of recording and reproducing equipment. Mullin is generally credited with introducing high-quality magnetic recording capability to the United States after World War II. In the course of his career he assembled the extensive collection of recording artifacts that inspired this article.

28. Harrison, Helen P. *The Archival Appraisal of Sound Recordings and Related Materials: A RAMP Study with Guidelines.* Paris: UNESCO, 1987.

A thorough, useful study of issues relating to appraisal and selection of sound recordings in archives. The author sets forth basic aspects of appraisal (including legal issues, collecting scope and policies, conservation and records management) and applies them to the varying needs of archives that deal with sound recordings of all types. Although experienced archivists will be familiar with the information contained in portions of the report, they will also find information on the history and typology of sound recordings and sound recording archives that is usually neglected in archival literature.

29. ———. "Preservation of Moving Pictures and Sound Carriers." *Art Libraries Journal* 5:1 (Spring 1980): 13-20.

The author briefly discusses preservation of film, video, and sound recordings (including audio tapes, cassettes, and discs), and offers concise, accurate information on proper storage and use of such materials.

30. ———. *Selection in Sound Archives.* IASA Special Publication No. 5, 1984.

This volume contains papers presented at meetings of the International Association of Sound Archives (IASA), many of which were also published in the IASA publication *Phonographic Bulletin.* An excellent source for information on issues relating to selection criteria and collecting policies for sound archives.

31. Herbst, Krist. "Networks That Make Sweet Music." *Network World* (25 June 1990): 37-39, 52.

According to the author, new technology enables recording studios to transmit and exchange high quality audio signals via satellite and fiberoptic cable, and audio versions of local area networks (LANs) are becoming available and feasible. He describes studios currently linked by networks, a transcontinental recording session, and the development of audio LANs.

32. Kalil, Ford, ed. *Magnetic Tape Recording for the Eighties.* NASA Reference Publication 1075. National Aeronautics and Space Administration, April 1982.

This publication contains reports on the creation, use, care, and preservation of magnetic tape recordings. It focuses primarily on instrumentation and computer recordings rather than recorded sound, and is at times quite technical. Nevertheless, archivists dealing with sound recordings will find parts of the reports helpful, including the bibliographies compiled by the authors.

33. Kent, Scott. "Binder Breakdown in Back-coated Tapes." *Recording Engineer/Producer* (July 1988): 80-81.

The author describes the phenomenon of oxide shedding that frequently afflicts magnetic tapes produced from the late 1960s and 1970s through the early 1980s. Kent attributes oxide shedding (dubbed "sticky shed syndrome" by another author) to binder deterioration, and describes the sticky oxide residue that adheres to tape playback heads and the accompanying high-pitched squeal. He also discusses the "temporary fix" achieved by heating the tape under controlled conditions.

34. Kittle, Paul W. "Effects on Media Materials of Storage in Proximity to a Magnetic Resonance Imaging Scanner." *Bulletin of the Medical Library Association* 77:1 (January 1989): 67-69.

The author discusses a project carried out at the Loma Linda University Medical Center to determine whether video cassettes and audio cassettes stored in a medical library, in close proximity to an MRI scanner that generates a magnetic field, were likely to become damaged. In this particular case, the investigators found no apparent detrimental effects. The author describes the methodology of the project, the equipment used to carry out the work, and the results. A bibliography is included.

35. Knight, G. A. "Factors Relating to the Long Term Storage of Magnetic Tape." *Phonographic Bulletin* 18 (July 1977): 15-45.

This article is a reprint of a report prepared by the Central Research Laboratories of EMI Ltd. While preparing the report, the author reviewed past recommendations regarding storage and transit conditions for magnetic audio tape by surveying the available literature, examining and assessing the condition of selected EMI tapes, and exchanging information with other interested organizations. The report covers environmental conditions, deterioration of tapes due to physical composition ("inherent vice"), and other sources of possible damage. It includes a concise summary of recommendations for storage environment, packaging, and handling procedures for both older and modern magnetic tape. The recommendation that tapes be stored in sealed plastic bags is not universally accepted, and should be implemented cautiously. The report contains a brief bibliography.

