International Preservation News

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International Preservation News is a publication of the International Federation of Library Associations and Institutions (IFLA) Core Progamme on Preservation and Conservation (PAC) that reports on the preservation activities and events that support efforts to preserve materials in the world's libraries and archives.

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ISO 9706

Editorial

IPN n°12 (June 1996) was devoted to Latin America, Spain and Portugal. In view of your enthusiastic response we have decided to renew this experience with another region: the creation of the new PAC Regional Centre for Eastern Europe and the CIS gives us this opportunity.

Last July, Beatrix Kastaly (former Chair of the Section on Preservation and Conservation) and I visited the three libraries which were candidates to host the future PAC Centre : in Moscow the Russian State Library (formerly Lenin) and the Library for Foreign Literature, and in St Petersburg the Russian National Library.

Our report was discussed by the IFLA Executive Board who decided that the Library for Foreign Literature (LFL) in Moscow complied with the necessary qualifications to host the centre. Already very much involved in international matters, the LFL has shown excellent managerial practices and proved real organizational awareness, not to mention its strong commitment to preservation issues.

I would like to thank all three libraries who sent proposals and especially Ekaterina Genieva for supporting and hosting the centre, and providing the suitable premises, equipment and staff. My thanks also go to Galina Kislovskaya who has accepted, in spite of her numerous important responsibilities, to run the centre. I know, from experience and from having already witnessed both her enthusiasm and professionalism, that she will make an excellent director. Special attention must be given to the vast territory covered by the CIS. Under the same and unique political leadership for decades, the region is now divided into twelve independent republics endowed with strong national features. If we have to consider the specific characteristics of each one of them, we must still affirm that most of them have to face a difficult economic and financial situation. This leads, particularly in the field of libraries and preservation, to a global and extended assessment on the priorities to be defined and the proposals to be implemented. Success is linked to a common desire to cooperate. I send good luck to the new centre and to everyone who will collaborate.

Planning of the New PAC Regional Centre in Moscow

Over the last few years dynamic political developments in Eastern European, Baltic and CIS countries have led to quite tangible changes in the economics of this vast geographical area. Very few of these states have improved economically because of drastic structural changes. As for libraries, the new political and economic environment entailed modifications in strategies and an almost total lack of funding for the next few years.

Like all the other PAC centres, the new Regional Centre in Moscow will stick to the goals of the IFLA-PAC core programme as they are formulated in the 1998-2001 Medium-Term Programme. These include raising awareness of preservation issues, developing a policy of coordination, encouraging and monitoring studies, research and standardization, and educating library staff and encouraging training.

Depending on our specific environment, stress might shift from "studies and research " to "education and training" both in the range of the goals and in the number of the activities that would lead to their implementation.

The basic idea lying behind the concept of the centre in Moscow is disseminating information. Provision of information to libraries in the region will be implemented in the form of publications, training courses, and conferences.

Publications stand as a prerequisite for meeting all the goals and especially the "education and training"one. Of course, International Preservation News will remain a central publication in the mailing list.

Translations

Bearing in mind that language barriers are hindering and will hinder the exchange of information between professionals, the Regional Centre will seek solutions for pulling this barrier down. Those who understand and speak Russian will get IPN with fliers giving a brief description of its contents and additional data on local events in Russian. Naturally not all the countries will need this innovation. These will get IPN in its traditional form.

Russian translations of IFLA professional reports and leaflets dealing with preservation as well as other publications on preservation will be translated, published, and/or disseminated. Again the available English versions will be sent to those for whom English is not a problem. In the near future, several texts will be translated into Russian:

- Clements, D.W.G. Guidelines on Best Practices in Basic Collection Management for non-Professional Staff and on the Organization of Training Courses: a RAMP Study. Paris: Unesco,1992.
- Buchanan, S.A. Disaster Planning, Preparedness and Recovery for Libraries and Archives: a RAMP Study. Paris: Unesco,1988.
- Guidelines for Newspaper Preservation Microfilming. IFLA Round Table on Newspapers. The Hague: IFLA Headquarters, 1996.
- Technical Leaflets on Reformatting. The Implications of Digital Imaging for Preservation. Digital Imaging Basics. Northeast Document Conservation Centre.

The Regional Centre also plans to translate four videos, namely:

- Into the Future. On the Preservation of Knowledge in the Electronic Age. A film by Terry Sanders.
- Handling Printed Books. The British Library, National Preservation Office.
- If Disaster Strikes. The British Library, National Preservation Office.
- Controlling your Library Environment. The British Library, National Preservation Office.

  There are also plans to translate the course by Wendy Smith on distance education on preservation and mount it on the internet in 1998.

Calendar of events

The topics of the training courses for 1998-1999 are linked to the publications listed above since actual training needs lay in the spheres that are covered by these publications.

In compliance with this approach training courses are planned:

- May 1998, Vladimir: a course on disaster planning will be held in cooperation with the local regional centre of conservation for libraries in Central Russia and Baltic countries.
- November 1998, Almaty: a similar course will be organized for Central Asia and

Kazakhstan.

- 1999, Izhevsk and Krasnodar: there will be two training courses on handling practices.
- Conferences, round tables and seminars will help meet the goals dealing with "studies and research" and "coordination and policy".
- February 1998, Moscow: the Library for Foreign Literature will host its traditional one-day round table on the preservation of newspapers.
- March 1998, Moscow: the Russian State Library will organize a workshop on digital preservation.
- April 1998, Moscow: a seminar on the prevention of biological damage will be held at the Russian State Library.
- April 1998: the Russian National Library and Russian Library Association are planning to hold an international seminar on "Libraries after Disaster".
- May 1998: a group of libraries, the Ministry of Culture and the "Raritet" School of conservation will organize the fourth of All Russia contest on binding.
- November 1998, Moscow: the Ministry of Culture, the Russian Library Association, the Russian National Library will hold a second seminar on the security of library collections.

All these events have been listed because the new Regional Centre in Moscow cannot work without the close cooperation of other major libraries in the country.

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How Hungary has Tackled the Brittle Paper Issue

The first newspaper in Hungarian was published in 1782. In Hungary most libraries collect newspapers for their own profile. There is not any real and coordinated action as far as collecting, cataloguing, storing and accessing documents are concerned. Preservation, however, is the only area where some principles and common activities are shared, thanks to the impetus from the National Library of Hungary.

The National Library holds about 290,000 volumes of newspapers and journals. The exact quantity of newspapers cannot be determined. Nevertheless, the Newspaper Library was created in 1888. Journals were added to it later on.

In Hungary, newspaper preservation is so demanding that its falls mostly within the scope of the National Library. In other libraries where newspapers are to be retained permanently, they are stored in various - sometimes very poor - environmental conditions, awaiting to be bound. Approximately 70% of the old - pre-1952 - newspapers of the nation can only be found in a

relative completeness at the National Library. But there has never been enough resources to store them in adequate conditions and bind them all. A considerable number were in bad repair, brittle, and crumbled into dust. They turned yellow or even brown.

So it was decided to microfilm all the Hungarica (Hungarian language or Hungary-related) newspapers of the National Library. The financial, technical and personnel conditions for this work were provided by the government. Newspaper microfilming has been performed since 1969 with three cameras and an automatic developing and printing laboratory. Preparation, microfilming, controlling and cataloguing are done by about 20 trained photographers and librarians. Since 1969, the retrospective microfilming of newspapers has been in progress; between one and one and a half million pages have been microfilmed annually.

Over a million pages are microfilmed each year

However, before any microfilming activity is undertaken, old newspapers have to be conserved, be it either through light or heavy treatment, in order to secure the best legibility: tight spines are loosened, wrinkled sheets are flattened, tear and wear are glued, holes are filled in with paper, and previous paper-strips are removed. If the paper is too brittle and crumbles, it is deacidified and strengthened by laminating it with polyethylene and Japanese tissues. These repairs are performed by seven trained bookbinders and/or book and paper conservators.

After being microfilmed, original newspapers are retained at the National Library where most old newspapers can be found as unique copies. Original newspapers - if they are unbound - are put away in custom-made corrugated boxes lined with alkaline paper, which are also used for archival copies of current newspapers too. The second copies of current newspapers are to be bound because they can be consulted until they have been microfilmed.

Archival quality master-negatives have been preserved in air-conditioned storage areas at 15-16° C and 30-40% RH. Preservation negatives, however, have not been made. Positive films are kept in the newspapers' room. Master-negatives and original newspapers are housed in different parts of Budapest. As a consequence, negative films are considered not only as preservation copies but as safety ones too. Originals - if one positive film copy is available - may be read in exceptional cases. Microfilms can be read in the special microfilm reading room.

Newspaper microfilms are recorded regularly and published in the registers of the National Library. Thanks to these registers other libraries can order microfilms to complete or preserve their own holdings. The microfilms made at the National Library are as complete as possible. Yet titles that are missing are completed with those from other libraries. The National Library has also microfilmed Hungarica newspapers in the libraries of some of the neighbouring countries: Austria; Slovakia; the Czech Republic; Serbia, and Croatia.

Brittle books are microfilmed too

The National Library has made microfiches of journals, and has microfilmed the most valuable materials such as manuscripts, notes, theatrical documents, and colour slides from the Map and Poster Divisions. Other libraries, such as research, special, and university libraries microfilm most of their valuable manuscripts, incunabula, old Hungarian printed books, newspapers, and special collections. Some of these activities are performed in cooperation: for instance, the incunabula of all libraries have been microfilmed by the Library of the Academy of Sciences.

Since 1997, the National Library has undertaken the microfilming of some brittle books. The first criterion of selection for microfilming is based on the repeated access to the same documents. After a first consultation, a brittle book is to be put away in a phase box - if this has not been done already - which is labelled with the date of consultation on it. The second consultation is also noted and after the third one, the book is microfilmed. When a positive microfilm is available, the label on the box reads that "this book may be consulted through microfilm only". But if the paper of the book is extremely brittle it will be microfilmed already before or after the first consultation.

The retrospective microfilming of newspapers will be completed in a few years. For the last few years current newspaper titles prior to 1952 have also been microfilmed. The microfilming of other current titles will follow the retrospective microfilming. Then conservation will be reduced to a minimum which will change the conservators' job description.
The paper of the most valuable and unique newspapers will be deacidified and strengthened as these titles have to be retained by the National Library permanently. The type of mass treatment has not been determined yet. The paper of most of our old newspapers is so weak and brittle that mere impregnation with adhesive is not sufficient.

Today's newspapers will be reproduced on permanent paper

The mass deacidification and strengthening of acidic and brittle papers has not been undertaken in Hungary yet. Two semi-mass deacidifying machine using a calcium-hydroxide solution are currently in operation, one in the (three) conservation workshops and the other in the bindery of the National Library. This equipment can treat up to two or three hundred pages at a time but only if sheets are separated (bound volumes are excluded).

In the 1980s the conservation research group of the Library performed many experiments in cooperation with a paper mill and the Paper Research Institute, to produce a lignin- and acid-free, thin but durable and permanent paper with good opacity. The National Library planned to reproduce the deposit copies of newly published newspapers on this paper in order to reduce the volume of newspapers requiring conservation treatment in the future. By the early 90s we succeeded in formulating the suitable composition. Meanwhile the technology for the manufacture of imported newsprint paper also changed.

The acidic medium in which sizing was made was converted from an acid to a neutral or an alkaline one and this was made possible with the use of a calcium-carbonate filler. Thus newsprint paper was not acidic anymore but slightly alkaline and obviously did not deteriorate so rapidly and dramatically as the acidic one. Because of the poor fibre composition, the natural mechanical strength of these papers is not strong enough but their original strength is preserved for a longer time. In the last few years, the Library had no financial possibility to get thin paper with great mechanical strength - which should be free of groundwood and should contain cotton and pine-pulps - nor to purchase a large-sized photocopy machine for copying newspapers.

