

Commentaries & Case Studies

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The Commentaries and Case Studies department is a forum for sharply focused archival topics that may not require full-length articles. Commentaries and Case Studies articles generally take the form of analyses of archivists' experiences implementing archival principles and techniques within specific institutional settings, or short discussions of common theoretical, methodological, or professional issues. Members of the Society and others knowledgeable in areas of archival interest are encouraged to submit papers for consideration. Papers should be sent to Managing Editor, the *American Archivist*, Society of American Archivists, 600 S. Federal, Suite 504, Chicago, IL 60605.

In this issue, Roger Jones reports on a study by the North Carolina State Archives examining the Barrow processes after nearly forty years of use and suggests how archivists can check the reliability of past preservation efforts in their holdings. Howard Lowell discusses the purposes of state archives, while Dale Stirling explains a national survey of Alaskan archival materials. A discussion of the key factors in the selection and arrangement of items in an exhibit emphasizes the effectiveness of displaying archival materials. And, finally, Penny Page briefly describes a collection of alcohol-related materials.

Barrow Lamination: The North Carolina State Archives Experience

ROGER JONES

In the mid 1970s doubts arose about certain document conservation practices that generally had been accepted for many years within the archival profession. These uncertainties focused on the techniques of lamination (and, to a lesser extent, deacidification of paper records) that had been developed by William J. Barrow, a pioneer in the field of docu-

ment conservation. These doubts were discussed in print, at national and regional professional gatherings, and through the regular and informal contacts that naturally exist among archival institutions. Consequently, a number of archival agencies that had extensively employed Barrow lamination began to adopt alternative methods of conservation and

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dramatically reduce their use of lamination or abandon it altogether.¹

The North Carolina State Archives was not deaf or unresponsive to these concerns, particularly since it had been one of the first archival institutions to adopt and employ the Barrow lamination technique. The agency made an effort to collect up-to-date information about current conservation technology and particularly to gather data that was critical of the Barrow process. Although this information proved to be rather vague, concern within the state archives over these issues led to an internal review and modification of the conservation program. This self-examination resulted in more careful screening and selection of documents to be laminated, and renewed vigilance over the monitoring of the deacidification process. While conservators started using the newly developed technique of encapsulation in addition to lamination, the latter process continued to be extensively employed by the agency.

By the early 1980s it became increasingly apparent that the trend to abandon Barrow lamination was growing and that the North Carolina State Archives was in a decided minority with respect to its conservation methodology. This realization, reinforced by concerns expressed by the North Carolina Historical Records Advisory Committee in a needs assessment report,² prompted the decision to undertake a more intensive evaluation of the agency's past and present conservation efforts. In 1983 a study team consisting

of Roger Jones, head of the Technical Services Branch, and Ray Hocutt, chief conservator of that unit, was appointed. David Olson, State Archivist of North Carolina, supervised the project.

The conservation study began with a brief historical review of the agency's involvement in document repair and restoration. It was noted that when the archives began to employ the Barrow deacidification-lamination technique in 1950, the process represented the state of the art in the conservation field, and that it maintained that unchallenged position for more than two decades. The criticisms of the Barrow process were reexamined.

In the search for information on this subject the study team made liberal use of George and Dorothy Cunha's two remarkably comprehensive bibliographies on conservation.³ A conscientious effort was made to identify and examine all pertinent sources cited in these works. The agency also applied to the Library of Congress, the National Archives, and the Society of American Archivists for assistance in gathering information, and searched three computerized data bases available through the North Carolina State Library.

This extensive research supported the conclusion that doubts about the Barrow process originated in the Preservation Research Office of the Library of Congress. These doubts were first expressed in a summary of the activities of the Preservation Research Office that appeared in the January 1973 issue of the *American Ar-*

¹The North Carolina State Archives does not suggest that there had been no questions raised about the lamination and deacidification of paper records prior to the mid 1970s. During the 1950s a number of concerns about lamination were expressed in the *American Archivist*. These concerns, however, related to lamination as practiced in the National Archives, which utilized equipment and procedures quite different from those that Barrow had developed. See, for example, Robert W. S. Turner, "To Repair or Despair?" *American Archivist* 20 (January 1957): 319-34, with comments on Turner's article by James L. Gear, 329-34.