36. Lampton, Christopher. *CD ROMs*. New York: F. Watts, 1987.

This book is part of a "First Book" series designed for young readers, apparently of middle school and high school age. Archivists who are not technologically adept, but who desire a clearer understanding of how compact discs, optical disks, and digital technology work, will find the text clear and easy to understand. The book includes a brief glossary of CD-ROM terminology.

37. "Laser Rot." *The Perfect Vision* 1:1 (Winter 1986-1987): 35-45.

This article describes, informally, the playback problems with laser video discs, particularly the form of deterioration known as "laser rot." Although the article does not deal directly with this problem as it affects CDs (audio, rather than video optical disk formats), and is not written by an archivist or from an archival point of view, archivists may find useful the descriptions of the physical structure of video discs and of laser rot.

38. Leavitt, Donald L. "Recorded Sound in the Library of Congress." *Library Trends* 21:1 (July 1972): 53-59.

The author describes the origins of the recorded sound collections in the Library of Congress, including the types of materials collected over the years and the types of patrons and uses of the materials.

39. Levitt, Martin L. "A Case Study in Audio Tape Transfer." *College & Research Libraries News* 49:10 (November 1988): 654-657.

The author describes an archival preservation project in which the Library of the American Philosophical Society transferred valuable, aging, and fragile audio tapes to Rotary Digital Audio Tape (RDAT) for preservation purposes. The project is noteworthy in part because the library chose digital RDAT technology, which in 1987 was brand new. The author discusses the methodology used to assess the condition of the library's audio collection, development of the preservation plan, and rationale for choosing a radical and controversial format for preservation of the tapes. The February 1989 issue of *C & RL News* (see entry no. 58) contains a letter pointing out the potential problems with the library's choice of recording format, and enumerating the reasons why RDAT was not a good preservation choice. Mr. Levitt provides a response to these arguments immediately following the letter.

40. Loescher, F. A., and F. H. Hirsch. "Long-term Durability of Pickup Diamonds and Records." *Journal of the Audio Engineering Society* 22 (December 1974): 800-806.

The authors studied durability of contemporary styluses and record grooves by undertaking long-term tests, under controlled conditions, of both dry and wet playback systems. The article describes the testing procedure in detail, and includes photographs of the styluses showing the type and amount of deterioration they exhibited at various points during the tests.

41. Masters, Ian G. "The Basics (A Series of Articles on the Basics of Audio)." *Stereo Review,* beginning in the September 1989 issue and continuing.

Masters begins with an overview of the history and development of sound reproduction technology. Each article addresses an individual topic in recording and reproduction, including disc and tape recordings, acoustics, how sound is reproduced from various media, and how to choose system components. The

articles are well-focused and provide good background information for archivists who lack a clear understanding of audio recording and playback technology.

42. McCormick, Don, and Seth Winner. "The Toscanini Legacy." *ARSC Journal* 20:2 (Fall 1989): 182-190.

The authors describe the contents of "The Toscanini Legacy," a very large and valuable collection of materials held by the New York Public Library relating to the life and career of Arturo Toscanini. The authors note the types of sound recordings found in the collection (including various types of commercial and instantaneous discs, tapes, and an exotic format known as Selenophone film), many of which were both rare and in poor condition. They thoroughly discuss the preservation and re-recording processes used with the recordings. The article includes information on setting priorities for preservation work within the collection, cleaning the recordings, re-recording (including the equipment used), cataloging, and use of the recordings by patrons.

43. McKee, Elwood. "AAA Audio Preservation Planning Project: A Preliminary Progress Report." *ARSC Journal* 18:1-3 (1986): 20-32.

The author reports on the progress of a study of the status of sound recording preservation in major sound archives. The study was funded by NEH, and sought to "gather as much information as possible about all aspects of the conservation, preservation, and restoration of sound recordings." The author describes the methodology of the project and includes a report of the preliminary findings of the investigators. The final report on this project is cited as entry no. 1 in this bibliography.

44. McWilliams, Jerry. *The Preservation and Restoration of Sound Recordings.* Nashville: American Association for State and Local History, 1979.

This was the first book to directly and exclusively address the role of sound recordings in archives and issues relating to preservation and restoration of sound recordings. The author writes of the history of early and recent recording technology, and then offers advice on storage, handling, playback, and restoration of sound recordings. Some of the information is now out of date; some sound archivists disagree with some of the author's recommendations. Archivists will want to use this work in conjunction with more recent publications and recommendations regarding archival storage and handling practices. Contains a bibliography.