First conversion to acid-free production in 1984

Many manufacturers of writing and printing papers in Western and Central Europe have converted their technology from sizing in an acid medium to sizing in a neutral or an alkaline medium. This made it possible to use an alkaline filler made of calcium-carbonate instead of clay, which is neutral and does not have any positive impact on the paper permanence. In the

second half of the 80s, the cost of carbonates, from which a better ratio of whiteness in paper could be achieved, dropped, thus making the production of acid-free paper more economical. This was important because price is the dominant factor in the industry, not permanence.

In Hungarian paper mills, the first trials for producing paper in a neutral medium with a synthetic sizing agent and calcium-carbonate filler were carried out between 1975 and 1980 when the introduction of this technology for the production of writing and printing paper was precluded by the instability of the sizing dispersion and expensive prices. After initial attempts, the first major breakthrough occured in 1984 when one of the paper machines in the Szolnok paper mill was converted to acid-free production. This conversion was necessary because waste products, which formed on the coating machine, and which used calcium carbonate pigment, could not be recycled since the medium was acidic.

Conversion meant that not only aluminium-sulphate was no longer used, but that a synthetic sizing agent was added which changed the whole technology of papermaking. This successful conversion, the increasing price of sizing agents based on pine-resin -which needs acidic medium-, the reasonable price and the ever-increasing quality and quantity of fillers based on Hungarian carbonates convinced other mills to adopt this method. The percentage of acid-free writing and printing paper produced in Hungary is a very clear indication of the tendency: 10% in 1984; 30% in 1986; more than 60% in 1990, and 100% today.

Survey showed that 85 % of printed books are acid-free

The quantity of acid-free paper made in Hungary is not equal to the quantity actually used, taking import and export into account. The thorough liberalization of import into Hungary since 1989-1990 entailed that vast quantities of printing paper have been imported and numerous new publishers and printing offices have often shown preference for foreign paper because of their good quality and relatively low price.

Knowing the big change in the production of non-acid printing papers in Hungary between 1986 and 1996 and the fact that a great quantity of paper was imported from Western, Central and Northern Europe for books which were published in Hungary, one could assume that the prevailing role of acidic book paper has ceased. To have a clear view on this question we have tested the acidity/alkalinity and the presence of lignin in the paper of the books received by the National Library as deposit copies between 1986 and 1996. A random but statistically relevant sample, 450 books printed on non-coated paper were chosen and tested. The results are shown in the table below.

Table not available, please contact editor for further information.

*The result reaches more than 100% because some books were made with both acidic and neutral papers and they have been counted into both categories.

The ratio of acid-free papers used for the printing of books seemed to stabilize around 85% in Hungary for the last five years. This proves that both sizing in neutral or alkaline media and the use of calcium-carbonate as filler are spreading steadily in the European papermaking technology and that the use of neutral or alkaline printing papers is already predominant in Hungary.

Indication of permanency will help librarians in their job

In 1993 and 1994 the Research Institute for the Paper Industry tested ten different printing, photocopying and preservation papers produced by three Hungarian paper mills to establish if these papers met the requirements of the ISO 9706 standard. The test was initiated by the National Archives and the National Library. All the papers met the requirements but the mills have not given much importance to this fact as they did not mention the permanency of their papers in the description of their products. Thus publishers and printing offices could not get any information and could not make the best use of these acid-free papers.

This is why I think that libraries and library organizations should make further efforts to ensure that the quality and the permanence of the paper be indicated by paper mills in the product descriptions. The name, quality and origin of the paper, together with the exact name of the manufacturer, should also be indicated. This would provide a base for estimating the life expectancy of each publication, particularly if the ageing properties of the paper used are known.

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Hungría se protege del problema de los papeles ácidos

La Biblioteca Nacional es el organismo responsable de la preservación nacional de las publicaciones periódicas. Antes de microfilmarse, los documentos se someten a reparaciones menores, se desacidifican con hidróxido de carbono y se refuerzan por laminación con papel japonés o con polietileno. Luego de la microfilmación, se colocan en cajas forradas con papel alcalino. Los títulos figuran en un registro nacional. En 1980, el Instituto de Investigación del Papel, una fábrica de papel y la Biblioteca Nacional emprendieron un programa de investigación, en respuesta al deseo de esta última de reproducir las publicaciones periódicas actuales en papel permanente. En 1984, la fábrica de Szolnok realizó la conversión de sus instalaciones para la producción no ácida. En 1990, el encolado en medio alcalino se expandió. Pero los húngaros importan todavía mucho papel europeo por razones económicas. A fin de determinar la calidad

de los libros que entran por depósito legal, la Biblioteca, desde hace cinco años, aplica una encuesta sobre estas colecciones: en Hungría, el 85% de los libros se imprimen en papel libre de ácido. En 1994, se realizaron pruebas a los papeles producidos en Hungría. Todos cumplen la norma ISO 9706 pero ello no se indica en ninguna parte, lo cual hace difícil la tarea de los bibliotecólogos.

Tests on Slovak Permanent Paper

The following text also deals with national production of permanent paper, this time in the Slovak Republic by a local paper mill. However, cooperation with national institutions exists there too as the National Archives in Bratislava thoroughly tested the permanency of the papers produced and their compliance with ISO 9706.

The broad spectrum of different types of paper in the Slovak archives ranges from 14th century handmade papers to present-day machine made papers. The oldest paper documents kept in the Slovak archives date from the period 1325-1330. Several centuries later these old papers, which were made from rags by the technology of Middle Ages papermakers, still have excellent mechanical properties. It is a paradox that the main preservation issues result from modern papers in the thriving times of the papermaking industry. The question whether today's documents will survive and pass on their messages to the next generations is becoming more and more crucial.

Each day archives and libraries receive documents and books made from unstable acid paper, which has little ageing resistance. The acidity contained in hemicelluloses and lignin is considered the principal internal factor of degradation in paper ageing. Problems of acid paper deterioration are well known and have been documented by a large number of research and general publications in conferences and seminars.
At the worldwide level, the difference in the capacity of conservation laboratories and the number of documents needing conservation is really huge. Also the exponential production of today's documents and books is enormous for archives and libraries.

Various papers available on the national market were tested

The only solution for the future is prevention. This means using permanent or durable papers and writing inks in the production of documents and books.
Paper from several paper mills in the Slovak and Czech republics was thoroughly tested to determine its ageing resistance [1-5] within the framework of a large research programme, developed at the Slovak National Archives in Bratislava at the beginning of 1980. It aimed to test writing and printing paper from different producers available on the market (all of them are state companies from the former Czechoslovak Republic) for their permanence and durability.
Nowadays, there are three large paper manufacturers in Slovakia. 0nly one of them, however, produces alkaline paper.

The North Slovakian Pulp and Paper Mills (Severoslovenské celulózky a papierne, in Ruzomberok) is the largest papermaker in the Slovak Republic, with three alkaline mills, one of which (the Celpap mill) has its own kraft pulp mill. This mill was created after two individual mills merged, the Solo mill, established in 1880, and the Supra mill, established in 1906.
Both mills began modernization programmes in the late 1970s. Some of the paper machines are now equipped with newly rebuilt drives. Others, for example Board Machine no. 2 in the Solo

mill, and Paper Machines no. 6 and 7 in the Supra mill, were completely reconstructed. All woodfree printing and writing papers produced by these paper machines are sized with an alkylketene dimer (AKD) sizing agent and filled with calcium carbonate.

At the beginning of the 1980s, both sulphite pulp mills (in Solo and Supra) and one obsolete sulphate pulp mill (Supra) were shut down. In 1981 a new kraft pulp mill was started up. It has a capacity of 200,000 tons per year of hardwood and softwood pulp, of which 156,000 tons are bleached. The pulp mill was supplied by the Canadian company H.A. Simons (Overseas) Ltd., Vancouver. In 1991 Paper Machine no. 8, supplied by Voith St. Pelten (Austria), came into operation. It has a yearly capacity of 100,000 tons of woodfree printing and writing paper. The working width of the machine is 6550 mm and the maximum working speed is 1000 meters/minute. PM no. 8 and the pulp mill form the third mill, called Celpap. The entire production of PM no. 8 is sized with AKD and filled with calcium carbonate.
The North Slovakian Pulp and Paper Mills (Severoslovenské celulózky a papierne), produces over 90% of the total printing and writing paper production in Slovakia, which can meet local needs and even be exported. Prices are very competitive with those of good quality acid paper. Most of the Celpap papers were tested in the laboratories of the Slovak National Archives in Bratislava for permanence and durability. Their compliance with the international standard ISO 9706 was evaluated.

All tests showed compliance with ISO 9706

The composition of the papers used is shown in Table 1. All samples - xerographic (XE), laser (LA), offset (OF) and writing paper (WP) - were produced on Paper Machine no. 8 in the Celpap mill of the North Slovakian Pulp and Paper Mills (Severoslovenské celulózky a papierne) at Ruzomberok.

Required characteristics of ISO 9706 and the results of tested papers

pH
According to ISO 9706, the pH value by cold extraction (ISO 6588) is required to be within the range from 7.5 to 10.0.

Results
The pH values of all four papers was 9.3. This is within the range given in ISO 9706.

Table 1

Table not available, please contact editor for further information.

Alkaline Reserve

ISO 9706 requires an alkaline reserve corresponding to at least 0.4 mol of acid per kilogram. When calcium carbonate is used to create the alkaline reserve, the requirement is met if the paper contains about 20 g of calcium carbonate per kg of paper, which is equivalent to 2 %.

Results
The alkaline reserve of samples was determined as specified in Finish Standard SFS 4465, as ISO 10716 for determinating the alkaline reserve was still in preparation at the time of

our investigation.

Despite Note 3, ISO 9706 which states "when calcium carbonate is used to create the alkaline reserve, the requirement is met if the paper contains about 20 g of CaCO3 per kg of paper", the alkaline reserve has also been determined.

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In all samples the values for alkaline reserve recommended by ISO 9706 are greatly exceeded.

Tearing resistance
According to ISO 9706, for papers weighing 70 gsm (g/m2) or more, the tearing resistance in either direction (MD or CD) shall be at least 350 mN.

Results
Tearing resistance tests were performed on an Elmendorf testing machine according to ISO 1974, on samples cut in the machine and cross direction (MD, CD).
The results below show that all the papers easily met the specifications.

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Paper stock
ISO 9706 specifies a maximum content of easily oxidized material as measured by a kappa number below 5 .

Results
The Kappa number was measured by ISO 302, with the modification given in Annex A of ISO 9706.

None of the papers had a kappa number over 3. As ISO 9706 calls for a maximum kappa number of 5, indicating resistance to oxidation, all the papers met the ISO requirement.

Statement and symbol of compliance

A symbol of compliance in the form of the mathematical symbol of infinity set inside a circle, was developed by NISO, the US National Information Standards Organization and introduced in ANSI Z39.48-1984. The symbol is used in ISO 9706 with the permission of NISO.

Since the four papers tested meet the requirements of the above mentioned standard, they are marked with the symbol of compliance. The symbol is multiprinted on one side of every sheet of A4 in white printing ink, (trade name Bianco Acquagem HSL/B, produced by the German Company BASF).

Since 1985 the Ministry of the Interior has shown concern for high quality office paper

Despite the non-existence of any Czechoslovak or international standards for permanent paper at the time, the 1985 Regulation issued by the Ministry of Interior, concerning record management within state administration and state institutions in the Slovak Republic, mentioned that

"documents should be created on a high-quality office paper" [8].

In April 1993, the Slovak National Archives, Slovak Archives Administration and the North Slovakian Pulp and Paper Mill in Ruzomberok organized an international seminar "Degradation of Archives and Library Materials vs Permanent and Durable Paper for Archives" [4]. About 50 experts presented 13 lectures and discussed problems of acid paper degradation and production, properties and use of permanent paper.

Then in February 1994, the same institutions organized a seminar entitled "The Use of Permanent and Durable Paper in the State Administration of the Slovak Republic and in State Archives and Libraries". More than 100 participants from different governmental agencies and ministries, banks and insurance companies, archives and libraries as well as many other governmental and non-governmental institutions, took part in the seminar. They were fully briefed on the production, properties and commercial availability of permanent paper produced in Slovakia [9].

A new law on archives and record management is now being prepared. Archivists and experts involved in preservation will try to include a section on the use of permanent paper for documents.