²*Archives and Records Programs and Historical Records Repositories in North Carolina: An Analysis of Present Problems and Future Needs* (Raleigh: North Carolina Historical Records Advisory Committee, 1983), 22-24.

³George Martin Cunha and Dorothy Grant Cunha, *Conservation of Library Materials: A Manual and Bibliography on the Care, Repair and Restoration of Library Materials*, 2nd ed. (Metuchen, N.J.: Scarecrow Press, 1971-1972), vol. 2; George Martin Cunha and Dorothy Grant Cunha, *Library and Archives Conservation: 1980s and Beyond* (Metuchen, N.J.: Scarecrow Press, 1982-1983), vol. 2.

chivist. The summary indicated that, among other projects, the office was investigating alternatives to lamination because of "evidence that this process is not without some harmful effects caused partly by the heat required for lamination. . . ." ⁴ Subsequently, Frazer G. Poole, then Assistant Director for Preservation for the Library of Congress, authored an article enlarging upon this subject, which was published in the April 1976 issue of the *American Archivist*.

Prior to its publication, the substance of this article appeared in an untitled report or memorandum, credited to Poole, that was circulated by the Library of Congress. The North Carolina State Archives received its first copy of this report in January 1975, in response to an inquiry about conservation practices in the Library of Congress. A second copy, varying slightly, accompanied some information on encapsulation requested by the archives from the Library of Congress later that year.

It is difficult even now to credit so slender and brief an article with precipitating the distrust that ultimately resulted in the partial discrediting of the Barrow process. The report consisted of broad observations, undocumented generalizations, and inferential statements. No hard data was included nor cited. Although Poole never characterized his text as a formal scientific treatment of the subject, from the vantage point of the 1980s, it seems that many archival institutions in this country took it to be exactly that.

Poole's article, entitled "Current Lamination Policies of the Library of Con-

gress," began with the statement that the library had abandoned lamination "in favor of techniques which are much less damaging. . . ." ⁶ It was—and still is—the opinion of the North Carolina State Archives that the exposition that followed did not adequately address the issue of damage and did not substantiate the charge that the Barrow process was harmful.

Poole's criticisms of the Barrow deacidification-lamination process were, essentially, four: (1) he was critical of the "commonly used" single-solution deacidification procedure; ⁷ (2) he declared with certainty that Barrow's guidelines for monitoring the effectiveness of aqueous deacidification solutions had not been consistently applied in conservation laboratories throughout the country; (3) he expressed the belief that the heat of the lamination process could result in document deterioration; and (4) he stated that the lamination process could not easily be reversed.

The first criticism had no relevance to the North Carolina State Archives, as the agency had never employed the single-solution deacidification procedure. The archives is not aware, however, that the magnesium carbonate (or magnesium bicarbonate) procedure was ever commonly used. In any event, Poole cast considerable doubt upon the validity of his observations about the process by making a glaring error in his description of the chemical formulation prescribed by Barrow. ⁸ In a subsequent issue of the *American Archivist*, Poole acknowledged this error but still insisted that the low con-

⁴"Technical Notes," *American Archivist* 36 (January 1973): 84. This summary did not specify which lamination process was being investigated. It should be noted that here and elsewhere in professional literature there has been a general carelessness in distinguishing between the Barrow process and other forms of lamination.

⁵Frazer G. Poole, "Current Lamination Policies of the Library of Congress," *American Archivist* 39 (April 1976): 157-59. Poole's article clarified that it was the Barrow process that was under investigation.

⁶Poole, "Current Lamination Policies," 157.