45. Orbanz, Eva, Helen P. Harrison, and Henning Schou. *Archiving the Audiovisual Heritage: A Joint Technical Symposium, Federation Internationale des Archives du Film, Federation Internationale des Archives de Television, International Association of Sound Archives.* Berlin: Stiftung Deutsche Kinemathek, 1988.

This book is an anthology of papers presented at a Joint Technical Symposium, which was held in Berlin in 1987 and organized by the International Federation of Film Archives (FIAF), the International Federation of Television Archives (FIAT), and the International Association of Sound Archives (IASA). The papers, prepared by experts in the various fields, address issues relating to preservation and restoration of modern audiovisual media (including film, video, and sound recordings). The articles, which are printed in

English, are, for the most part, excellent. They will be of interest to most archivists who work with audiovisual materials.

46. Owen, Tom. "Fifty Questions on Audio Restoration and Transfer Technology." *ARSC Journal* 15:2-3 (1983): 38-45a. Note also the response to this article in the *ARSC Journal* 16:3 (1984): 5-11.

The author, who was chief engineer at the Rodgers and Hammerstein Archives of Recorded Sound at Lincoln Center, poses and answers both simple and complex questions relating to audio restoration. He recommends cleaning methods, equipment, and engineering techniques that he feels are appropriate for use with archival recordings. The next issue of the *ARSC Journal* (volume 16:2 (1984)) includes a disclaimer from the ARSC president regarding the article and indicates that enough controversy resulted from this article to warrant retention of attorneys. Volume 16:3 (1984) of the *ARSC Journal* contains both a policy statement relating to Mr. Owen's article (on p. 3) and correspondence relating to the piece with responses by Mr. Owen (pp. 5-11). The article clearly deals with sensitive and controversial issues in sound restoration, and archivists will want to examine all sides of the various issues before choosing which recommendations to implement.

47. Pesak, Josef. "Ultrasonic Cleaning of Gramophone Records." *TESLA Electronics* 16:1 (March 1983): 16-19.

The author describes the principle of ultrasonic cleaning and the results of cleaning procedures and tests carried out in TESLA Litovel (a Czechoslovakian producer of record players). The article includes photographs of record grooves before and after cleaning, charts and graphs documenting the size and number of dirt particles found on recordings, and graphs of the comparative noise levels of dirty and clean records.

48. Pickett, A. G., and M. M. Lemcoe. *Preservation and Storage of Sound Recordings*. Washington, D.C.: Library of Congress, 1959.

This classic work was carried out at the request of the Library of Congress. The investigators studied all aspects of deterioration and preservation of the sound recording formats commonly used or recently developed at the time of their work (including acetate, shellac and vinyl disc recordings, and acetate and mylar-based magnetic tape). The report is still cited as an authoritative source of information, and most of the investigators' conclusions and recommendations remain valid. The report includes technical information regarding the testing procedures and the physical characteristics of recording media, plus illustrations, recommendations, and a bibliography.

49. Porter, James D. "Sound in the Archives." *American Archivist* 27:2 (April 1964): 327-336.

The author writes from the perspective of an archivist whose institution has studied the problems that can arise when governmental offices create audio records in an unregulated manner, and has developed standards to control the creation of such documents. Most of the author's recommendations regarding creation of magnetic tape sound recordings are still valid, despite the passage of over twenty-five years, although contemporary archivists will find that "home," or consumer, reel-to-reel tape recorders are no longer readily available. This article is virtually the only short work of any substance dealing with creation,

accessioning, preservation, and use of archival sound recordings from the point of view of a "traditional," paper-and-document-oriented archives.

50. Poulos, Arthur. "Audio and Video Cassettes, Friend or Foe of the Librarian?" *Special Libraries* 63:5-6 (May/June 1972): 222-226.

The author briefly recounts the history and development of audio and video cassette technology. He documents the improving quality and increasing popularity of the new formats and playback systems, and speculates on the future place of these materials in libraries. The present popularity of both audio and video materials in cassette format substantiates most of his predictions.

51. Public Archives of Canada. Sound Archives Section. National Film Archives. *Sound Archives: Guide to Procedures.* Ottawa: Public Archives of Canada, 1979.