Alkaline papers produced by The North Slovakian Pulp and Paper Mill in Ruzomberok, were thoroughly tested in the laboratories of the Slovak National Archives in Bratislava for permanence and durability. On the basis of the results it can be stated that these papers meet the requirements of ISO 9706 for permanence; their ageing resistance is very high and their properties are suitable for documents destined for retention and long-term storage.

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Pruebas a papeles permanentes fabricados en la República de Eslovaquia

Hacia 1980, los Archivos Nacionales de Bratislava lanzaron un programa de investigación sobre la resistencia al envejecimiento de los papeles procedentes de diversas fábricas de las repúblicas checa y eslovaca.El grupo "Severoslovenské celulózky a papierne" del norte del país dispone de tres fábricas que, desde 1970, fabrican pastas sin madera, encoladas en medios alcalinos con una carga de bicarbonato de calcio. Este grupo representa más del 90% de la producción nacional.Todos los papeles analizados por los Archivos Nacionales según las prescripciones de la norma ISO 9706 muestran una fuerte resistencia al envejecimiento y propiedades completamente adecuadas para su conservación a largo plazo.`

Insufficient State Resources Do not Prevent Preservation

Preservation activities at the National and University Library (NUL) of Slovenia started in 1992 when the Preservation Department was established. Currently it consists of the conservation and bookbinding departments, while microfilming (the centralized microfilming project has been running since 1986) is sited outdoors.

The first task of the newly formed department was to assess storage conditions. The library building, built in 1941, is considered a masterpiece of one of the country's finest architects, Joze Plecnik. Although it has no environmental control system, storage conditions within the repositories are fairly good throughout the year (18-24°C , 45-60% RH).

The main problem we are facing is the lack of space: the building was designed to hold 250,000 units, while the library's collections hold more than 2 million units. As a consequence, materials have to be stored in off-site repositories where relative humidity seldom falls below 70% RH. This year several dehumidifiers have been installed to improve housing conditions until materials are moved to more suitable repositories.

A new library is being designed

New repositories are planned for 2001, when the construction of the new library building, which will be located in the vicinity of the old one, is scheduled to be completed. The technical

documentation is in the final stage and the construction works are due to begin in 1998.

There books will be stored in three areas. The biggest repository (ca. 2 million units), built underground, will be equipped with fully automated storage and retrieval system, which will enable us to maintain a low temperature environment. An additional 0.5 million units will be stored in closed stacks containing bookshelves and compacti, while 0.25 million units will be located in an open access zone.

Although the new library will have a sophisticated environmental, fire and safety control system, the National and University Library's most precious pieces, which are kept as special collections, will remain in the old building. During the renovation of the NUL in 1997, a special environmental controlled, fireproof, underground and safety 80 m2 vault was built to accommodate the library's most valuable artefacts.

Fruitful ideas make up for lack of money

Due to the difficult economic situation in Slovenia, resources for preservation and conservation activities are extremely limited. The problem is partially being solved by the campaign "adopt a book", which has started in 1993. Sponsors can adopt a book by contributing 1500 - 15000 DEM. In return, the library is bound to provide media coverage. Thus an exhibition is prepared once a year with sponsors receiving honorary diplomas. Thanks to this action awareness of book preservation in authorities and the general public is increasing significantly.

Since there are no training programme on paper and book conservation available in Slovenia, the NUL regularly organizes short courses on different conservation topics. The Deutsche Bücherei in Leipzig kindly gave a three-month long training in book conservation. A workshop on leaf-casting techniques took place in 1995 at the National and University Library of Slovenia. It was led by Dr. Helmut Bansa from the Bayerische Staatsbibliothek and was financially supported by the Government of Bavaria.

In October 1997 a two-week course on late-gothic binding structures took place under the supervision of Mr. Christopher Clarkson. The workshop was a joint venture of the Slovene National Archives and the National and University Library and was financially supported by the British Council and the Slovene Ministry of Culture.

The collaboration of the NUL with the Pulp and Paper Institute and University of Ljubljana, Dpt. of Chemistry, led to an extensive research project, which concentrated on the elucidation of autoxidative mechanisms leading to the deterioration of paper during ageing and the development of new stabilizing treatments for papers containing iron-gall inks.

Jana Kolar

Head of the Preservation Department
National and University Library
Ljubljana

Pocos recursos pero mucha buena voluntad

La Biblioteca Nacional y Universitaria de Eslovenia constituye una obra maestra de la arquitectura. A pesar de la ausencia de un sistema de control ambiental, las colecciones se

conservan en buenas condiciones; no obstante, sufren de la falta de espacio. Es por ello que se ha previsto la apertura de una nueva biblioteca para el año 2001. Los documentos valiosos sin embargo, se conservarán en el antiguo edificio, en una sala especialmente acondicionada. A fin de paliar la falta de recursos financieros, el Departamento de Preservación ha instrumentado un sistema de patrocinio privado con la operación "adopte un libro". Invita regularmente a profesionales extranjeros para ofrecer la formación de restauradores, inexistente a nivel nacional, y trabaja en colaboración con el Instituto del Papel en Liubliana para realizar tratamientos de estabilización de papeles impregnados con tintas metalogalicas.

Home-made Permanent Paper in Slovenia

Sometimes, it is nice to see that countries such as Slovenia address the issue of acidic papers in their own way, silently and efficiently. By doing so, they work hand in hand with all those who are involved in the fight for permanent paper. The following text will show that smaller and poorer countries can be an example to our so-called over-developed societies.

Our lives depend very much on the use of paper materials. Paper, as a carrier of the printed and written cultural heritage remains a very important material and has always been an essential indicator of the welfare and growth of a nation.

The tradition of handmade paper in Slovenia dates back to the 16th century. According to Valvasor , the first operating paper mill closed in 1547. The second one began to operate in Fuûine in 1579. The birthplaces of today's paper mills have not changed since the 17th century: RadeËe (1750), VevËe (1843)., GoriËane (1852), TrûiË (1882), KoliËevo (1920), Kröko (1939). Actually pulp and paper is one of the oldest industries in Slovenia.

The Pulp and Paper Institute of Ljubljana has celebrated its 50th anniversary of continuous action in 97. It is an independent research organization constituted in 1947 in order to support research and development. Staff is composed of thirteen researchers and twelve technical assistants working on basic and applied research in the field of technology, education and training for postgraduates. University students are welcome to carry on research on pulp and paper and the related technology, in the framework of their studies or as a post-diploma speciality.

Meeting environmental, technological and economical requirements

Research fields covered are:

- fiber production based on chemical and mechanical wood processes and nonwood plants processes,
- papermaking and paper finishing through coating,
- research in water and waste water treatment,
- test and evaluation of printing and graphic materials used for paper and paperboard, mainly in offset,
- test and evaluation of packaging materials, such as cardboard and corrugated board.

We are in the process of investigating the following materials and issues: non-wood plants; bleaching without chlorine; recycling of difficult recirculated papers; mechanisms of paper ageing; permanence and durability of paper materials; quantity reduction of solid waste

materials; environment friendly pigmented papers; computer modeling of paper coating; the rationale for raw material and energy consumption in the pulp and paper industry; alternative raw materials from regional resources for environmental, technological and economical production of graphic printing paper; standardization of reproduction and printing process on papers made with reclaimed fibers; quality assurance.

Our laboratories allow us to test pulp, paper and board products, printing processes, as well as additives, fillers, pigments and other auxiliary agents. We have pilot plants for pulping, bleaching, refining, screening, papermaking and coating, offset printing, and semi-industrial papermaking.

Cooperation with other international institutes

Research & Development is carried out in conjunction with some institutions and producers in Austria, Germany, France and Hungary on new papers (sterilization paper; pigmented paper made of reclaimed fibers; alkaline sized paper, permanent paper) and new raw materials or materials with improved quality (fillers, pigments, sizing agents, cobinders and binders) including the development of new technology (alkaline sizing, computer conducted pulp cooking) and the introduction of the newest and updated test methods (particle size distribution, distribution of fibre length, charge of particles, paper formation etc.) We work in cooperation with the pulp, paper converting and printing industry, the Ministry for Science and Technology, and recently the Ministry for Culture.

International cooperation has been established with UNIDO (Production and Application of New Materials in Pulp and Paper Industry), the COST programme (involved in paper recyclability), the COPERNICUS Programme (extension of recyclability of waste paper in Slovenia and Hungary) and the USA-SLO Joint research project (New Technologies for Paper Recycling).

Some of our researchers are members of the following international organizations and unions: l'Association Technique de l'Industrie Papetière in Paris, The Technical Association of Pulp and Paper Industry (TAPPI), the International Association of Scientific Papermakers (IASPM) and Zellcheming.

Research is supported by the state

In the framework of the two year's applicative research work undertaken in 1995-1996 entitled "Ageing of paper and board", the influence on the quality of different types of paper as well as the different preservation and conservation procedures on the durability and permanence of paper and of printing and writing materials were analysed. The above project was founded by the Ministry of Science and Technology and the Ministry of Culture. It was performed at our Institute with the collaboration of the Archives of the Republic of Slovenia.

The influence of different grades of today's computer printing and copying papers on the end properties of writing and printing materials, was identified. This has been performed in comparison with permanent paper. The results of chemical stability, surface properties, mechanical strength and optical stability of paper as well as their evaluation through the ISO 9706 Standard have shown the quality and usefulness of some of today's various qualities of copying and computer printing papers. Research has confirmed that writing and printing materials with permanent and archival value should fall under the permanence standard.

National Slovene standards have been elaborated

Under the auspices of the Board for Standardization of the Ministry of Science and Technology's Technical Committee for fiber, standards for paper and board, paper endproduct and corrugated board, which cover all the field of ISO TC 6, were established. Three working groups have been created (WG1: Fibres material, WG2: Paper, Board, Cardboard and Paper product, WG3: Corrugated Board Product). Members have agreed to use the CEN (Europan Committee for Standardization) and ISO individual standards.

Thus since April 1996, the standard ISO 9706: 1994 - Information and Documentation - Paper for Document - Requirements for Permanence has been adopted in Slovenia. We have come to the conclusion that standard ISO/DIS 11 108 for Archive Paper will also be accepted, once it is available in its finished form.

The Pulp and Paper Institute in Ljubljana and the National Archives have developed together a permanent paper for conservation. From 1992 onwards, we have produced a semi-industrial paper machine, three qualities of permanent paper and board, such our ICP-PP1-Durable Paper, PP2-Permanent Paper and PP3-Highly Permanent Paper, ranging from 50 to 300 g/m2.
These papers are suitable for writing, drawing and printing, for permanent use, for preserving materials in libraries, archives, and any institutions involved in conservation.

All these papers meet the Slovene standard SIST/ISO 9706: 1994. Paper and board characteristics meet the ISO 9706 recommendation for permanent papers for long life publications.

Besides developing and investigating the use of new and more effective procedures of neutralization, conservation and conservation of old paper-based materials, it will be necessary to ensure the longest "longevity" of paper on which our written cultural heritage will be kept. The basic task of patrons in archives, libraries, museums and galleries, together with the support of the government, is to define the directives and recommendations for the appraisal, preservation and protection of the written cultural heritage.

Meta Cernic Letnar,

Researcher
Pulp and Paper Institute
Ljubljana

Fabricación de papel permanente en Eslovenia.

El Instituto del Papel de Liubliana se fundó en 1947. Aquí, trece investigadores y doce asistentes estudian las fibras de los papeles fabricados por procesos químicos y mecánicos, así como las técnicas de fabricación y de acabado por revestimiento. Analizan las aguas servidas y su tratamiento; someten a prueba y evalúan la calidad de los documentos de impresión y de artes gráficas utilizados para la impresión offset, así como los materiales de embalaje. Igualmente, el instituto trabaja con el reciclaje, la permanencia de los papeles y las incidencias ecológicas vinculadas a los métodos y productos de fabricación. Sus estudios se extienden progresivamente a todos los componentes empleados. En colaboración con los Archivos Nacionales de Eslovenia, el instituto ha elaborado tres tipos de papeles y cartones perdurables y permanentes, útiles para los fines de escritura, grafismo e impresión, así como para la restauración y la conservación.