⁷Ibid.

⁸Ibid. The two gram per liter of water concentration of magnesium carbonate that Poole inaccurately de-

centration of magnesium that he described was in "general use" and was ineffective.⁹ It is the opinion of the North Carolina State Archives that this latter statement further weakened Poole's argument, since it confused the process with its misapplication.

With regard to the second criticism, the state archives can only say that it has always attempted to follow all the instructions that Barrow gave. It should be noted, again, that misapplication of a process does not constitute grounds for an indictment of the process itself, although the manner in which Poole presented this criticism in his article seems to suggest that it does. In addition, the author did not explain how he gained his certain knowledge of the lack of consistent application of Barrow's guidelines.

The third criticism, which raised the possibility of deterioration of documents from the heat of the laminator, was the most alarming. Poole, however, supplied no data to support his contention, and the only physical evidence he cited was an observable change in the coloration of certain documents that had been laminated—a phenomenon that, unsupported by other evidence, cannot be construed as

a positive indication of deterioration. Poole further clouded his argument by stating with certainty, within the same paragraph, that one cause of deterioration of laminated documents was ineffective deacidification, and he suggested that inferior laminating materials might be contributory, but neither of these points was successfully related to the issue under discussion—the heat of the laminator. Moreover, Poole did not dispute, or even acknowledge the existence of, test data on the subject of lamination heat that did not support his assertion.¹⁰

The final criticism, which concerned reversibility, placed laminated documents at a disadvantage compared to encapsulated records—an evaluation that was certainly fair. Poole chose to characterize de-lamination as difficult. Its difficulty is a matter for debate; it is important to note, however, that it can almost always be successfully accomplished. (Poole did not speculate on why one would wish or find it necessary to de-laminate a document.)

The North Carolina State Archives devoted much scrutiny to this article by Frazer Poole because it apparently presented the first and only significant chal-

scribed for the Barrow "one-shot method" is actually less than one-tenth of the amount Barrow recommended.

⁹"The Forum," *American Archivist* 40 (January 1977): 159.

¹⁰The reports cited below support the conclusion that the act of laminating neutral pH paper produces no significant physical change in or deterioration of the paper. Accelerated deterioration occurs only when highly acidic papers are laminated, the degree of deterioration being proportionate to the amount of acid present. This degeneration, however, appears to be due to a chemical interaction between the acid in the paper and the laminating film rather than simply the result of heating the composite. Of the most recent treatments of the subject, the work of Cynthia C. Bright and David A. Roberson appears to be the most thoughtfully conceived and thorough. Their investigations were recorded in "A Report to the W. J. Barrow Restoration Shop, Inc.: Effects of Cellulose Acetate-Tissue Lamination on Paper" (unpublished report, W. J. Barrow Research Laboratory, Richmond, 1974), and in "A Supplement to the Report of October 17, 1974, to the W. J. Barrow Restoration Shop, Inc.: Effect of Cellulose Acetate-Tissue Lamination on Paper" (unpublished report, W. J. Barrow Research Laboratory, Richmond, 1974). Among the older sources, the research of William K. Wilson and B. W. Forshee, as reported in *Conservation of Documents by Lamination* (Washington, D.C.: National Bureau of Standards, 1959), remains of interest. This monograph was among the first to caution against the lamination of paper of high acid content, while stating that acid-free paper was unaffected by the process. Additional information on this subject can be found in W. J. Barrow's *Manuscripts and Documents: Their Deterioration and Restoration* (Charlottesville: University of Virginia Press, 1955), 58–60. The author discusses the physical properties of a laminated sheet and reports on a battery of tests designed to measure the folding endurance of various papers that were artificially aged. His data support the contention of Wilson and Forshee that the lamination process presents a problem only when it is employed on paper with high acid content. The data also suggest, indirectly, that lamination does not adversely affect neutral pH paper.

