

Archives Section: Standing Committees:

COMMITTEE ON THE CONSERVATION OF WRITINGS

REPORT

2 June, 1970

INTRODUCTION

This Committee grew out of recommendations contained in the chairman's paper as published in the Canadian Archivist 1969 pp. 9 ff. republished in Records Management Quarterly Volume 4 No. 1, January 1970, pp. 15 ff.; and in In-Plant Reprographics Volume 1, Number 4, February 1970, pp. 9 ff. This report aims at bringing together some developments since May, 1969.

Persons who have participated on the Committee include Mr. David Rudkin of the PAC; Mr. Warren Mizener of the PAC; Mr. Mel Starkman of the University of Toronto Archives; Mr. R. Roche of the PAC and the Chairman, John Andreassen of McGill University Archives. Others who have attended some meetings of the Committee or have contributed to its work include: C.C.J. Bond of the PAC; J. W. Howard of the PAC; J. Pidek of the National Library; Ian Wees of the National Library; and Mr. Al Taylor of the PAC and National Library. McGill University representatives on a related problem who have made contributions include Mr. Keith Crouch, Director of Libraries; Mrs. I. M. B. Dobell of the McCord Museum; Mrs. E. Lewis of the Rare Books and Special Collections, McLennan Library; Miss Ellen Wells of the Osler Library. Mr. Emrys Evans of the Rare Books Department, University of Toronto also took part. The National Librarian, Mr. J. G. Sylvestre, and the Acting Dominion Archivist, Dr. W. I. Smith, gave of their time and counsel at various stages of the committee's work.

Several meetings were held in the Public Archives of Canada, one at the University of Toronto and several at McGill University.

THE PROBLEM

Basically, the problem archivists, librarians, museologists and records administrators face is that the media on which we have placed information of some consequence to the present and the future has self-destruct characteristics and/or is subject to pollutants and environmental conditions which can only speed up the deterioration of those media. The problem breaks itself down into two major parts: a) what can we do about the great body of writings on various media created since 1850, and b) what can we do about providing better media, and eliminate pollutants and bad environment in future?

#### CURRENTLY AVAILABLE SOLUTIONS TO THE PROBLEM

- a) Microfilming of groundwood papers and "brittle books".  
De-acidification, strengthening and lamination of sheet materials.  
Reprinting of important brittle books.
- b) Use permanent/durable papers for printing of research publications.  
Use permanent/durable papers, board, etc., for records required to be kept permanently.  
Provide an appropriate environment for records on any type media.

There is little question that with present concentrated attention on this problem, better, more economical ways of doing some of the things which must be done will either evolve or come in some scientific or technological "breakthrough". This hardly seems reason to put off the preservation of materials now in custody or the establishment of a source of supply of permanent/durable recording media and for the introduction of better environmental standards.

One of those technological breakthroughs may well be the substitution of some plastic for paper which must be retained as a permanent record.

#### WHAT ARE THE REASONABLE PRIORITIES?

Your Committee has considered that the most important step to be taken is to make sure that the problem is brought to the attention not only of those who have a real responsibility for doing something about it but of making it better known to the general public. It is all very well for an archivist to talk to archivists. What we need is more archivists who talk and write for non-archivists. Publication of last year's statement in three different journals was one step in this direction. Perhaps the best popular summary of the problem and its present possibilities of solution was David G. Lowe's article on "The Case of the Vanishing Records" in American Heritage, The Magazine of History, Volume XX, Number 5, August 1969, pp. 34 ff.

If we are to get the story across in the places where it counts most, it will have to be done through the adoption of reasonably adequate performance standards for raw and processed microfilm; for permanent/durable papers; and for environmental factors in the retention of records whatever the media used. There are many other media which call for the development of Canadian performance standards as well; e.g., motion picture film, audio and audio-visual tapes; the microfilm product of COM systems; photographic film and papers; computer tapes, etc., to mention only a few. Only if the Federal Government which has the basic responsibility for setting such standards follows through and buys its permanent record media requirements according to appropriate permanent/durable performance standards will the provincial, municipal, special taxing district agencies benefit, will the corporate and institutional bodies reap a benefit at an economic cost.