Estos papeles cumplen con la norma ISO 9706, la cual sirvió de base para que Eslovenia adoptara su propia regla en 1996.

Cooperation Between Pulp and Paper Institute and Archives

Preservation policies in Slovenia are still very directed towards active conservation. The microfilming and digitization of archival materials and books is carried out in order to remove originals from access. Long-term preservation activities are supported by the government. Much attention is given to the usage of permanent paper in Slovenia.

The turbulent past of the Slovene State is reflected by the history and holdings of the National Archives of Slovenia. For the last few centuries the Slovene territory has been successively part of the Venetian Republic, Napoleon Illyrian Provinces, the Austrian-Hungarian Monarchy and the Yugoslavian Republic. About 200 million documents dating from the 11th until the 20th century are preserved, including films, photographic materials and audiovisual archives. The Conservation Department, which is responsible for the preservation of these records, celebrated its 40th anniversary of continuous activity last year. In April 1996, an exhibition was organized and in July, an international symposium entitled "Book and Paper Conservation" was held.

Paper producers presented their permanent paper programme

Permanent paper is a major issue on which Slovenian librarians and archivists have joined forces to raise awareness and spread production and usage. For the last five years several symposiums and exhibitions on safeguarding the documentary heritage have been organized. As an example, a one-day seminar was organized in May 1996 by the National and University Library, the National Archives of Slovenia, and the Pulp and Paper Institute. Members of government, publishers, printers, distributors, librarians and archivists attended it. Paper producers in Slovenia were asked to present their permanent paper programme.

The Pulp and Paper Institute in Ljubljana and the National Archives have worked together to develop a permanent paper intended for conservation. This paper is also used for publications to be retained for the long term. Cooperative activities between both institutions were pursued in 1995, when a five-year research programme was launched. It aims to evaluate different aqueous, non-aqueous and mass conservation techniques, including mass deacidification. The first step of the project was presented in Restaurator and at the International Conference on the Conservation and Conservation of Books in Erice, 1996.

Preservation training must be recognized by the authorities

One of the most acute problems is the lack of any kind of appropriate training programmes in preservation and conservation in Slovenia. In order to fill this gap we have participated in international training courses (the Paper Conservation Course organized by ICCROM) and several short courses on different conservation techniques have been held at our institution.

Thus staff training in preservation planning is characterized by informal initiatives at all levels. Archival and library schools have attempted to include preservation training in their curricula. The National Archives of Slovenia have developed a special in-house training programme, but preservation is covered in an informal way. However Slovenian archivists and librarians are trying to improve this situation.

Jedert Vodopivec

Head of the Conservation Department
National Archives of Ljubljana

Short History of Preservation at the National Library of the Czech Republic

The welfare of society is usually reflected by the extent of preservation activities implemented in libraries. An overview of the history of the National Library of Prague helps us better understand its fight to safeguard the Library's heritage collections, and at the national level, the difficulties in setting up an overall strategy.

From the end of World War II up to the 1980s, preservation activities took place in the Conservation Department -for repairs of rare and historical books- and the photographic laboratory -in order to meet readers' requests and to make microfilms of rare manuscripts.

The Conservation Department, which was created in 1953, used to perform standard repairs for public libraries, to train many specialists from libraries and archives. So far several tens of rare medieval books, hundreds of complex repairs, and thousands of other minor repairs were either saved or performed by staff. Staff also watched the correct handling of books and tried to improve their storage conditions, especially as far as the consequences of the water heating system breakdowns were concerned.

The microfilming of the most important parts of the historical collections began shortly after the war as an immediate response to war damage. Two negatives were made with a Recordak camera, which was offered by the Rockefeller Foundation and which had been running up to the beginning of 1980. One positive copy was made for users. However microfilming proceeded very slowly and by 1990 less than 2,000 volumes of manuscripts (about one quarter of the whole collection) had been microfilmed. Since the late 1960s, microfilming has been extended to newspapers and the main library card catalogue. In spite of obsolete equipment, microfilms were made in a satisfactory way and can still be read today.

Bleak days

In the 1970s and 1980s serious preservation problems occured due to lack of storage and a decaying lack of interest in library issues. Already after the war, the storage areas that had been built in the 1920s, were overcrowded. Various historical buildings outside Prague were then allocated to house books but they presented adverse storage conditions. In addition three halls, whose walls were made of corrugated iron sheet, served as depositories but none of them was heated or equipped with any fire or security system. Mold grew and some books were infested with insects and rodents. Favorable conditions could only be found in the main building of the library where greater damage was precluded.

Things became worse when one of the main storage rooms was rebuilt into an automation centre. Thousands of books were then put on the floor. Others were put away in vegetable containers and placed under the roof. Millions of books were thus stored, many of which were old prints !

State support was directed towards information centres of large industrial branches rather than public libraries. The profession of librarian was depreciated which entailed its decay. Inspections

of collections were carried out rarely. There was no registration of lost volumes. As a consequence, the number of volumes stolen by staff members increased and many books were lost in the process of cataloguing. The cleaning of books stopped gradually. Free access to historical books increased their deterioration.

Such devastation activated sporadic attempts. From the middle of 1980s the Department of Reprographic Services was transformed into a preservation microfilming laboratory to reformat rare manuscripts and embrittled newspapers. The lack of money for the purchase of equipment and films, and the lack of space for the storage of microfilms, as well as the unreadiness of other libraries to catalogue microfilms and make them accessible to users, complied us to make archival masters only.

In 1980, new facilities were set up to control the microbiological environment and mold prevention. A method of book disinfection with fog generators for a soft diffusion of water and ethanol solution, which is still in use today, was developed. However warnings from the conservators and the Department of Manuscripts pointed out the inconvenient storage conditions and continuous degradation.

Transformation period and the CASLIN project

When political changes occured in the country, the National Library was in a bad position. However shortly after the Velvet Revolution, top management exchanges with the Andrew Mellon Foundation and Mount Holyoke College opened the door to assistance and improvement and to the implementation of the CASLIN (Czech and Slovak Library Information Network) project which triggered actions for necessary changes.

When Czechoslovakia was still an undivided nation, the CASLIN aimed to create a network of two Czech and two Slovak libraries which would act as an automation centre. The micrographic laboratories of the Czech and Slovak National Libraries were newly equipped and a working group on preservation microfilming was established, involving four libraries.

The automation process raised other issues and entailed analysing all library activities and their following transformation. But it turned out soon that any change and solution was not possible because of lack of space. This induced the authorities to transform the National Library. The Czech government allocated a building which could be reconstructed into a depository and allowed other departments to move. In 1993 an American company, The Hillier Group and the Czech firm A.D.N.S designed the project. Work began in July 1994 and ended in November 1995.

The new management team realized that preservation was one of the library's main priorities and that reorganizing preservation activities was of the highest importance. At the beginning of 1990s, the Department of mass and preventive preservation, the Workshop of mechanical cleaning and the National Preservation Programme were established. These three units, together with the Department of Conservation, the Department of micrography and the Laboratory of microbiology were subordinated to the Deputy Director. In 1994 this development culminated in the creation of the new division which brought together the preservation departments with the main collections. The Division of Collections and Preservation is now the largest in the Library with eight departments and more than eighty staff members.

New central storage area

As mentioned above, the most important turning point in the modern history of our Library was the building of the new depository on the border of Prague. Storage areas, equipped with air conditioning system for temperature and humidity, house four million volumes. Effective filters preclude dust and car exhaust from entering. The electronic fire safety system and the self extinguishing sprinkler system decrease the risk of fire. A special environment has been conceived for preserving microfilms.

The new building also houses the new micrographic laboratories, the conservation workshop, chemical laboratories, special rooms equipped for mechanical cleaning and disinfection. The library's printing house and the archives of the National Library have also been transferred there.

In 1996 and 1997, two million volumes were moved. The moving was prepared a long time in advance: books were cleaned and disinfected in the old depositories before being placed into the new ones. Old prints were selected and put away as special stock in the main building.

The new organization of the departments and the preservation premises entailed the separation of the conservation workshops from the historical collections which are still in the main building in the center of Prague. This disadvantage was overcome by establishing a smaller workstation in close proximity to the Department of Manuscripts and Old Prints, where the survey of historical books and smaller repairs were carried out.

In the course of these transformations other activities were launched, such as the boxing programme, the survey of current collections, the digitization of manuscripts and the detailed survey of historical books.

New approaches to preservation and technologies were hindered by the isolation of libraries and the absence of any cooperative activities supported by the library consortium. The National Preservation Programme, which takes care of the reference library, propagates new conservation techniques, and processes and coordinates preservation microfilming through the working group of the CASLIN project.

Research and Development programmes are blooming

At the National Library, several preservation projects which are (or will be) financed by the Ministry of Culture were carried out in 1996 and 1997. Last year the two-year project "Stoppage of leather binding degradation caused by water" was approved.

Four other projects related to preservation were approved this year, in particular the cooperative project of preservation microfilming which involves the National Library, the Moravian Country Library and State Research Libraries in Plzen and in Olomouc and which follows up the activities of the CASLIN working group.

The project has three primary aims: to equip four micrographic laboratories to produce standard quality microfilms, to adapt filming procedures to meet requirements of ISO standards and finally to reformat eighteen titles of major newspapers. This project will be over in 1999 when we join the EROMM European project.

The second project deals with the digitization of microforms and aims to set up a laboratory

where 35mm microfilms and microfiches, where various documents such as newspapers, magazines, manuscripts and old prints would be digitized. The access to digitized documents will be provided through CD-Roms and the Internet.

Climatic conditions in the storage rooms of the Manuscripts and Old Prints Department will be explored as a third project. It should lead to the implementation of adequate measures that would guarantee stable environmental conditions. Similar financial resources are used for research in the standardization of microbiological infestation.

The fourth project deals with archiving documents in electronic format.

Staff involvement

After the implementation of measures for the improvement of microclimate conditions in storage areas, priorities would move from historical collections to 19th and 20th century brittle paper and other modern book collections. Late in 1997, a new department which will incorporate book binding (today part of the Conservation Department) and mechanical cleaning (today part of the Department of preventive and mass preservation) will be created. This new arrangement should free new resources for repairing books in situ. Staff members will perform these operations as soon as mechanical cleaning is in the final stage.

Some new activities which will be carried out by staff in storage areas could improve the care of modern collections. So far, staff in storage areas restricted their activities to a mere looking at the books and putting them back on the shelves. But in the near future, the main collections will be divided into sections according to the type of document (non-book, periodical, foreign literature, etc.) which will be controlled by specially trained staff who will be in closer contact with the preservation departments. They will be involved in collection surveys and other preservation activities. Smaller repairs in situ could also be performed by staff in the Micrographic Department and other departments.

In the long term, we also intend to install lamination and mass deacidification facilities but this depends on the amount of funds available. The preservation of 19th and 20th century modern papers has been initiated but it is still in its initial stage.

National strategy difficult to implement

While the situation at the National Library is improving gradually, preservation in other libraries is not satisfactory because of the lack of money and information for the most part. Very few libraries have in-house conservators. Three of them are involved in the national microfilming programme. In such a context, working out a global strategy at the national level is a real challenge. Actually national strategy should devise the safeguarding of historical and rare books. Much thought should be given to the creation of a central depository system which could address the issue of lack of storage at a lower cost. Preservation microfilming, digitization and storage of electronic documents should be developed globally. Printing publications on acid free paper is also one of the global strategic objectives.

All these activities cannot be carried out without previous large scale surveys in other libraries. It is necessary to collect information to plan the microfilming, digitizing, boxing, and storing programmes in the long term.

The lack of commercial or non-profit-making firms that deal with microfilming, conservation and other preservation activities is also prejudicial to smaller libaries which will never have their own facilities. The lack of any independent institution such as the Commission on Library Resources or the Commission on Preservation and Access, standing halfway between state institutions and libraries, and supporting the development of libraries and preservation activities, is perceived negatively too.