This publication describes "the objectives, activities and procedures of the Sound Archives" section of the National Film Archives of Canada. It includes information on acquisitions, accessions, descriptive policies and procedures, indexing, conservation, restrictions, and reference service. These procedures relate specifically to the needs of this particular institution; nevertheless, archivists will find much reliable background information as well.

52. Radocy, Frank. "Tape Storage Problems." *Journal of the Audio Engineering Society* 5:1 (January 1957): 32-35.

The author tested and compared types of damage and deterioration exhibited by magnetic tapes with acetate and Mylar bases. The conclusions listed at the end of the article are essentially identical to recommendations commonly discussed today, except that more recent researchers suggest slightly lower storage temperatures and recommend plastic or acid-free cardboard storage boxes rather than sealed metal cans.

53. Ranada, David. "How to Clean a Stylus." *Stereo Review* 48 (January 1983): 58.

A good description of the techniques used to clean a stylus and the basic products needed to accomplish this task. Includes photographs of styluses (both dirty and clean) and the cleaning process.

54. Read, Oliver, and Walter Welch. *From Tinfoil to Stereo.* 2nd ed. Indianapolis: H. W. Sams, 1976.

The authors provide an exhaustive history of the development of recording technology, omitting virtually no details, and with particular emphasis on the development of early cylinder and disc technology. Most archivists seeking concise, readable background information will find Roland Gelatt's *The Fabulous Phonograph, 1877-1977* more accessible.

55. Reed, Mary Hutchings. *The Copyright Primer for Librarians and Educators.* Chicago: American Library Association; Washington, D. C.: National Education Association, 1987.

Although this publication discusses all aspects of copyright law as the law affects librarians and educators, rather than focusing specifically on recorded sound materials, it does include information relating to copying sound recordings that archivists may find helpful.

56. Robbins, Donald C. "Current Resources for the Bibliographic Control of Sound Recordings." *Library Trends* 21:1 (July 1972): 136-146.

This article examines sources for "bibliographic control of in-print, commercially produced material." Noncommercial materials are not discussed at all. The author describes sources of information for domestic and foreign sound recordings, including trade lists such as the *Schwann Record & Tape Guide* and *Phonolog* (with their foreign counterparts), as well as bibliographies and discographies with a more official, or scholarly, origin. He also pinpoints specific problem areas.

57. Roberts, David. "Archives and Sound Archives—What's the Difference?" *Archives and Manuscripts* 12:2 (November 1984): 117-126.

The author offers a careful, thoughtful discussion of the different types of archives that count sound recordings among their holdings. He notes the differences between sound recordings that traditional archives collect and the collections of commercial recordings or recordings relating to particular subjects that other sound archives often build. He proceeds to discuss the implications of these different understandings of sound archives for the functions carried out by the two types of institutions.

58. Roosa, Mark S. "Audio Tape Transfer." *College & Research Libraries News* 50:2 (February 1989): 132-134.

The author writes in response to an article that appeared in a previous issue of *C & RL News* (see entry no. 39). Roosa takes issue with the use of new digital technology (specifically the rotary digital audio tape, or RDAT, format) for audio preservation in the project that Levitt describes. Roosa outlines the goals of archival audio preservation and describes why, at the present time, the analog format is preferable to digital. Roosa's letter is followed by Levitt's response.

59. Roper, Michael. "Advanced Technical Media: The Conservation and Storage of Audio-visual and Machine-readable Records." *Journal of the Society of Archivists* 7:2 (October 1982): 106-112.

The author discusses the complexity and fragility of many audiovisual formats, and discusses storage and handling criteria for photographs, film, microfilm, sound recordings, and machine-readable records. He also touches on technology that was emerging at the time the article was written, including video discs, binary COM/CIM, holography, and transparent electrophotography.

60. Rosenberg, Kenyon C. "Direct & Digital Sound Recordings: Basics for Librarians." *Library Journal* 108:9 (1 May 1983): 879-880.

The author explains the evolution of "direct to disc" and digital recording technology, and mentions the expected availability of the then-new compact disc. His explanation of the two types of new recordings, and the disadvantages of older recording methods, is clear and understandable.