Your committee recognizes one other high priority involving microfilm, but it is being worked on by committees of other organizations such as ARMA and the Canadian Micrographic Society. This involves changing the Federal and the provincial Evidence acts so that microfilm records can be accepted as primary evidence, without clearing almost every use of

microfilm with anything up to a dozen different Federal and provincial agencies, by records series filmed, in advance.

#### PERFORMANCE STANDARDS DEVELOPMENTS

##### Microfilm

The Canadian Government Specifications Board's Committee on Microfilming in 1964 prepared and obtained issuance of Specification for 35 MM Microfilming of Engineering and Architectural Drawings 72-GP-1a, 10 April, 1964. Mr. Al C. Taylor is currently head of that Committee and represents both the National Librarian and the Dominion Archivist. During the past year, this Committee on Microfilming has been reorganized and working sub-committees have been set up to delve into three areas: automation; engineering and library standards. Two additional Public Archives staff members serve on the parent Committee, Messrs. W. D. Wheeler and Roy St. Jean, and three other staff members are on the sub-committees. Mr. Taylor expects to have additional standards for microfilm on paper in September-October, 1970. Only representatives of Federal agencies were on the main Committee in the list accompanying the 1964 Specification.

Note should be made of the fact that a meeting of the International Standards Organization (IS) Committee TC 46/SC 1 was held in Paris, France, on March 9 - 13, 1970. A report will probably appear in the Micro-News Bulletin.

##### Permanent/durable Papers

The Canadian Government Specification Board's Committee on Printing and Writing Papers has prepared and obtained issuance of three different standards in recent years, pertinent to your committee's assignment.

Standard for Paper, Bond 9-GP-1b, 19 April 1968, 6 pp.

Standard for Paper, Ledger, 9-GP-41, 14 March 1969, 6 pp.

Standard for Paper, Index Bristol, 9-GP-37, January 1970, 6 pp.

These standards call for a pH of 4.8 or higher. It is our understanding that papers with a pH of 6.7 or higher indicates a neutral or alkaline paper, cold extract. So, to begin with, these specifications would hardly be acceptable if what we really need and must have for permanent/durable papers is a neutral or acid-free paper.

At the time of issuance of the 1970 standard, the Committee on Printing and Writing Paper consisted of 27 members and the Standards Officer of the Canadian Government Specifications Board, Mr. D. L. Bova. Ten of the 28 members represented paper manufacturers. The Dominion Archivist was not represented.

Subsequently, Mr. David Rudkin of the PAC, a member of your Committee, has been asked to serve on the Committee on Printing and Writing Paper of the Canadian Government Specifications Board. Your Committee hopes that he will be influential in future in improving the existing standards and that he will give high priority to the issuance of an acceptable standard for a permanent/durable "Manifold Paper" (the paper on which we keep carbon copies).

In the talks and the exchanges of correspondence between Mr. David

Rudkin, the PAC and the Canadian Government Specifications Board, it was decided that the Advisory Council on Public Records established under P. C. 1966-1749, might be the best means to urging the necessary permanent/durable paper standards. Mr. Jay Atherton, Head, Public Records Section, PAC, and a member of the Advisory Council under its general authority to "consider and make recommendations to the Dominion Archivist concerning all matters respecting public records referred to it by any member of the Council or the Treasury Board".

#### Permanent/durable Library Card Stock

A third committee of the Canadian Government Specifications Board, the Committee on Library Catalogue Cards has also prepared and had issued Standard for Card, Index: Library Cataloguing (For Permanent Use), 53-GP-106, 10 January 1969, 4 pp. plus Amendment No. 1, 22 May, 1969, 1 p.