The last important requirement deals with preservation teaching at the Library and Information Science of Charles University and in secondary library schools.

As you can see bad social development can affect the state of preservation negatively. Only political stability and economic growth can guarantee the development of preservation activities and techniques. In this context the admission of the Czech Republic to European structures (NATO and EU) can be seen as one of the guarantees for the survival of library collections.

Jiri Polisensky

Director of the Collections and Preservation Division
National Library of the Czech Republic

Panorama histórico de la preservación en la Biblioteca Nacional de Praga

Entre 1945 y 1980, las actividades de conservación en Praga se limitaban a la restauración manual y a la microfilmación de documentos consultados. El régimen imperante concedía poca importancia a los problemas que enfrentan las bibliotecas. Hubo que esperar la conmoción política de los años 90 para que se creara, gracias al financiamiento de la Fundación Andrew Mellon, una red de información de bibliotecas checas y eslovacas, CASLIN, y para que la preservación se concibiera como algo indispensable. Consecuentemente, dos millones de documentos se trasladaron a locales climatizados. En el marco del programa "Memoria del Mundo", nuevos proyectos salieron a la luz: el programa de adecuación de ambientes, las encuestas sobre el estado de las colecciones y sobre las condiciones de los manuscritos, así como la digitalización de las piezas históricas más importantes. Finalmente, el personal de los depósitos recibirá una formación apropiada. El oscuro pasado político, sin embargo, hace difícil la puesta en práctica de un programa de preservación a escala nacional.

Survey of Rare Manuscripts Gave Impetus to Overall Preservation

A preservation survey is useless if not prepared carefully and not directed towards changes in the uses and customs of a library as part of a new or renewed preservation policy. At the National Library of Prague, such a minute undertaking was carried out by the Conservation Department which resulted in new access to information.

The origin of the rich book collections of the National Library is connected with the foundation of the University of Prague in 1348. In 1366, the University founder, the Czech King Charles IV presented the new library of Charles College with forty-eight manuscripts. In the mid-eighteenth century, the library of the Jesuit College in the Klementinum, which today houses the National Library, owned as many as 15,265 books. After the abolition of the Jesuit order in 1773, during the period of the Josephin reformation, the library was enriched by the acquisition of up to

50,000 books from monasteries that were closed down; in 1801, Karel Raphael Ungar, the librarian of the University Library, referred to 147,000 books in his report.

The systematic preservation of books is rather recent

The Library collections continue to grow as a result of purchases at auctions, donations and deposits. Today, the overall number of books in the National Library is around six million, including a collection of approximately 8,500 manuscripts, 4,000 incunabulas and 300,000 books printed before 1800. These books are deposited in the Rare Book Room of the Department of Manuscripts and Old Printed Books. The most valuable historical part of the collection comprises some 5,000 medieval manuscripts on parchment and paper, some of them having opulent illuminations and very precious bindings. Many of these manuscripts are recognized at the worldwide level. The collection holds works performed in scriptoria across Europe but most of them originated from Bohemia. Undoubtedly we can say that the Library's collection represents a significant part of both the Czech and European cultural heritage.

Although there has been a conservation department conserving a selected number of books since 1953, the systematic overall preservation of books has been instituted only recently. Information about the alarming condition of the rarest materials, the historical heart of the library, had already been published in the late 1980s. With the political changes, early in the 1990s, the protection and conservation of books have attracted increased attention. New ideas about access to collections have emerged. The Library has been restructured. A new Division of Preservation has been created, together with other departments reponsible for preventive and mass treatments, preservation microfilming and digitization projects. The problems that have accumulated for several decades -the most important of which are unsuitable storage conditions- are being solved step by step.

First step: diagnose the state of the rarest manuscripts

Illuminated manuscripts were in an alarming state, yet none of the curators was able to diagnose the scope of damage, nor to analyze this information from a conservator's point of view. For this reason, a working group made of preservation and manuscript specialists was formed to discuss the conditions of the manuscripts and set up a preservation plan. After consulting specialists from The Getty Conservation Institute and thanks to support from The Getty Grant Programme, a survey project involving 500 of the rarest manuscripts was established. Christopher Clarkson was invited from Great Britain as project consultant.

The primary and overriding goal of this project was to analyse the real physical condition of the rarest materials in the manuscript collection and then to decide on their preservation and further protection. It was presumed that the most valuable books numbered about 500, and that this figure would also be representative of the condition of the whole collection.

It must be said that it is not our aim to conserve nor to put in order all the books. In most cases, this would be very risky and complex and could change the historical identity of manuscripts. It is also impossible to correct irrecoverable damage; some conservation treatments carried out in the past have proved that this kind of intervention is double-edged.

We first discussed the survey methodology with Christopher Clarkson. It was clear from the very beginning that the survey should provide several pieces of information at various levels. Besides

the detailed analysis of the physical condition of the books from which ideas about further protection and conservation would arise, it should also include a detailed typological description of the manuscripts and their bindings. As an example, the material of the text-block, e.g. parchment or paper, was described, then the writing medium, illuminations, and the type of the binding.

Second step: recommendations for protection

Each part of the typological questions was followed by questions dealing with the physical condition of the corresponding part of the manuscript and its state. The final part of the form included an overall recommendation concerning the protection of the book, such as the type of storage and enclosures, the scope of the necessary conservation work, and instructions or recommendations for curators about the possibilities of access by researchers.

Slides were used for photodocumentation. First the binding of each manuscript was photographed, together with a typical opening of the volume. Usually the most significant illuminated folio already published in the past was chosen so that its current condition could be compared with the past one.

The photographic archives of the National Library are rich with materials that helped us compare the state of the manuscripts. All the negatives of photographs made at the readers' requests have been kept systematically. A private photographer who holds a unique collection of negatives of major Czech cultural relics, Mr P. Paul, was contacted. He treasured photographs taken by his father some fifty years ago. Unfortunately he took very few pictures of bindings, which made our comparative work more difficult. Other photographs taken during the survey documented both the characteristic damage of the books and various kinds of details, indicative of the technology of the book production. About seven to twenty photographs of each manuscript were taken depending on its condition and significance. The selected slides will be digitized on a CD-photo.

Final step: a database

After completion of the survey, our aim is to carry out minor first aid conservation treatments rapidly, in order to prevent further damage, to fix loose fragments, to add new protective covers.

We are considering producing phase boxes such as those designed by Christopher Clarkson and would like to get enough funding to purchase a machine for their production. In fact, many books are awaiting boxing and handmade production would take too long.

One of the goals of the survey project was to create a database indicating the origin, the condition suffered by various types of illuminations, inks, parchments and binding structures. This information will certainly prove useful for training conservators and interested readers. Conversion of the survey to the computer database gave the opportunity to either expand or simplify the form. It was under these conditions that further improvements were made. In this way a compact database including very detailed and exact information about the condition of the books could be made.

In addition, we would like to put a shortened version of the survey database on the library computer network so that staff in the Manuscript Department could then keep a record of the volumes consulted by researchers. In this way the database will help orientate readers to

substitutes whenever manuscripts in bad repair are requested.

Hopefully the results of our survey will be taken into account for the reconstruction of the Klementinum, for desiging the new rare book room and more specially for the shelving and curatorial care of the manuscript collection. New rooms for the conservation department are planned to be in the vicinity of the rare book room.

We hope to contribute to the preservation of the unique cultural heritage of our country, thus enabling future generations of scholars to study the admirable skill of the authors of medieval illuminated manuscripts, bindings and the technology of their production.

This text is part of a paper that was delivered at the IPC Conference in London in April 1997. Full text will be published in the conference postprints

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Encuesta sobre el estado de los manuscritos

Los cambios políticos de los años 90 suscitaron una restructuración de las actividades de conservación. Se creó un nuevo departamento y se le asignaron sub-divisiones para que se encargaran de los tratamientos masivos y de prevención, así como de la microfilmación y la digitalización. La biblioteca alberga aproximadamente 8.500 manuscritos en papel y pergamino que datan de la época medieval, pero su estado ha alarmado a los responsables de dicha colección, quienes acudieron a los expertos del Instituto Getty. El señor Christopher Clarkson recibió una invitación para que dirigiera la encuesta sobre el estado de las colecciones. Quinientos manuscritos fueron seleccionados: se describieron minuciosamente y luego se hicieron recomendaciones de conservación. En un primer momento, se previó las reparaciones pequeñas y actualmente está en estudio la protección dentro de cajas elaboradas por C. Clarkson. Se realizó un trabajo de documentación con tomas fotográficas. Finalmente, toda la información compilada figura en una base de datos, a la cual tiene acceso el personal encargado de orientar a los lectores sobre los soportes de substitución.

Involvement in the "Memory of the World' Programme

When the "Memory of the World" programme was launched by Unesco in 1992-1993, the National Library of Prague took an active part in preparing the first pilot CD-ROM that is known and cited as the "Prague Project". However, this was the very beginning, as a new programme has been set up since. Indeed the new "Memoriae Mundi Series Bohemica" project represents one of the basic activities of the library.

Even if mostly focused on digitization, the Library is involved in the whole work of the International Advisory Committee of this Unesco programme and its Sub-Committee on Technology.

As a consequence, a Digitization Centre has been built within the National Library. It is equipped with a Kodack DCS 460 digital camera and all the necessary tools that allow exposure and light controls, the processing of image information, its merging with descriptive metadata and the

recording of digital copies onto optical discs. The necessary software tools for generating the SGML (Standard Generalized Markup Language) structure of the final digital documents have been created too.

For 1997 and 1998, the funding of the programme will be made possible from a grant system from the Ministry of Culture. We aim to build digital archives by first storing our own production of digital copies of endangered rare documents, then by storing the CDs audio records received through the legal deposit. Simultaneously an information system of these archives is being built. The digitization of old sound records is part of our prospective goal.

The greatest attention is paid to the definition of appropriate archival and access structures of the digital documents produced in the framework of the programme. These are developed in co-operation with the Unesco "Memory of the World" Sub-Committee on Technology.

Our digitization project is carried out jointly with the Albertina Icome Praha Comp. Ltd. The results of our work will be published on a CD-ROM early in 1998. Users will find all the necessary software tools to produce and see copies of old rare documents. These software products will be free for non-commercial use. However access is not restricted as documents, structured in conformity with the proposed rules, can be accessed by WWW browsers. The CD copies of the digital manuscripts can be ordered at a very reasonable price.

Further information can be found at the URL address .

Adolf Knoll Deputy Director National Library of the Czech Republic

Flood in Poland

On 21st July, the IFLA discussion list received a message that was sent to librarians worlwide. Ewa Krysiak from the National Library of Poland asked for urgent pieces of advice, for material and financial help to cope with collections, equipment, hardware and building damage by the flood in southern and western Poland. The National Library of Poland has created a central data bank to collect, process and transfer all data on damage to libraries in need. A special team to coordinate rescue activities and give instructions has been formed and a special sub bank account has been opened to those who would like to support with donations:

Bank Pekao S.A. VIII O/W Warszawa
N° 12401112-30001590-2700-401112-002
"Pomoc dla bibliotek - powodz".

At the PAC level, Amparo de Torres from the Library of Congress, sent bibliographical references from the Internet for the most part. She also sent the Russian and English version of Sally Buchanan's package on disaster planning and recovery, and Peter Waters' instruction on how to freeze and freeze dry flooded materials.

Prospective Changes at the Russian State Library

The Russian State Library in Moscow owns more than 42 million documents. Three thousand people are employed, of which 60 are part of the Conservation Centre. The library has been acting as a national library since 1991 when an agreement of coordination and cooperation was signed with the National Library of Russia, in St Petersburg.

The Department of Hygiene and Conservation of the Russian State Library was set up in 1944. It used to head the Research Laboratory. But in order to keep abreast of the requirements for book preservation the activities of the centre were reorientated and it was renamed "Research Centre for Conservation".
Daily activities are: control of storage conditions; implementation of preventive measures; conservation; research on paper, leather and parchment constituents; and assistance to other Russian libraries, archives and museums on methodology.