lenge to the Barrow process and because the study team concluded that a careful examination of such critical assertions was an essential step in placing the agency's concerns into perspective and in determining the scope and focus of the investigation of its conservation efforts. Pursuant to this examination, the archives wrote to the Library of Congress to inquire whether Poole's article had appeared elsewhere in a fuller form, or, if not, whether he had accumulated unpublished information that supported his contentions. The reply indicated that no such supportive data had been generated, or at least that none was known to exist.¹¹

Regardless of its opinions about the quality and value of Poole's assessment, the North Carolina State Archives had never totally dismissed or ignored the issues he raised. During the years following the publication of the 1973 article, the agency has been watchful for any evidence of the deterioration about which he wrote. This vigilance was intensified during the recent conservation study.

Having reviewed the controversy and refined its own perspective, the archives considered ways in which its conservation efforts could be evaluated. Given the large volume of records laminated by the agency, it was obvious that a comprehensive survey of the collection would require a massive and time-consuming effort. (Indeed, having deacidified and laminated more than two million pages over the last thirty-five years, the North Carolina State Archives may have employed the Barrow process more extensively than any other institution in the country.)

Faced with this difficult situation, the study team decided to initially examine laminated documents selected at random. From this examination, a number of records would be chosen, identified, and

tested for levels of acidity. The goal of the survey was to provide preliminary information necessary for determining the need for and direction of further investigations.

The study team then spent several days in the stacks of the state archives examining a great variety of records of differing ages and paper compositions. Although no numbers were recorded, hundreds of documents were examined in this random fashion. None of these documents exhibited obvious signs of physical deterioration. No brittleness was evident, and all laminates appeared to be supple and flexible.

From among these hundreds of documents, thirty-four records were selected for acidity testing, one document from each year the agency had employed Barrow lamination. By intention the test sample included documents of varying ages, ranging over as wide a span of time as possible. Records from four centuries were included, the oldest dating from approximately 1680 and the most recent from 1920. Also by intention, the sample group included the work of as many conservators as could be identified. Altogether, the work of thirteen of the sixteen conservators employed by the archives was included.

Information about each selected document was precisely recorded, including a title description, shelf number, and, in the case of volumes, page number. The approximate date of the creation of the record and the year that the conservation work was performed were noted, as was the conservator. Careful identification ensured that the test samples could be retrieved with ease so that the documents could be reexamined and the acidity test verified or repeated.

Each sample received a second, careful physical examination. As before, there

¹¹Author's telephone conversation with Chandru Shahani, research officer, Preservation Research and Testing Office, Library of Congress, October 1984.

were no obvious signs of deterioration. Each document was then subjected to a colorimetric measurement of its level of acidity and the readings were recorded. The average acid level of the samples was a pH of 7. All samples fell within a desirable pH range, the lowest-rated samples indicating a pH of 6.8 and the highest-rated a pH of 7.4. There was no significant variation in pH readings with respect to the age of the laminate. The earliest laminated document, processed in 1950, exhibited a pH of 6.8; the most recent, from 1983, indicated a pH of 7. Nor was there any significant variance in pH levels between the oldest document, created in 1680, and the newest, from 1920. Both showed pH readings of 6.8. No pattern of difference was observed in the work of the thirteen conservators who had performed the work. All of the treatments appeared to be successful, and the work of one conservator was indistinguishable from that of another.

The North Carolina State Archives recognizes that the information obtained from the acidity test has limited value. Although the test results suggest that these documents remain stable, the exact effects of deacidification and lamination on the sample documents remain problematic since no precise physical measurements were made of these papers before they were subjected to the Barrow process. Nor does the agency make any extravagant claims about the exhaustiveness of this survey; its limitations are self-evident. Much of the examination was subjective, and the size of the test group hardly constitutes an adequate sampling of the agency's collection. Despite these limitations, however, the archives notes that this test sample is the largest that has been reported in print to the profession in recent years.