This committee at the time the standard issued consisted of nine members and the Standards Officer, D. L. Bova. Representatives of the National Science Library, the National Library and the Canadian Library Association served on the Committee. The "pH value of the cold extract of the cards shall be not less than 6.0".

#### AIR POLLUTION CONTROLS

Your Committee has kept a watchful eye on attempts to control air pollution, particularly in Montreal, Toronto and Hamilton. Philips Electronics Industries, Ltd., Toronto, recently (11 November 1969) announced the installation of a sensing system in the heavily industrialized region near Rotterdam. Some 31 sensors are tied in through telephone lines with a central computer. The sensors use the coulometric system of determining the level of sulphur dioxide in the atmosphere. SO<sub>2</sub> is used as the tracer, although other contaminants are present. The sensors operate for three months without attention. Our concern has been to determine whether something of a similar character for installation inside buildings where writings are kept could be made available. This story was given wide dissemination in the 11 May, 1970, issue of Time, p. 65.

#### THE CHIMNEY EFFECT

Because temperature, relative humidity and the circulation of polluted air through heating and cooling systems are factors in the preservation of writings, your Committee has noted with interest the important research underway in the National Research Council of Canada on the so-called "Chimney Effect". Control over temperature, relative humidity and the circulation of air in high-rise buildings, seems to have become more difficult with the wide variations in outdoor temperature and in buildings of the sky-scraper type. Fire and smoke hazards are also increased in such buildings. Libraries, archival establishments and museums, not to mention office buildings housing people, are affected.

Attention is called to N. B. Hutcheon and G. W. Shorter, on "Smoke Problems in High-Rise Buildings" reprinted from ASHRAE Journal, Vol. 10, No. 9, September 1968, pp. 57-61, Technical Paper No. 258 of the Division

of Building Research, Ottawa, October 1968. NRC 10427, 10 cents.

Your Committee looks forward to additional findings and recommendations growing out of this research program.

#### ILLUMINATION AND ULTRAVIOLET RADIATIONS

When your Committee chairman returned from Europe in 1946, one of his earliest assignments had to do with the preservation of two deteriorating Documents. The causes and the remedies are clearly outlined in NBS Circular 505, Preservation of the Declaration of Independence and the Constitution of the United States a Report prepared by the National Bureau of Standards to the Library of Congress, issued July 2, 1951, 16 pp. U.S.G.P.O. 15 cents. There is no need to summarize that excellent report except in the briefest terms. Moisture, acid and light sources and deleterious matters in the atmosphere had to be controlled, and this was accomplished through placement of the documents on an acid-free base within a capsule containing inert gas and covered by an appropriate radiation filter. Leak detection instruments were built into the capsule. Here, in this Report were spelled out most of the problems and the solutions to them, for all to read and understand.

However, it is still pretty clear that those responsible for planning as well as those responsible for operating buildings to house writings on paper and other historical and cultural media are still unaware of the damaging facilities and services which they are either providing or maintaining. This is particularly true in the matter of windows, and other forms of illumination and light source provided in libraries, archives, museums and exhibit areas.

Of pertinence is the recently issued "Public Archives of Canada Picture Conservation Report Subject: Level of Illumination and Protection from Ultraviolet Radiations, No. 1", February 1970, 5 pp. Prepared by Roger Roche, Head, Picture Conservation, PAC.

Your Committee considers this statement one of the most timely, brief, readable and chilling documents on the effects of light on the deterioration of papers and other media yet produced in Canada and urges that it be required reading for building planners, architects, museologists, exhibitors, archivists and librarians.

#### ACID-FREE FOLDERS AND ENVELOPES

As an experiment, and for testing and comparison purposes, we acquired a modest supply of acid-free envelopes and standard-size file folders from a U. S. distributor for use in Montreal.