Moscow is an ecological disaster zone with up to 1 to 1,2 million tons of pollutants thrown out annually. This speeds up the natural process of the ageing of documents considerably. When checking the stocks of the Library it appeared that the state of the papers varied according to their quality. Two to three percent of the documents could not be accessed any longer and 25 % of them were so brittle that their transfer onto other carriers has to be considered as soon as possible.

Backlog of documents to be repaired difficult to be overcome

Over one million rare and precious publications are in need of restored bindings and about twenty million sheets have to be restored urgently. The library is responsible for such a huge amount of documents that the activities of the centre have to be modified. New priorities have to be set up in order to better address the policies of preservation in all Russian libraries. The 9706 ISO standard for permanent paper must be made public in Russia. The standardization of papers, pastes, leathers, cloths, glues and dyes is the target for the years to come.

One of our aims is to be present in each department of the library. Needs have to be identified in order to determine priorities and raise funds for implementing the long-term programme of activities up to 2012.

Presently it is not possible for the centre, nor for similar bodies in Russia, to meet all preservation requirements. In fact the number of services dealing with preservation in national and major libraries in the federal republics should be increased. The centre should work in close cooperation with other centres on a federal and international basis, elaborate standards and secure the implementation of preservation policies. It should be able to address storage issues within the library and for other libraries too, become a leading research and information centre in Russia and develop training for library staff.

Restored documents must be replaced in safe environment

Preserving library materials as far as possible into the future depends on adequate storage conditions. Currently all these issues cannot be addressed properly because technical equipment and sites are lacking.

However proper storage conditions require:

- control of temperature, relative humidity, light and air;
- mycological and entomological control;
- disinfection and fumigation of infested holdings;
- determination of the kind and cause of damage;
- identification of materials/objects capable of damaging books.

The fulfilment of these tasks can only be made possible with the help of specialized staff and adequate equipment. Thus it is necessary to:

- form a group of climatologists;
- design environmental monitors for storage areas ;
- install air-conditioning system equipped with filters against bacterial and gaseous pollutants;
- acquire portable monitors to secure environmental conditions in case of emergency;
- design a centralised system for vacuum cleaning in storage areas;
- acquire a disinfection and fumigation chamber;

As a matter of fact, replacing restored documents in safe storage conditions is a prerequisite for their safekeeping.

Acid-free materials are needed

The protection of documents must be insured against mechanical, chemical and biological damage. All these aspects are interdependent.

Protection against mechanical damage can be achieved through the following processes:

- phase conservation: while awaiting conservation treatment, documents are put away in acid-free boxes.
- mounting;
- encapsulation: single sheets of paper are enclosed between two pieces of polyester film which are sealed around the edges.

Chemical influence can be precluded thanks to:

- washing documents with distilled water;
- neutralising the migration of acidity and laying in an alkaline reserve;
- blocking the impact of ions on heavy metals.

Microorganisms and pests can be repelled with biocides.

These measures can only be effective if some materials are acquired such as acid-free pasteboard, cardboard equipment, assembly lines for washing documents, and chambers for neutralising documents. At present little conservation is performed in the library because the gap between actual needs and the quality required is widening gradually.

In order to address this issue it will be necessary to create a data bank. Documents should be stored according to their physical state, value and need for conservation. Techniques such as leaf-casting, splitting, and lamination (for 19th-20th century documents) should be introduced. Processes for mass conservation and piecemeal binding should be installed and mass conservation as a whole should be increased in order to go through the conservation backlog. Preventive and small repairs could be performed by staff in the departments where collections are stored.

A data bank on preservation activities

Perfecting measures for assuring preservation in the Russian State Library and other institutions will be one of the main tasks of the centre.
The centre will have to develop a policy of transfer but this area is still underdeveloped. We will have to start investigating the preservation of digital carriers, as their storage requires specific conditions.

The centre should supply information to institutions and specialists involved in preservation. It will have to process preservation information from Russian and other international sources and make it public to those who are concerned, disseminate unpublished information, and set up a data bank on preservation activities in Russian libraries.

Experience shows that neither sporadic lectures nor reading will suffice for helping the implementation of new measures. Unawareness of the advances of science, in conjunction with lack of communication among conservators and scientists weigh heavy on the development of new methods. As a consequence, a 160-hour course with scientific lectures and practical training for new and skilled conservators should be organized. University courses that would award certificates should be created in agreement with the educational department.
Coordinating research will help avoid parallel work done by similar institutions.

All these tasks cannot be carried out outside the international framework. Actually, our centre has good links with the IFLA, the ECPA and ISO and intends to further cooperation with these institutions.

All these changes are expensive. Currently financial aid of around $325,000 are needed, including $300,000 for materials, equipment, and laboratory supplies and $25,455 for staff. Possible sources of supplies could come from the Russian State Library itself, the Ministry special projects programme, receipts from the commercial activity of the centre, and sponsorship.

Olga Perminova

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Russian State Library, Moscow

Previsiones en la Biblioteca del Estado de Rusia

Las actividades del centro de restauración, que existe desde 1944, conciernen principalmente el control de los depósitos, la ejecución de algunas medidas preventivas y la restauración tradicional. El centro realiza investigaciones sobre los elementos que constituyen las pieles, los papeles y los pergaminos y aporta una ayuda metodológica a otras instituciones del estado. La biblioteca posee más de 42 millones de documentos y se esfuerza por establecer un programa a mediano plano a fin de optimizar la preservación. El acento debe recaer en la conservación preventiva en los depósitos, la lucha contra las contaminaciones microbiológicas y el almacenamiento. El centro desea crear un banco de datos que permita censar todas las actividades de preservación en Rusia e instaurar una formación universitaria para los restauradores. Todos estos proyectos no pueden culminarse exitosamente fuera del marco internacional y sin el apoyo financiero del Estado.

Preservation Digitising of Newspapers

For over fifty years newspapers have been microfilmed to preserve their information content. Digital imaging has the potential to complement microfilming as a preservation reformatting strategy for newspapers and increase access to the information. This article describes the characteristics of newspapers, preservation microfilming and digitising, and how they may be brought together for these purposes.

Newspapers are highly valued throughout the world. They provide vivid accounts of places, events and people. In isolated rural areas they may be the only source of the contemporaneous documentary record.

The newspaper collection at the State Library of New South Wales (http://www.slnsw.gov.au/) comprises nearly 2,000 titles and over 44,000 volumes. This ranges from the earliest Australian title, the Sydney Gazette and NSW Advertiser (1803), to today's Sydney Morning Herald. It is the premier collection of newspapers in the State and one of the most heavily used resources in the Library. In their nomination as one of the five collections of world significance in the Library's submission to the UNESCO Memory of the World project, NSW newspapers were described as "a unique resource covering all aspects of life in New South Wales across the period of white settlement from the viewpoints of many communities".

The collection is catalogued on an in-house system and in the Australian Bibliographic Network (ABN). Nationally, we are responsible for the NSW component of the National Plan for Australian Newspapers, a cooperative project to microfilm all Australian newspapers to preservation standards and make their bibliographic records available through ABN by the year 2001.

Most manuscripts require black and white digitising and intermediary tones of grey

Digitising may be thought of as "electronic photography" in that the process converts continuous images into discrete electrical signals, just as the process of photography converts continuous images into discrete particles of silver. The electrical signals are represented as "dots" when the digitised image is printed and "pixels" when the digitised image is displayed on a computer monitor. Dots and pixels are stored in computers as one or more "bits", the smallest unit of computer memory.

Most text-based documents, including newspapers, can be digitised in "bitonal" (1-bit per pixel) imaging, where each pixel is either black or white. Black pixels are usually represented as zeros (0s), for the absence of light, and white pixels as ones (1s), for the presence of light. However, most manuscripts, and all continuous tone photographs, require digitising in black, white and several intermediary tones of grey. This is known as greyscale imaging and requires multiple bits per pixel. If 8-bits per pixel imaging is chosen then 256 shades of grey are theoretically available. This is a frequently chosen standard because it closely approximates the number of shades of grey that the eye can distinguish. Digitising in colour, using 24 (or more) bits per pixel, is becoming more common with the increasing use of colour in publications and on the World Wide Web (WWW). The central challenge in obtaining quality in digital conversion is matching the characteristics of the original source (or intermediary medium) with the capabilities of the conversion technology, especially the scanning equipment.

Digital image fidelity is dependant on the number of bits per pixels and the number of pixels or

(dots) used to represent the original object. This is known as its "resolution" (the number of dots to a linear measurement, such as an inch). For example, low resolution computer monitors usually display images at 72 dots per inch (dpi) in both horizontal and vertical directions, medium resolution laser printers print at 300 to 600 dpi and high resolution "typesetters" may require several thousand dpi to achieve reproduction quality images. After digitising, the bits are stored sequentially in a computer. This sequence is subsequently "read" by software and an image of the original document re-created for display, printing or transmission purposes.

Microfilm has always been unpopular with users

Libraries are reformatting materials as digital images for several reasons. Anne R. Kenney, Associate Director in the Department of Preservation and Conservation at Cornell University Libraries, has said: "Digital technology holds great promise for the world's libraries and archives, revolutionising how we capture, store, preserve and access information".(1) From the users's point of view, digital imaging has the potential to overcome some of the disadvantages of microfilm. Microfilm is an efficient, cheap and long-lasting alternative to traditional conservation methods, but it has never been popular with users because it is cumbersome to use and on occasions difficult to read. In contrast, digital images offer the potential of non-sequential access to information, automated networked access anywhere in the world, and the possibilities of image enhancement that keeps each image as legible as its original.

Newspapers belong to a category of materials known as "text and line-art documents". The category includes books, serials, manuscripts, typescripts, line drawings, engravings, and black and white copying processes. Text and line-art documents have similar characteristics. Research by Cornell University into the digital imaging of documentary materials shows that they can be digitised using similar specifications because of their similarities. Actually there is usually a high contrast between the image (which is almost always black type) and its background (which is usually white paper). High contrast images are best digitised using high contrast bitonal imaging. Reformatted newspapers only have to be legible to convey their meaning. This is a simple requirement compared to visually complex documents such as photographs.

The height of the smallest significant feature to be reproduced, such as the smallest word or letter, can be measured. This measurement may be used to calculate the scanner resolution setting that will consistently render the smallest feature legible. Tests have established that a scanner setting of 600 dpi bitonal imaging meets these requirements and includes a fifty per cent over-sampling allowance to compensate for the loss of information inherent in bitonal scanning. Text-based documents are predominantly white background and therefore mostly become digital "1s" when they are scanned. This optimises the effectiveness of simple compression techniques such as ITU Group 4, a "lossless" (reversible) compression technique seen most often within TIFF (Tagged Information File Format) image files.

Oversized documents must be digitized via an intermediary medium

However, in legacy collections, the contrast between the print and the paper is sometimes low and varies from page to page, may make batching and economies of scale difficult to achieve. Documents range in size from small books to broadsheet newspapers. They can usually be grouped by size and the groups reformatted at the same reduction ratio (rr). This speeds up conversion.
However, broadsheet newspapers are too large to fit on flat-bed scanners, which are usually no

more than 17 inches by 10 inches (43 cm x 25 cm), and must be digitised via an intermediary medium such as microfilm, or using high resolution digital cameras. Deteriorated newspapers may require repair before they can be reformatted, slowing down the reformatting process. The use of colour is becoming more common, introducing new issues including colour fidelity, increased file sizes and extended transmission times across networks.
The increasing size and complexity of newspapers, including the use of supplements, requires complex directory and file structures to be devised, taking time away from the process of reformatting.

There are many key characteristics of microfilm technology as it relates to digitising.
Microfilm cameras are capable of recording very high resolutions: 120 line pairs per millimetre (lppm) cameras are common and cameras capable of greater than 230 lppm are becoming available. This is equivalent to an optical resolution of 6,000 dpi, or above. High contrast microfilm is an advantage for imaging high contrast text and line-art documents. However, the reproduction of half-tones and colour is unpredictable using this medium.
Colour microfilm is available that is long-lasting, has high colour fidelity, and from which excellent digital images may be produced. In particular, IlfachromeTM colour microfilm is being used for this purpose.

