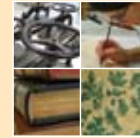




PRESERVATION EDUCATION CURRICULUM



NORTHEAST
DOCUMENT
CONSERVATION
CENTER

CLASS 3 LESSON PLAN

Structure and Deterioration of Paper-based Materials

Resources for the Teacher

General

Mills, John S., and Raymond White. *The Organic Chemistry of Museum Objects*. 2d ed. Oxford: Butterworths, 1994, pp.141–59.

This somewhat dense volume describes the principles of deterioration as they relate to collections materials.

Ritzenthaler, Mary Lynn. "Chapter 3: Nature of Archival Materials" and "Chapter 4: Causes of Deterioration." In *Preserving Archives and Manuscripts*. Chicago: Society of American Archivists, 1993.

A basic overview of the deterioration of materials found in archival collections. Covers the history of papermaking, acidic paper, types of paper, reprographic processes, inks and other media, animal skins, photographic materials, and adhesives. An excellent starting point for students.

Paper

Hoel, Ivar A. L. *Standards for Permanent Paper*. 64th IFLA General Conference August 16–21, 1998. <http://www.ifla.org/IV/ifla64/115-114e.htm>

This gives a good overview and comparison of various standards related to permanent and durable paper and describes some of the conflicts involved in specifying standards.

Hunter, Dard. *Papermaking: The History and Technique of an Ancient Craft*. New York: Knopf, 1947; New York: Dover, 1978. (Any edition is fine.)

This is still considered one of the seminal works on papermaking. Those with a strong interest in the history of papermaking will want to read the entire book; for others, scanning the chronology of events in the back of the book will give a good overview.

National Information Standards Organization (NISO). *Permanence of Paper for Publications and Documents in Libraries and Archives ANSI/NISO Z39.48-1992 (R1997)*. Bethesda, Md.: NISO Press, 1997.

The American National Standard for permanent paper. Available in full text at <http://128.8.237.133/standards/resources/Z39-48.pdf>.

Roberts, J. C. *The Chemistry of Paper*. Cambridge: Royal Society of Chemistry, 1996.

Although this book is somewhat dense, it is well worth taking the time to read. One can read the verbal explanations and ignore the chemistry and equations. It gives a comprehensive overview of paper fabrication methods as well as deterioration processes. It is written for the papermaking industry, and reading it gives some idea of the significance of libraries and archives in terms of paper production worldwide.

Shelley, Marjorie. "Warning Signs: When Works on Paper Require Conservation." In *Conservation Concerns: A Guide for Collectors and Curators*, edited by Konstanze Bachmann. Washington, D.C.: Smithsonian Institution Press, 1992.

A brief summary of the signs that indicate damage from photochemical deterioration, mold or insects, inappropriate environment, and poor storage.

For Further Study

Bower, Peter. "Blues and Browns and Drabs: The Evolution of Colored Papers." In *The Broad Spectrum: Studies in the Materials, Techniques and Conservation of Color on Paper*, edited by Harriet K. Stratis and Britt Salvesen. London: Archtype, 2002, pp. 42–48.

Goho, Alexandra. "News that's fit to print—and preserve." *Science News* 165 (January 10, 2004): 24–25.

Krill, John. *English Artists' Paper: Renaissance to Regency*. New Castle, Del.: Oak Knoll Press, 2002, pp. 1–41.

Turner, Silvie. *The Book of Fine Paper: A Worldwide Guide to Contemporary Papers for Art, Design and Decoration*. New York: Thames and Hudson, 1998, pp. 209–22.

Inks and Colorants

Ball, Philip. *Bright Earth: Art and the Invention of Color*. New York: Farrar, Straus and Giroux, 2001, pp. 24–71.

This is an enjoyable and highly informative text about the discovery and development of pigments. While the book focuses more on artist materials than on manuscript inks, many of the principles overlap, and it is entertaining enough to draw in a broad audience.

Dube, Liz. "The Copying Pencil: Composition, History and Conservation Implications."
<http://aic.stanford.edu/sg/bpg/annual/v17/bp17-05.html>

This short article describes the manufacture of copy pencils and the way they were used historically. It is particularly useful as an illustration that materials are not always what they first appear to be.

Ink Corrosion Web site. <http://www.knaw.nl/ecpa/ink/index.html>

This Web site gives a comprehensive overview of the use of iron gall ink through time, and the resulting problems. It offers historic recipes and a detailed description of the damage that results from the interaction of iron gall ink and paper.

Watercolors Web site. <http://www.handprint.com/HP/WCL/pigmt1.html#pigmenttypes>

The "Paints" section of this Web site provides information on the history and characteristics of pigments.

For Further Study

Garfield, Simon. *Mauve: How One Man Invented a Color That Changed the World*. New York: W.W. Norton, 2001, pp. 35–50; 145–46.