Cost data follows:

1,000 file folders, 12" x 10"	U.S. \$ 56.00/M
1,000 envelopes, 9" x 12"	U.S. <u>80.00/M</u>
Sub-total	\$143.00 Canadian

However, Customs charged 17½% plus 12% Federal Sales Tax for an additional cost of \$ 46.14

Brokerage charges were 7.50  
Freight charges were 12.84

Total costs: \$202.48 Canadian

The folders cost about .0865 cents; the envelopes, .114 cents each.

During the first week in March 1970, a phone call from Domtar Fine Papers, Cornwall, indicated that an announcement on Canadian-made permanent/durable papers was being readied and would be out in the near future. The above data on costs delivered in Canada of U.S.-made papers will be of some assistance in judging offering prices of Canadian-manufactured folders and envelopes when they become available.

#### STABLE MANIFOLD PAPERS

Manifold papers are the papers we use to make carbon copies of what we send out in the way of letters and memoranda. As long ago as 1936, Dr. Robert Binkley, Chairman of the Joint Committee on Materials for Research, wrote in his Manual of Methods of Reproducing Research Materials, p. 109, "The average business letter sheet will last longer than the average book page; the average carbon copy will fall to pieces sooner." So there is nothing new about this problem. We've recognized it for a long time, but done practically nothing about it. At McGill University, our letterheads, watermarked "McGill University Montreal" happen to be a neutral or alkaline paper with a reasonably long life-expectancy. What we send out, will last. Our file copies, however, are invariably on highly acid paper and have a relatively brief life-expectancy.

The Committee search diligently for a manufacturer of permanent/durable manifold papers. A few fine paper manufacturers in the U.S. and Canada do make fairly thin permanent/durable printing papers which might serve our needs for permanent/durable manifold papers, but none have yet been willing to state that they have such manifold papers for sale. It may very well be that the now-pending announcement of Domtar on their line of fine permanent/durable papers will supply this evident need. We will have to await the announcement and the test data. (It might be added that we have found Air Canada using an acid-free onion skin paper for airmail correspondence.)

A typical response is that of the Ecusta Paper Division of Olin, in Pisgah Forest, North Carolina. "We are not, however, nor do we plan to be in the immediate future, in the manifold business. I cannot, therefore, send you a sample of manifold paper. On the other hand, we do make a full line of lightweight printing papers that are produced in the alkaline range (high pH) and, therefore, offer the longevity I believe is of interest to you."

Meanwhile, we are attempting as a Committee to keep up with research in this field. The most important titles which have come to our attention are:

Raymond L. Hebert, Max Tryon and William K. Wilson, "Differential Thermal Analysis of Some Papers and Carbohydrate Materials" in TAPPI, The Journal of the Technical Association of the Pulp and Paper Industry, Vol. 52, No. 6, June 1969.

W. K. Wilson and R. L. Hebert "Evaluation of the Stability of Record Papers" in TAPPI, Vol. 52, No. 8, August 1969.

W. K. Wilson and R. L. Hebert, Evaluation of the Stability of Manifold Papers, NBS Project 4110442, NBS Report 9959, December 2, 1968. 16 plus pp.

E. J. Parks, Thermal Analysis of Modified Cellulose, NBS Project 4110442, NBS Report 10 113, October 27, 1969, 26 plus pp.

#### PRESERVATION AND STORAGE OF SOUND RECORDINGS ON MASTER PRESERVATION TAPES

Most commercially available sound recordings have a relatively short life-expectancy. This has resulted in the loss of numerous records of some consequence. The Committee would, therefore, urge that sound recordings on whatever medium be copied on a "Master Preservation Tape". The preservation and storage of such Master Preservation Tapes should follow the practices called for in A. G. Pickett and M. M. Lemcoe, Preservation and Storage of Sound Recordings, A Study Supported by a Grant from the Rockefeller Foundation, Library of Congress, Washington, 1959 (for sale by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 45¢), as amended or improved by any Canadian Government Specifications Board Standard.

As a matter of information, such "Master Preservation Tapes" should be copied with the use of AMPEX equipment.