Newspapers shoud be reformatted once they are acquired

Although all library materials deteriorate with age and use, newspapers are especially vulnerable due to their inherent chemical instability. They may be reduced to fragments in a few decades. What are libraries doing about this problem? Conservation treatment is a short-term option for individual newspapers of high artefactual value but it cannot be increased in scale to meet the preservation needs of deteriorating newspaper collections. Mass deacidification has been shown to be effective at the demonstration level and may be increased in scale within the next few years. At present, however, this demand can only be met through reformatting so that the information content of newspaper collections is preserved. Ideally, reformatting should be undertaken when newspapers are acquired. It must be done before they become too brittle to handle - somewhere between 25 and 100 years depending on their initial strength, use, and the environment in which they are stored.

The most effective reformatting technology is preservation microfilming: that is, 35 mm polyester-based silver-halide microfilm, processed to recognised international standards for chemical stability, stored in inert containers and recommended storage conditions. If this specification is met then preservation microfilm is expected to last several hundreds of years.

The longevity of digital information is problematic. Margaret Hedstrom, Associate Professor in the School of Information at the University of Michigan, has commented that: "Recording media for digital materials are vulnerable to deterioration and catastrophic loss, and even under ideal conditions they are short lived relative to traditional format materials" (2). This challenging situation arises for several reasons. Magnetic and optical media, such as hard disks, floppy disks, magnetic tape, CD-ROM and CD-R are inherently unstable, easily damaged and, like all media, are deteriorating as soon as they are made. There is an intrinsically low level of redundancy in information in digital format: even a very small change in a single digital signal may make all the information unreadable.
Hardware, software and operating systems for recording and storing information are being replaced with new products and methods on a regular three-to-five-year cycle. Known as

technological obsolescence, this is the most pressing technical issue. In contrast to the preservation of paper-based objects, the preservation of digital information is largely experimental and fraught with the risks associated with untested methods. Although electronic resources have been in existence for over 60 years, there is an absence of established policies, standards, protocols and proven methods. This is only now being addressed.

When it comes to preserving information in digital format, the aim is to preserve its meaning over time through maintaining its useability and integrity. Preserving the meaning is more important than preserving the medium, although preserving machine-readable formats by definition requires the information, the medium and the access technology to be in good condition. To preserve the information it must be "refreshed" (a process of copying each bit, keeping the same order and the same total number of bits) and/or "migrated" (a process of periodically transferring digital information from one hardware/software configuration to another, or from one generation of computer technology to a subsequent generation). Migration aims to keep the same functionality and meaning (or as much as can be achieved) across successive generations of technology.

Digital images may be produced directly from documents using flat-bed scanners and digital cameras (the scan-first option), and indirectly via an intermediary medium such as microfilm (the film-first option). It is likely that both options will need to be used.

Scan-first

Flat-bed scanners are being widely used to digitise books and manuscripts. For example, a number of projects at Cornell University Library are testing and evaluating the interrelationship between printed books, digital images for access purposes and microfilm for preservation purposes. Initially using Xerox Documents on Demand (XDOD)TM scanners, but now out-sourcing their digitising, Cornell are creating 600 dpi bitonal images that are saved in TIFF image file format. After "cleaning", up to 40:1 compression is achieved using the ITU Group 4 standard. Cornell uses the following two-step procedure to send these images over the Internet: the 600 dpi bitonal images are scaled to 300 dpi; then 100 dpi, 3-bit greyscale GIF (Graphics Information Format) images are created "on the fly" when a user selects them from Cornell's digital library (http://moa.cit.cornell.edu/). The greyscale increases legibility on computer monitors and is a "native" format for WWW browsers such as Netscape TM. Cornell staff, and in particular Anne R. Kenney, have published extensively on their digital projects (see, for example, http://www.dlib.org/dlib/october96/cornell/10chapman.html).

The scan-first option may also be used to create preservation microfilm as a long-term "safety-net" for resources that are actively deteriorating. In a process known as "Raster COM" (Computer Output Microfilm in which the image is composed of an array of pixels arranged in rows and columns) digital image files are recorded a pixel at a time onto microfilm using an Electron Beam Recorder (EBR). The process is capable of recording 1,000 lppm (10,000 dpi) onto microfilm (see http://www.igraph.com/).

A way around the size limitation of flat-bed scanners is to use a digital camera: that is, a camera with a conventional lens but an array of Charge Coupled Devices (CCDs) instead of light sensitive film. Digital cameras produce very high quality images of small documents, but do not have sufficient CCDs to achieve 600 dpi which ensures that very small features will be legible. For example, today's Sydney Morning Herald is 23 inches (58 cm) high. To achieve 600 dpi a

digital camera with 13,800 pixels is required.

Several projects are exploring the film-first option's advantages and disadvantages

Film-first

In the film-first option, microfilm scanners are used for converting roll film, microfiche and aperture cards to digital format. The advantages of digitising from microfilm are various. There are no size or shape limitations, anything that can be photographed can be digitised; the microfilm still exists as an archival backup on a proven medium; conversion speeds are high when the process can be standardised; and a considerable quantity of film exists on which the preparation and microfilming costs have already been expended.

The disadvantages of digitising from microfilm are the following:
the digital image is second or third generation, the image may be enhanced but at a cost; high contrast film has already eliminated some information present in the original, and it has poor tonal reproduction; the poor condition of some films, including scratches, gutter shadow and splices; irregular undocumented filming, size variations and significant indexing issues interrupt production mode digitising; and scanner resolution (size of pixel array) may not be sufficient to capture all significant details.

Projects to explore the benefits and limitations of the film-first option include Project Open Book at Yale University Library (http://www.library.yale.edu/preservation/pobweb.htm), filming the Burney Collection at the British Library (http://portico.bl.uk/access/microfilm-digitisation.html), the conversion of two Latin American newspapers at the University of Florida (http://www.karamelik.eastlib.ufl.edu/projects/mellon) and the Australian Cooperative Digitisation Project (http://www.nla.gov.au/ferg/), known as the ACDP.

Yet projects are not carried out similarly

The projects have the following characteristics in common:
High quality digital images are being obtained from new and existing microfilm, including film of poor quality.
Many of the original materials were not filmed to current preservation microfilming standards making ëde-skewingí (straightening), 'cleaning' (de-speckling and removing the black borders around the edge of the text area and the black line down the centre of each page), and brightness and contrast control necessary.
Use of the TIFF image file format and ITU Group 4 compression.
Use of high resolution bitonal scanning at Yale, the British Library and the ACDP; although only Yale have achieved 600 dpi through a modification to the equipment and software. The other projects have achieved 400 dpi.
Directory and file structures reflect the collation of the original materials and can be "parsed" (analysed) to retrieve a particular page or document structure element, such as a table of contents.
Use of the WWW to provide access, although access at the Florida project is to a text-based description and order form. The need for thorough documentation, specifications and 100 per cent quality control.

A commitment to sharing the information they have gained.

In some aspects the projects have adopted different approaches. Florida employed 8-bit greyscale to increase the legibility of their poor quality newspaper microfilms. The images are approximately 1Mb each and users may select images from a text-based description at the project web site. A CD-R on demand is 'burned' for each user by reloading the requested images to a server.
The British Library and Yale are using "industrial strength" microfilm scanners, whereas Florida is using Minolta TM equipment and ACDP tested the technically similar ScreenScan TM system that projects a microfilmed image onto a ground glass screen before it is digitised.
Yale, Florida and the British Library are digitising in-house, whereas the ACDP is out-sourcing to the local micrographics industry.

Preservation Digitising

If digitising can meet or exceed the criteria established for preservation microfilming then it may be considered as a preservation strategy. These criteria may be simplified to three statements: the image must be of sufficient quality to meet users' information requirements; it must last for as long as it is required; and appropriate bibliographic requirements must be met.

Methods to establish the significant information to users, and translate these requirements into digitising parameters, have been developed by Cornell, Yale and others; and adopted in imaging projects for text-based documents. Images for preservation purposes should be benchmarked at the quality that just captures the smallest significant detail that users require.
Resolution requirements should also be set sufficiently high to avoid item-by-item decision making.
Only high resolution imaging justifies the high costs involved in converting images to digital format and meets future as well as current information needs. The aim is to create a digital preservation master.
Digital Quality Index (QI) benchmarks can be established for digital imaging that build on work in the micrographics industry. To reduce generational loss, high resolution digital cameras are the preferred method of digital image capture but they are not yet widely available.
To achieve a specific output resolution in bitonal scanning it is necessary to increase the scanner resolution setting by 150 per cent. Digital files for preservation purposes should be created in open file formats (such as TIFF), compressed using lossless compression algorithms (such as ITU group 4) and organized in standardised Document Control Structures (such as SGML).
Digital files for access purposes should be created in file formats and compression algorithms that meet user requirements for image fidelity and speed of access, optimising current technology.
Multiple format digital images may be produced from the digital preservation master, with low resolution images stored magnetically on-line, and high resolution masters stored either on optical media in near-line or off-line systems. Tape may also be used for long-term off-line storage; Raster COM may be used as a long-term preservation safety-net.

Is digitising a preservation option for newspapers?

The size of most newspapers means that they are too large to digitise at the 600 dpi bitonal specification that is known to capture all significant information and preserve meaning over time. However, improvements in pixel arrays in microfilm scanners and digital cameras, imaging

technology, and image enhancement software will address this issue before long. An alternative approach, such as the Florida University project using 400 dpi and greyscale imaging, demonstrates that newspapers can be successfully digitised in reasonable detail if large file sizes are accepted. Digitising newspapers is currently at the cutting edge of digital imaging technology. This does not mean that it cannot be done, but that compromises must be accepted.

I am less pessimistic than some of my colleagues about the longevity of digital information. This is not to say that some of it will not be lost before we develop standards, policies, strategies and techniques to preserve it. I prefer to believe that we will solve the challenges - because we must for the digital collections now being built - at least as successfully as we have solved all previous preservation challenges. As information professionals we are finding it difficult to keep up with the changing technologies that make digital materials obsolete almost overnight. How we convert back and forth between the digital technologies used for computerised storage and transmission, and the analogue technologies used for human presentation is demanding.

The preservation challenge is to manage this hybrid information era and to meet this challenge by holding on to the gains we have made in the preservation of paper-based information; recognising microfilming is an important - perhaps the most important - preservation reformatting strategy. There may be a renewed interest in the film-first option as optics continue to improve and standards adapt to support microfilming with digitising in mind; and developing policies, procedures and techniques to establish preservation digitising as an accepted preservation reformatting strategy, and ensure that digital information remains useable for as long as it is required

Preservation digitising is already an accepted concept in the sound and moving image collections, but has yet to gain acceptance in paper-based documentary materials. This may only be a question of different imperatives and time.

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N.B This article was presented as a Theme Paper Preservation Preservation Digitising of Newspapers at the Round Table on Newspapers, IFLA 62nd Annual Conference, Beijing, 29 August, 1996. It has also been translated into Russian by the Russian State Library from where it is available.

Alan Howell

Preservation Manager
State Library of New South Wales
Australia

La digitalización de publicaciones periódicas como opción de preservación

Alan Howell, responsable de la preservación en la Biblioteca de Estado de New South Wales en Australia, presenta el principio de la imagen digital y lo compara con una fotografía electrónica. Describe las ventajas y los inconvenientes que implican las dos técnicas modernas de reproducción de publicaciones periódicas: la digitalización y la microfilmación. Habla de las posibilidades de microfilmar primero y de digitalizar luego, o viceversa, digitalizar primero y luego microfilmar, a fin de optimizar la conservación de la información. En uno u otro caso, el autor resalta la conveniencia de reproducir las publicaciones periódicas desde su adquisición. Presenta los equipos apropiados para ambas técnicas, así como los proyectos de investigación emprendidos por las universidades de Yale, Cornell, Florida, la Bristish Library y la ACDP (Australian Cooperative Digitisation Project). Si bien el microfilm sigue siendo un soporte confiable a largo plazo, la digitalización impone todavía numerosos desafíos. Pero el autor se muestra optimista ....

