

In Memoriam

WILLIAM J. BARROW, 1904-1967

Bill Barrow had planned to publish another of his valuable technical papers in this issue of the *American Archivist*. As of August 3 we had not received the new paper, and on that date we wrote Bill about it. There was no reply, and 3 weeks later he was dead. In the space we had reserved for his paper we print, with permission, the following press release (no. 247) of the Council on Library Resources:

Libraries and archives and all who depend on them lost one of their most effective collaborators in the sudden death from a heart attack on August 25, 1967, of William J. Barrow, documents restorer by profession and Director of the W. J. Barrow Research Laboratory, Richmond, Virginia.

Mr. Barrow's name will continue to be associated with the cylindrical laminator which he invented for use in the restoration of documents, with the Barrow process for deacidification of paper as an essential part of the restoration process, with the demonstration of the actual facts of paper stability over the past four centuries, with the development of a permanent/durable book paper marketable within the price range of commercial book papers, and with other notable investigations connected with paper and ink, over a period of some thirty years.

Mr. Barrow was born on December 11, 1904, in Brunswick County, Virginia, the son of a physician, Dr. Bernard Barrow, and Sallie Virginia Archer Barrow. He graduated from Randolph-Macon Academy in 1923 and attended Randolph-Macon College, 1923-5. In 1932, in the course of research into family records, he became interested in document preservation. Encouraged by Dr. R. H. McIlwaine, who as State Librarian of Virginia felt the need of scientific attention to this matter, he prepared himself by taking instruction in bookbinding and by observing at the Library of Congress the methods of document restoration then in vogue which left much to be desired in meeting alarming problems of deterioration. Dr. McIlwaine gave him workshop space in the Virginia State Library where he undertook assignments in document restoration.

His reputation soon spread, and he was invited to establish a larger workshop at the Mariners' Museum in Newport News. While there he developed his cylindrical press for laminating documents with cellulose acetate foil which had earlier been found suitable for this purpose by the National Bureau of Standards. For this development he has received international recognition. In 1936, for example, he was elected a Fellow of the Royal Society of Arts, London, and his laminators have been installed in principal libraries and archives around the world, including the Library of Congress, British Museum, Bibliothèque National, Paris, and the national archives of France and Belgium. (One of his laminators is currently on the way to India, where he was planning to supervise its installation next Fall.)

Back at the Virginia State Library in Richmond (where he operated the document repair shop until his death), Mr. Barrow continued to improve his process. An early development was intended to strengthen laminated documents. Because cellulose acetate tears very easily, he added sheets of fine strong tissue to the laminate sandwich.

The next improvement was of focal importance, not only for lamination but for all subsequent developments. Mr. Barrow began to wonder what would happen to the documents that he was laminating; he reasoned that the progressive deterioration that had made lamination necessary would continue despite lamination. This reasoning stimulated him to investigations that convinced him of the principal role played by acidity in the deterioration of paper. As a result, in the years 1940-1945 he developed his deacidification process using solutions of calcium hydroxide, calcium bicarbonate and/or magnesium bicarbonate as an essential part of the restoration process. This

technique was validated by the National Bureau of Standards in 1957 after the unfortunate experiences of some repositories had shown that lamination by itself is insufficient to assure preservation.

In the ensuing years Mr. Barrow lost none of the many opportunities which came his way to study old papers and inks and to publish his findings when he could find the leisure. Among other things he discovered how to deacidify documents with water-soluble inks, and he invented a process of ink-lifting whereby the actual print (or other writing) can be lifted from the surface of deteriorated paper and transferred to new strong paper. The Library of Congress has availed itself of this technique for a number of important books.

By 1957 Mr. Barrow had developed a number of hypotheses regarding the causes and cures of paper deterioration and was anxious to test them. In that year, in an investigation sponsored by the Virginia State Library with funding from the Council on Library Resources, he was given the opportunity to ascertain by the careful testing and measurement of 500 books for the period 1900-1949 just what happened to book-paper in the 20th century. He found that the most alarmist views of deterioration were not exaggerated; that the paper in the average book of 1900-1910 retained only 4% of what is supposed to have been its initial strength and may be expected to be unusable by the year 2000; that paper in books even in 1940-49 had already in 1957-58 lost 64% of the initial strength; that the principal culprit for this deterioration was not, as commonly thought, polluted industrial atmosphere (although this plays a minor part) but manufacturing processes.