The "Master Preservation Tape" to be used is designated 3-M brand magnetic tape, catalogue no. 202-1/4-2500, or equal. This tape to be used until such time as the Canadian Government Specifications Board issues a standard for long-life magnetic tapes.

Note should be made of the fact that the "Master Preservation Tape" specified costs roughly 33% more than the standard tapes.

#### NEWSPAPERS AND SERIALS MICROFILMING

The Canadian Library Association has for years been effectively microfilming long series of Canadian Newspapers. The latest Geographical List and Index of CLA Microfilms is dated April 1970, 31 pp.

This commendable program is good as far as it goes, but it does not deal with the literally thousands of publications on groundwood and other deteriorating papers which have archival and/or historical values; e.g., government documents, university calendars, student newspapers, serials and other ephemera. Attention must be called to the fast disappearance of such papers which, if not soon microfilmed, will be lost for all time.

## LAMINATION

For some ten years, an 18" table-top office Laminator has been available. These office laminators may well serve useful purposes in protecting papers against moisture, dirt, grease, external pollutants and tampering. However, they should not be used on any papers which are to be kept permanently, or as part of research collections.

Lamination for archival and permanent retention purposes calls for (1) de-acidification of the paper, (2) strengthening of the paper, and (3) its lamination in an archival quality cellulose acetate. The office-type laminator sells for about \$700. The archival-type laminator costs almost ten times as much.

## DURABLE BOOK PAPER SPECIFICATIONS

Existing standards for book papers were developed by W. J. Barrow, and they were published in 1960. Improved standards can be expected in due time, but for the time being, what follows must serve. We understand that the Queen's Printer in Ottawa is cooperating with the Canadian Government Specifications Board in the development of Canadian Specifications for permanent/durable book papers. Note that the Barrow "pH of the paper shall not be less than 6.5 at time of manufacture".

### "Tentative Specifications for Durable, Non-Coated, Chemical Wood Book Papers

Based on 25" x 38" size at 60 lbs. per ream

1. The paper must be free of groundwood and unbleached fibers.
2. On the basis of a minimum of 15 test strips, from 15 different sheets selected at random from a ream, initial folding endurance of conditioned strips shall average not less than 300 folds in the weakest direction as measured on the M.I.T. tester at  $\frac{1}{2}$  kilogram tension.
3. On the basis of a minimum of 12 test strips (selected as in 2) and tested by 5 tears through 4 strips initial tear resistance of conditioned strips shall average not less than 60 grams in weakest direction as measured on the Elmendorf tester.
4. After artificial aging at  $100^{\circ} \text{C} \pm 20$ , the average of strips (selected and tested as in 2 and 3) shall not show less than the following fold and tear for the days of aging indicated.

Days	Fold	Tear
12	200	53 grams
24	140	48 grams
36	100	43 grams

5. The pH of the paper shall not be less than 6.5 at time of manufacture, and after heat aging (as in 4) for 3 days shall show no sharp decline.



6. Opacity of the paper shall not be less than 90.
7. Procedures for testing shall follow TAPPI unless otherwise indicated.

Note: "The paper on which the above specifications were printed had the following properties: basic weight - 60 lbs.; colour - cream; opacity - 90; folds - 448 weak direction (M.I.T.  $\frac{1}{2}$  kg. tension); tear - 78 grams in weak direction (Elmendorf); and pH 8.0 (cold extraction). It is estimated that after artificial aging for 36 days at 100° C, 40 percent of the fold and 75 percent of the tear will be retained, thus giving a theoretically useful life of at least 300 years." From p. 31 and Colphon, The Manufacture and Testing of Durable Book Papers, Based on the Investigations of W. J. Barrow, edited by Randolph W. Church. The Virginia State Library, Richmond, 1960, 64 pp.