Mayer, Ralph. *The Artist's Handbook of Materials and Techniques*. New York: Viking Press, 1981.

Read the introduction and the chapter on pigments in any edition.

Schaeffer, Terry T. *Effects of Light on Materials in Collections*. Los Angeles: Getty Conservation Institute, 2001, pp. 35–50, 56–66, 126–31, 132–36.

Walsh, Judith, Barbara Berrie, and Michele Palmer. "The Connoisseurship Problem of Discoloured Lead Pigments in Japanese Woodblock Prints." *IPC Conference Papers*, London, 1997.

Skin Materials

Koninklijke Bibliotheek. "Overview of Leather and Parchment Manufacture."

<http://www.kb.nl/cons/leather/chapter1-en.html>

A good overview of parchment manufacture and some of the conservation issues associated with skin materials. This is worth scanning quickly.

Manning, David. "The Manufacture of Leather—Pt. 1." *J. Hewit & Sons, Ltd. Vol. 1* (Spring 1996).

<http://www.hewit.com/sd1-leat.htm>

A good overview of leather manufacture. It is from the manufacturer's perspective and thus does not go into detail about the problems with leather. This is worth scanning quickly.

For Further Study

Parkinson, Richard, and Stephen Quirke. *Papyrus*. London: British Museum Press, 1995.

Leather Manufacture—The processing of hides to make leather.

<http://www.csiro.au/resources/LeatherManufacture.html>

Pith Paper. http://www.artifacts.org/artinfo/articals/pith_paper.html

Printing and Reprographic Processes

Gascoigne, Bamber. *How to Identify Prints: A Complete Guide to Manual and Mechanical Processes from Woodcut to Ink Jet*. 1986. New York: Thames and Hudson, 1995.

This reference book identifies various printing processes.

A summary of the production of architectural drawings and the photo-reproduction techniques used from the 1870s onward.

For Further Study

Griffiths, Anthony. *Prints and Printmaking: An Introduction to the History and Techniques*. Berkeley: University of California Press, 1996.

Kissel, Eleonore, and Erin Vigneau. *Architectural Photoreproductions: A Manual for Identification and Care*. New Castle, Del.: Oak Knoll Press, 1999.

Nadeau, Louis. "Office Copying and Printing Processes." From *Guide to the Identification of Prints and Photographs: Featuring a Chronological History of Reproduction Technologies*, 2002. <http://palimpsest.stanford.edu/byauth/nadeau/copyingprocesses.pdf>

Rhodes, Barbara, and William Wells Streeter. *Before Photocopying: The Art and History of Mechanical Copying: 1780–1938*. New Castle, Del.: Oak Knoll Press, 1999.

Photographic Materials

Fischer, Monique. "Creating Long-Lasting Inkjet Prints." <http://www.nedcc.org/resources/leaflets/5Photographs/04InkjetPrints.php>

Lavedrine, Bertrand. "Chapter 1: The Vulnerability of Photographs." In *A Guide to the Preventive Conservation of Photograph Collections*. Los Angeles: Getty Conservation Institute, 2003, pp.3–29.

This recent, comprehensive guide to the care of photographic collections provides a thorough presentation of the preservation issues associated with photographic materials. Chapter 1 summarizes the types of deterioration associated with various photographic materials.

Reilly, James M. *Care and Identification of 19th-Century Photographic Prints*. Rochester, N.Y.: Eastman Kodak Co., 1986.

A classic resource to assist in identifying component materials and print processes, and in determining the stability of various types of photographic prints.

Ritzenthaler, Mary Lynn, and Diane Vogt O'Connor, with Helena Zinkham, Brett Carnell, and Kit A. Peterson. *Photographs: Archival Care and Management*. Chicago: Society of American Archivists, 2006.

Addresses photographic collections from the archival perspective, including the history of photography, preservation issues and techniques, interpreting photographs, legal issues, digitizing, and using photographs in outreach and educational efforts.

For Further Study

Coe, Brian, and Mark Haworth-Booth. *A Guide to Early Photographic Processes*. London: Victoria & Albert Museum, 1983, pp. 9–29.

Rosenblum, Naomi. *A World History of Photography*. 3d ed. New York: Abbeville Press, 1997.

Vernallis, Kayley. "The Loss of Meaning in Faded Color Photographs." In *Journal of the American Institute for Conservation* 38 (1999): 459–76.

Must be read in the original journal, since color is critical.

Books/Bindings

Diehl, Edith. *Bookbinding: Its Background and Technique*. New York: Dover Publications, 1980.

A very detailed overview of the historical development of bookbinding, as well as techniques used in hand bookbinding.

Greenfield, Jane. "The Nature of Books." In *The Care of Fine Books*. New York: Lyons and Burford, 1988.

A basic introduction, with illustrations, to the structure of the book and the history of bookbinding.

For Further Study

Foot, Mirjam M. *The History of Bookbinding as a Mirror of Society*. London: British Library, 1998.