61. Scharlau, Ulf. "Selection in Radio Sound Archives: A Problem of Methods of Documentation." *Phonographic Bulletin* 31 (1981): 33-36.

The author discusses the selection policies and cataloging and documentation procedures of the archive of the Süddeutscher Rundfunk, stressing the role these play in a radio archive.

62. Schüller, Dietrich. "Archival Tape Test." *Phonographic Bulletin* 27 (1980): 21-25.

The author reports on the result of tests of different types of magnetic audio tape used for long-term storage. The tests were conducted by the IASA Technical Committee on various brands of tape, and the article includes technical descriptions of how the samples performed. Archivists not well-versed in recording or audio engineering technology may wish to solicit assistance in understanding the results of the tests.

63. ———. "Towards a Standard for Exchange Tapes Between Research Sound Archives." *Phonographic Bulletin* 16 (December 1976): 36-37.

This article is a draft proposal by the IASA Technical Committee regarding international standards for archival audio tapes and tapes exchanged between sound archives. The author proposes standards for type of tape, types of acceptable reels and containers, speed, equalization, track-configuration, and other points. The article includes a chart of standards and policies used by major U.S. and foreign sound archives. Archivists seeking guidance in developing their own internal policies will find this article very helpful.

64. ———. "Sound Tapes and the 'Vinegar Syndrome'." *Phonographic Bulletin* 54 (July 1989): 29-31.

The author describes the "vinegar syndrome" that afflicts motion picture films of a triacetate cellulose base, reports on investigations regarding whether the syndrome may also affect acetate-based audio tapes, and discusses the discovery of "vinegar syndrome" audio tapes at at least one European sound archive. Schüller recommends procedures for examining audio tapes, handling damaged tapes, and preventing damage to healthy tapes. His recommendations cast some doubt on the advisability of storing tapes in plastic bags.

65. Schuursma, Rolf. L. "Principles of Selection." *Phonographic Bulletin* 9 (1974): 7-8.

The author discusses reasons why sound archivists may wish to develop selection policies, rather than accepting every recording offered to them. He offers a list of points to consider in determining which sound recordings have enduring value and are therefore appropriate for retention.

66. ———. "Principles of Selection in Sound Archives." *Phonographic Bulletin* 11 (1975): 12-19.

The author expands on the brief discussion of selection in the article listed in entry no. 65, exploring the implications of selection criteria, and the lack thereof, for archivists and historians.

67. Smiraglia, Richard P. *Music Cataloging*. Englewood, Colo.: Libraries Unlimited, Inc., 1989.

In this guide to cataloging music materials, the author focuses primarily on published music (whether in printed or recorded format) rather than on sound recordings or noncommercial archival materials. The book is well-written and thorough, and archivists seeking information on cataloging or description of music recordings may find it helpful.

68. Spence, John. "Mould: A Growing Problem Too Big to Ignore." *Phonographic Bulletin* 55 (November 1989): 21-25.

The author describes a mold outbreak in the Radio Archives of the Australian Broadcasting Corporation, including the conditions that created the problem, the tapes that were affected by mold, and the remedies chosen by the archives to solve the problem and clean the damaged tapes. The article includes a description of the cleaning methods tried by the archivists and the tape-cleaning machine that they eventually selected and used.

69. Storm, William. "The Establishment of International Re-Recording Standards." *Phonographic Bulletin* (July 1980): 5-12.

The author recommends that sound archives develop standards for archival re-recording, since preservation of the sound within a recording is of primary importance (as opposed to preservation of the recordings as artifacts or art objects). He discusses the conditions that will allow the development of such standards, and then proposes possible standards for two different types of re-recording. This article discusses issues that have not yet been settled and that will become increasingly important in the future. The article includes a bibliography.

70. ———. "Standards for Speakers." *Library Trends* 30:2 (Fall 1981): 307-317.

The author discusses criteria that archivists can employ in selecting speakers for use with archival sound recordings. He examines five variables to consider in selecting speakers, describes the meaning and archival implications of each, and concludes with summary guidelines. The article includes supporting graphs and charts.

71. Storm, William D. "Construction and Rationale of Building the Belfer Audio Laboratory and Archive at Syracuse University." *Phonographic Bulletin* 39 (July 1984): 9-18.