In support of the results of this modest investigation, the North Carolina State Archives can state that, throughout the

years that it has employed the Barrow technique, it has never discovered a deacidified-laminated document that has exhibited brittleness or any other noticeable form of deterioration. The agency freely admits that this statement, too, is manifestly subjective. Nevertheless, given the volume of records laminated, this statement may be more meaningful than any of the test data presented. The agency takes the position that the perception of experienced archivists is of considerable value, and for many years the staff in Raleigh has handled thousands of laminated documents. The fact that these archivists have never reported an incidence of the problems cited by critics of the process cannot be discounted.

The study team summarized its findings and presented them to the State Archivist of North Carolina in June 1984. The report circulated within the agency and prompted an increased awareness of conservation considerations among staff members. Since that time the study team has continued its investigations and discussions of document conservation. These discussions resulted in the decision to make the agency's findings available to fellow professionals. This article is the product of that decision.

In summary of its position, the North Carolina State Archives sees no reason to abandon Barrow lamination. The agency believes that the process remains a viable conservation technique when properly applied. The archives bases this judgment upon its own experience and upon the fact that no evidence sufficient to disprove the validity of the process has been forthcoming.

The North Carolina State Archives does not consider itself an advocate for lamination. The agency also stoutly resists assuming the burden of validating or invalidating the technique. The process was, after all, developed by W. J. Barrow within full view of the archival profes-

sion. Much of his research was conducted in collaboration with the National Bureau of Standards (now the American National Standards Institute). Other national institutions, if not actual contributors, were certainly witnesses to his work. The North Carolina State Archives takes the position that if indeed the Barrow deacidification-lamination procedure requires reconsideration, the investigation should be undertaken at the highest levels within the profession. It should be pursued fully and openly by those institutions that have the resources for such an examination and are in a position to assume national leadership.

The North Carolina State Archives also believes that a number of factors unrelated to the specific question of the validity of conservation procedures are contributing to the current state of confusion about the subject. Prominent among these is the fact that the majority of conservators now entering the profession are products of training programs in fine arts restoration. These new conservators bring to their work an undoubtedly superior and welcome degree of knowledge and skill. The North Carolina State Archives, however, questions whether all aspects of the fine arts approach to conservation, with its emphasis on handcraft restoration, are necessary or even appropriate to archival conservation.

The archives readily acknowledges as an obvious fact that those documents that have great historical significance or possess high monetary value merit the very best professional care and individual attention. The agency believes that it is equally obvious that the vast majority of the holdings of archival institutions do not fall into these categories. To return document conservation to the level of a handcraft would make it very difficult

for archivists to meet the challenge of preserving the huge quantities of deteriorating paper records with which they are typically entrusted. The agency agrees with the observation of Howard Lowell, State Archivist of Oklahoma, who recently stated that "no state archives can afford a restoration program like those for the restoration of art and works-of-art on paper."¹²

The North Carolina State Archives is further concerned that controversy and confusion over conservation methodology may be diverting attention from the issue that is rapidly developing into the most pressing challenge facing the archival profession today—the imperative need to concentrate on developing comprehensive preservation programs. North Carolina's state archives certainly believes that during the next decade the focus of its own efforts must, of necessity, shift toward an emphasis on the preservation of information and away from preoccupation with conserving paper artifacts.

Finally, the North Carolina State Archives feels that W. J. Barrow's reputation has been poorly served in the recent controversy. Barrow was a true pioneer in the field of paper conservation. He, more than any other individual, was responsible for identifying the causes of document deterioration and bringing them to the attention of the archival profession. He, in major part, was responsible for developing the first practical method of arresting and remedying this deterioration. Even the recent advances in conservation technology have developed along lines of research he charted. Personal knowledge of the man suggests that, should his process be superseded, he would be the first to applaud and embrace any improvements.

¹²Howard P. Lowell, *Preservation Needs in State Archives* (Albany, N.Y.: National Association of Government Archives and Records Administrators, 1986): 31.