#### RESEARCH PROJECTS UNDERWAY

Undoubtedly, the most encouraging thing which has developed during this past year is the number of research and development projects dealing with the problem of conservation of writings. Several are mentioned here. One of the serious problems we have in any field of standardization is that once a standard has been issued, research seems to stop. Once a research and development project is announced, others forget about the problem. There is something worthwhile and wholesome and hopeful in the fact that this problem of the preservation of writings is being attacked by a number of groups rather than a single one. The Council of Library Resources, Inc., for example, is putting its money into a number of projects rather than one, and the results will pay off from such policy.

1) The W. J. Barrow Research Laboratory, Inc., of Richmond, Virginia, has continued in operation since Mr. Barrow's death, with R. N. Dupuis as Director. During 1969, Mr. Barrow's findings were published in another very significant pamphlet, posthumously under the title Permanence/Durability of the Book - VI Spot Testing for Unstable Modern Book and Record Papers, 28 pp. This work provides a relatively simple method of testing papers to determine whether they are made of "groundwood", for alum, for rosin and for acidity.

2) The Conservation of Library Materials Research Group, Imperial College of Science and Technology has been set up in London, U.K., with a three-year grant from the Council on Library Resources, Inc. The group is co-directed by James Lewis and Peter Waters. The program envisages the study of problems growing out of the 1966 floods in Florence, Italy, and in some areas, expanding on the studies of the late William J. Barrow.

3) The U.S. Office of Education has announced support of the Association of Research Libraries of a program for the study of a national system for the preservation of library materials. The study is to be completed by December 31, 1970. Warren J. Haas, Director of Libraries at Columbia University and President of the Association of Research Libraries will serve as project director. Headquarters of the project are in the ARL Office, 1527 New Hampshire Avenue, N.W., Washington, D.C.

4) On 5 February, 1970, the Library of Congress announced that it would establish a Preservation Research Office, or laboratory, to undertake basic research in the preservation of library materials. A grant from the

Council on Library Resources, Inc., will meet the expense of scientific equipment. Primary emphasis will be given to solving problems involving the preservation of paper, but other problems relating to adhesives, book-bindings, microfilm, magnetic tape and motion picture film will also be explored.

5) At the fall 1969 meeting of the Society of American Archivists in Madison, Wisconsin, the Society announced what is undoubtedly one of the major research programs in this field. It has been designated the SAA Permanence of Paper and Related Materials, A Research Project, 5 years, \$650,000. The SAA has taken on the responsibility for raising the funds to finance the research by the Paper Evaluation Section of the U.S. National Bureau of Standards. Scope of the project includes paper testing, ink, typewriter ribbons, copying processes, carbon papers, quick copying processes, file folders, document containers, lamination tissue and film, mending tape, binding materials and adhesives. Progress reports, and accounts of the completed phases of the studies, will be issued from time to time. At the end of a project, a comprehensive handbook will be issued. For detailed information write F. Gerald Ham, Secretary SAA State Historical Society of Wisconsin, 816 State Street, Madison, Wisconsin 53706.

John C. L. Andreassen  
Chairman

\*\*\*\*\*

#### SOCIETY OF ARCHIVISTS

The Society of Archivists (England) has just produced a useful 3-page pamphlet entitled Recommendations for Local Government Archive Services which sets out most clearly basic requisites for the proper operation of a government archives. The recommendations are arranged under the headings "Functions", "Organization", "Accommodation and Equipment", and "General", and could, for the most part, apply to a government or other corporate archives anywhere.

Under "Organization", the duties of professional archivists are carefully distinguished from those of archives assistants, which are also listed. It is recommended that "service as an officer of a learned or professional society should constitute an acceptable part of the official duties of a professional archivist."

Only the definition of records management reads a little strangely as "the administration of current and semi-current records prior to their appraisal and designation for permanent preservation, or for immediate or ultimate destruction, or for microfilming prior to destruction". With one or two exceptions, records centres are not yet a feature of the English local government scene.

Requests for copies should be sent to Dr. C. E. Welch, M.A., F.S.A., Churchill College, Cambridge, England. Ed.