Accordingly, in a second investigation undertaken for the Virginia State Library in 1959, Mr. Barrow set out to discover whether a paper could avoid these processes and still be manufactured economically. His inquiry was successful; the result was a "permanent/durable" book paper made from chemical wood pulp but having an expectation of longevity comparable to that of the fine book papers of the past, yet still within the normal price range. A number of paper manufacturers are now offering papers which to greater or lesser degree meet the Barrow specifications.

Of these two investigations the Council on Library Resources said in 1960: "The results of these two projects, even if they should go no further than they have gone to date, may be regarded as constituting a remarkable achievement. A solitary worker—in this day of group research—unconnected with the complex technology and economics of paper manufacture and use, save as his interest in the subject was stimulated by his activities in document restoration, has in the short space of three years been able to concentrate attention on the causes of paper deterioration, to identify the principal target for attack, and to succeed in providing a feasible solution—commanding the respect of the experts—to a problem which has been for three quarters of a century one of the most stultifying and baffling that libraries have faced."

Up to this point, most of Mr. Barrow's work had been achieved with the meager facilities of his repair shop in the Virginia State Library. It was obvious that he should be better equipped. In consequence, in 1961, with assistance from the Council on Library Resources, he took advantage of the hospitality of the Virginia Historical Society to construct in its building a paper testing laboratory employing the most exacting controls of temperature and humidity, and devoted exclusively to problems of preservation of library materials. There with a small staff he has carried out a series of important investigations for the Council the results of which have been reported in a series of publications entitled "Permanence/Durability of the Book." Among these have been an investigation of methods for deacidification of entire books (as contrasted with deacidification of separate pages), development of methods for predicting the longevity of adhesives suitable for "perfect" binding and the selection of suitable adhesives for this purpose; investigations of what happened to book papers from 1900 back to the 16th century; and the effect of storage temperature upon the permanence of paper. In addition, the Laboratory undertook the experimental work toward developing performance standards (and the necessary testing devices) for library book

binding on behalf of the American Library Association. Another investigation has led to improvement of the stock used for library catalog cards.

At the time of his death Mr. Barrow was, in addition to the regular work of the Laboratory, seeing two publications through the press. He had just returned from England, where, on behalf of the American Library Association, he had been consulting with British paper manufacturers in an effort to assure a permanent/durable paper for the forthcoming 610-volume publication of the National Union Catalog; and he was conducting some experiments in combined resizing and deacidification in connection with the restoration work in the flood-damaged libraries of Florence.

In addition to an intense curiosity with regard to matters of everyday experience, Mr. Barrow had a genius for experimentation and investigation. Several of the investigations in which he came to useful conclusions were said on good authority to be "impossible." Thus it was not thought possible to make useful predictions of the longevity of polyvinyl acetate adhesive in the absence of a record of natural aging. Mr. Barrow found ways for substituting for the natural experience. Similarly with the effect of storage temperature on paper longevity: changes in paper stored at room temperatures or below are ordinarily too slow to be observable within available time limits. Mr. Barrow found ways to accelerate them. His scientific training was admittedly meager, but he was careful to secure the advice of specialists in the planning and evaluation of his experiments. At bottom, however, his success derived from the accuracy of intuitions based on an instinctive feeling for materials and processes, reinforced by years of intelligent observation.

In addition to these qualities, Mr. Barrow's affability and readiness to assist won him friends on five continents. Even when compelled to refuse his refusal was a courtesy.

Mr. Barrow's career was compressed by *Publishers' Weekly*—in the title of an article which it published in April 1966 on the Barrow Laboratory—into the single phrase, "The Thirty Years That Revolutionized Paper."

Mrs. Ann M. Carlton, who collaborated with Mr. Barrow in writing "Durability of Three Current Laminating Tissues" for our July issue, informs us as we go to press that the promised companion article, "Permanence of Laminating Tissue," is indeed ready. We plan to publish the new paper in our issue of January 1968. Thus will continue the dissemination of the Barrow findings. The experimentation prerequisite to such findings, we must believe, will also go on. In the words of an editorial in the *Richmond Times-Dispatch* of August 29: "It is to be hoped that, despite Dr. Barrow's sudden passing, the laboratory and its valuable experiments can somehow be continued. William J. Barrow was a dedicated man, and it seems safe to say that he would have wished the work to go on. To it he devoted more than three decades of his life. As a result of it, he became one of the most widely honored Virginians of his generation."

Bill Barrow is survived by his wife, Ruth Gibbs Barrow; his mother, Sallie Virginia Archer Barrow; three sons, Bernard Gibbs, William Archer, and James Abbott Barrow; a sister, Sarah Barrow Davey; and two grandchildren. They and we shall miss him.

KEN MUNDEN