The author describes the planning and development process for designing and building a sound archive and archival audio laboratory. The article includes discussion of the desired specifications of the recording complex (including a partial list of equipment), a sketch of the floor plans, and a bibliography of resources on acoustics.

72. ———. "A Proposal for the Establishment of International Re-recording Standards." *ARSC Journal* 15:2-3 (1983): 26-37.

This article is a revised version of the article cited in entry no. 69 in this bibliography, including an expanded bibliography of sources relating to the topic.

73. Storm, William D., and Kenneth Whistler. "Laser Reproduction of Cylinder Sound Recordings." *Dossier de l'Audiovisuel* 9 (October 1986): 40-41.

The authors report on their experiments with laser reproduction (playback) of cylinder recordings. This brief article was published in French and lacks an English abstract, so interested non-French-speaking archivists will need translation assistance.

74. Thomas, David H. "Cataloging Sound Recordings Using Archival Methods." *Cataloging and Classification Quarterly* 11:3-4 (1990): 193-212.

The author focuses on descriptive practices for archival audio materials. He offers a definition of archival sound recordings, discusses organization and arrangement of archival sound collections, and describes methods for cataloging archival, noncommercial sound recordings using the MARC AMC format. His observations stem from his work at the Rodgers and Hammerstein Archives of Recorded Sound at the New York Public Library. Archivists seeking to develop in-house descriptive practices for their audio materials will find the article clear, thoughtful, and helpful.

75. *Videodisc and Optical Digital Disk Technologies and Their Applications in Libraries: A Report to the Council on Library Resources.* Washington, D.C.: The Council on Library Resources. 1985.

While not focused specifically on optical disk technology as it pertains to sound recordings, this publication does address the developing potential of optical digital media, and speculates on the probable usefulness and longevity of such materials. The authors cautiously posit a life span of approximately ten years, based on manufacturers' information available at the time the report was compiled.

76. Ward, Alan. *A Manual of Sound Archive Administration.* Brookfield, Vt.: Gower Publishing Company, 1990.

The compiler of this bibliography has not yet read this publication. Reports from other archivists who have read it indicate that Ward offers accurate, reliable information and advice and that archivists will find the book clearly written and approachable. The author is British, and U.S. archivists will find that some portions of the book, such as the chapter on copyright, are more pertinent to Great Britain than to the United States.

77. Welch, Walter L. "Preservation and Restoration of Authenticity in Sound Recordings." *Library Trends* 21:1 (July 1972): 83-100.

The author describes the work of the Syracuse University Audio Archives and the Thomas Alva Edison Foundation Re-Recording Laboratory along with historical background on recordings produced by Thomas Edison. He offers some advice on storing, handling, and cleaning cylinder and disc recordings, much of which is still acceptable today, although contemporary archivists may want to be cautious about spraying commercial cleaning products on archival recordings.

78. ———. "Preservation and Restoration of Authenticity in Sound Recordings—To Standards." *Library Trends* 30:2 (Fall 1981): 297-305.

Despite the title of this article, the author does not discuss archival preservation or restoration issues in any detail. For the most part the article recounts the history of recordings produced by Thomas Edison in the first third of the twentieth century.

79. ———. "Recorded Music and Re-recording Processes." *American Archivist* 31:4 (October 1968): 379-383.

This work records the author's remarks from an informal presentation in which he focuses primarily on the work of Thomas Edison rather than on sound recordings in archives or the re-recording process.

80. Wheeler, Jim. "Increasing the Life of Your Audio Tape." *Journal of the Audio Engineering Society* 36:4 (April 1988): 232-234.

The author, a representative of the Ampex Corporation, discusses appropriate storage and handling procedures for increasing the life of magnetic tape. He includes recommendations on storage procedures and storage and work climate.

81. Woodcock, Roderick, and Marc Wielage. "Laser Rot." *Video* (April 1987): 49-52.

The authors describe "laser rot" as it affects video discs and examine possible failures in the production process that may cause such deterioration. Although the article is limited to video discs and does not discuss possible problems with compact discs, archivists may find the descriptions of the problem and the manufacturing process helpful.

SUBJECT INDEX

Many of the resources in this bibliography deal with more than one subject. This brief subject index is intended to help readers identify the primary or most important subject covered by each work, not as an exhaustive list of all the subjects discussed