Book Reviews

Biodeterioration of Cultural Property 3

Proceedings of the 3rd International Conference, July 4-7, 1995, Bangkok, Thailand. Bangkok: Thammasat University Press, 1995.

A thick volume introducing experiments conducted in various Asian laboratories and institutes.

Issues are explored together with local remedies. Although there are not enough research laboratories to cover all the needs in the East -Bangladesh, Maldives and Laos for instance are deprived of any laboratories- other institutes, such as the Indian Conservation Laboratory, of whose depending on museums in Thailand and Japan have conducted interesting studies to protect cultural property against infestations. Materials that are as diverse as stone, Chinese ink, textiles (silk, wool), painting, wood (rubberwood), brick and other organic materials such as hair, feather, paper, etc. are liable to severe deterioration due not only to the climate, mold, fungi and insects -which are common to all museums and libraries in the world- but also to lichens, algae, pigeon droppings, bat excrements to name but a few.

While efficient methods such as low oxygen environment in modified atmosphere for pest control or microwave radiation for disinfecting fungi on paper need special and costly equipement, low cost alternatives to the use of chemicals which are often toxic and hazardous to human health are being developed by searchers in Asia.
Among these, let's mention the use of homeopathic drugs as anti fungal agents for protecting books and paper, an experiment by Garg from the National Research Laboratory for Conservation in India which is safe and does not leave any residual or adverse effects on books.

Among medicinal plants and spices that inhibit fungi growth, clove proved to be the most promising plant species that inhibited six current fungi species (a study conducted partly by the Department of Agriculture in Thailand). Essential oil for the prevention of mould growth on palm leaf manuscripts has been investigated by Dhawan.
Sublethal doses of insecticides and their effects on the morphology of insects, however, is a reseach topic conducted by Fauzia Shaleen that needs further investigation. Other unusual remedies derived from the medical sphere are described. One may regret the overall construction of the book which lacks structure in the presentation of the topics but the content of the papers themselves is really interesting.

Degradation of Archives and Library Materials vs Permanent and Durable Paper for Archives

Hanus, Jozef ed. and comp. Bratislava: Slovak National Archives, 1993, 79 p.

These are the proceedings of an international seminar that was organized in Bratislava, March 93. Papers are either in English or Slovak with summaries in the other language.
Reading them gives quite an impressive outlook on the level of awareness of the participants. Most of them came from the Slovak Republic, but there were also professionals from the Czech Republic, Hungary, Austria, Slovenia who seem to be very efficient in addressing the paper issue and passing on information to colleagues.
Texts describing the acid and permanent production are very accurate. The small size of these countries may account for easier and more drastic changes in favour of neutral/permanent paper within printing houses, thus entailing the introduction of non-acidic books in libraries Since 1984, the first mill in Hungary was converted to acid-free production. In the Slovak Republic, mill conversion took place in 1991. Pressure on paper manufacturers seem to be more efficient than in some Western European countries and cooperation between research institutes (such as in Slovenia and in the Slovak Republic) and institutions bring fruitful results. In Slovakia, the demand of the local market is easily satisfied and production is even exported.

Dictionary of Book and Paper Conservation in Five Languages.

Beöthyné Kozocsa Ildikó and Beatrix Kastaly ed. Compiled by ten Hungarians conservators. Budapest: National Széchényi Library Printing Office, 1997. 375 p. Printed on permanent paper. ISBN 963 200 330 6.

This volume, which has been long needed in Hungary, contains the terms most frequently used to refer to basic techniques, materials, tools and equipment applied in book and paper conservation, bookbinding and some printing and drawing techniques. Hungarian, German, English, French and Italian are the languages of this dictionary that should help experts read, understand and translate technical texts. It is designed for book and paper conservators in the first place, but can be equally useful to bookbinders, librarians, archivists and museum curators.
Entries are arranged alphabetically in each of the five divisions and there is a cross reference system for finding synonyms for Hungarian terms. Compilers should be praised for their work and for printing the documents on permanent paper.

Order from
Ms Andrea Lados

National Széchényi Library
Budapest 1828, Hungary

Price: 50 DM or 30 US$ + postage. Payable through bank transfer or by cheque, upon receipt of invoice from the Library.

Digitisation as a Method of Preservation ?

Weber, H. and Marianne Dörr. Amsterdam: European Commission on Preservation and Access, July 1997, 27 p. ISBN 90-6984-190-8

This is the final report of a working group of the German Research Association. y, house four million volumes. Effective filters preclude dust and car exhaust from entering. The electronic fire safety system and the self extinguishing sprinkler system decrease the risk of fire. A special environment has been conceived for preserving microfilms.

The new building also houses the new micrographic laboratories, the conservation workshop, chemical laboratories, special rooms equipped for mechanical cleaning and disinfection. The li

Petit guide pour la reliure de bibliothèque

Un guide de 11 pages à l'attention des bibliothécaires et archivistes inexpérimentés qui doivent apprendre à organiser et cibler leur demande auprès des relieurs afin d'harmoniser les relations de travail des uns et des autres.

Disponible gratuitement auprès de

l'Institut français pour la reliure en bibliothèque
15, rue de Buci - 75006 Paris
Tél: 01 43 54 85 82

Virginie Kremp

IFLA-PAC Programme Officer
Bibliothèque nationale de France

PAC News

Second JICPA workshop next May in Tunis

A workshop on conservation will be held in Arabic at the National Archives of Tunisia. Experience from the first workshop last April in Dakar showed that practical training is more adapted to short-term courses of this kind. The programme is thus reviewed but not available yet. Contact Moncef Fakhfakh, Archives Nationales, La Kasbah, Tunis. Fax: (216) 1 569 175.

Ralph Manning, President of the Section on Preservation and Conservation

Beatrix Kastaly's mandate as president of the IFLA Section on Preservation and Conservation came to an end. Ralph Manning from the National Library of Canada, ex secretary, has been elected president and Maria Skepastianu (Greece) new secretary. She can be contacted at 13 Al. Mihailidi str, 552 36 Panorama, Thessaloniki, Greece

Resolution on permanent paper

The resolution on the use of permanent paper has been adopted at the Unesco General Conference, last November. All those who pressed their Unesco National Committee to back it see their efforts rewarded.

New National Preservation Office in New Zealand

It is a joint initiative of the National Library and National Archives of New Zealand to encourage and coordinate intiatives, amongst which the protection of the Maori's unique records which are often kept in the Maori own archives (from CDNLAO Newsletter, n°31, Sept. 97).

Council on Library and Information Resources (CLIR)

The Council on Library Resources and the Commission on Preservation and Access have merged to form the Council on Library and Information Resources (CLIR). The CPA will continue as one of four major initial programmes of CLIR, along with programmes for digital libraries, economics of information and leadership.

New address:

CLIR 1755 Massachusetts Avenue,
N.W. Suite 500 Washington, DC 20036
(202)-939-4750
Fax: (202)-939-4765.
info@clir.org

Translations into Portuguese

Thanks to support from the Commission on Preservation and Access, 52 publications dealing with preservation and conservation have been translated into Portuguese. More information about the available titles from: the "Projeto Conservaçao Preventiva em Bibliotecas e Arquivos": Arquivo Nacional, Rua Azeredo Coutinho, 77 CEP 20.230-170 Centro Rio de Janeiro, Brazil. Fax: +55 (21) 232-8430.

Many conservators still distrust polypropylene

Darby Johns, Managing Director at Albox Australia PTY LTD explains why: "the international conservation industry comes from a paper tradition. Very few conservators understand the chemistry of "plastics". Because of the terrible example of PVC there is a tendency to fear all plastic materials. Polypropylene was also too expensive for general archive purposes. This is not necessarily true today. The price of polypropylene resin has fallen in recent years and the price of paperboard continues to rise as the international community becomes increasingly aware of the need to curtail the use of forest products. Volume is another factor. If polypropylene was given the opportunity to compete for the huge volume orders for paperboard boxes it would be much more competitive."

The Preservation Map of Europe

It is a project of the European Commission on Preservation and Access co-funded by the European Commission (Raphael Programme) with the goal to disseminate knowledge about conservation practices in Europe among professional.

The ECPA started collecting the information for this project by sending a questionnaire to all national archives in Europe. The answers are the backbone of the Preservation Map. Besides this, the ECPA uses its own documentation and receives information from institutions all over Europe.

The Map is published on EPIC, the internet site of the ECPA:

The ECPA needs your help to make the Preservation Map of Europe as complete and up-to-date as possible.

Information in Spanish

The Centro de Información Documental de Archivos is charged with the development of databases on archival source information, the CARC, in which the content of more than 3.000 archives from Spain and several countries of Latin America is described and located. Bibliographical databases contain 25.628 references on specialized subjects, including an important number of references on preservation, conservation, conservation, microfilming, digitization, etc.
The databases are accessible through the internet. The address is for the bibliographic database and for the archival sources databases. This Centre also publishes a quaterly bulletin with bibliographic information and gives direct services to the professional community upon request.

Centro de información Documental de Archivos (CIDA Centre for Information and Documentation on Archives) Avda. de Juan de Herrera
2-4 planta

E-28040 Madrid, Spain
Tel: +34 1 521 56 26
Fax: +34 1 521 05 08

In Latvia conservation is taught at University

The Conservation Society of Latvia was created in 1989 when the country was still under the Soviet rule. It aimed to assess the level of conservators in a systematic way, and train and educate then in the framework of the educational system. These objectives were reached in 1990. A conservation course was opened at the Faculty of Chemistry of the Technical University in Riga. Eight conservators graduated in 1995. One Master Degree in conservation was awarded in 1997. Since 1993 the Committee for assessing professional conservators has been formed. Works are appraised by specialists. Conservators are awarded qualification grades, such as mere conservator, conservator craftman and conservator master craftman.

Incompleted microfilming programme in Latvia

Microfilming was initiated at the National Library of Latvia more than thirty years ago. The primitive facilities and materials bought at that time cannot guarantee anymore today's quality requirements. Bearing in mind that newspapers should be preserved, the Library concluded a cooperation agreement with the Norman Ross Publishing, Inc., an American company, in 1990. The company worked on the technical aspect of the project while the Library supplied the labour force and the documents. Several dozens of old and current newspaper titles in Latvian, Russian, Jewish and German were filmed. Unfortunately the project stopped in 1996 because of financial problems. Minor projects have been carried out since, with the University of Osnabrück in Germany, the Georg Olms Publishing House and Stanford University.

First Conference on Conservation in Kazakhstan

In the address to the Government and the Parliament, the Unesco representative of the Republic of Kazakhstan, as well as participants from libraries, museums and archives in the CIS, express their deep concern for the state of preservation of their collections. "The lack of legislation on the documentary heritage's security has a negative effect on their conservation". A national programme for preservation with a juridical and financial status should be created, together with a register of the cultural monuments of the Republic. A national school for conservators is a prerequisite to implement preservation/conservation education in the country and to help expand training programmes within specialized institutions. Participants were asked to join the Unesco resolution on permanent paper.
The conference was organized last October by Zarema Shaimardanova from the National Library of Kazakhstan and was covered by the local media. An exhibition of brittle and other deteriorated documents raised the attention of the public.

Events

February 98 - Moscow

Round table on the Preservation of Newspapers

Organized by the Library for Foreign Literature, new IFLA-PAC Regional Centre for Eastern Europe and the CIS.

More from Galina Kislovskaya

Library for Foreign Literature
Nikolo-Jamskaya Street 1
109 189 MOSCOW, Russia
Tel. +7-095-915-3621
Fax +7-095-915-3637
E-mail: gkislov@libfl.msk.su
www site: http://www.libfl.ras.ru

27-28 Mars 1998 - Arles (France)

IIIèmes journées sur la conservation préventive

Climatologie dans les archives et les bibliothèques
Subscription price : 550 FF

Centre de Conservation du Livre
18, rue de la Calade - 13200 ARLES
Téléphone : 04 90 49 99 89
Télécopie : 04 90 49 66 11

March 98 - Moscow

Workshop on Digital Information

As part as the project of the Conservation Centre of the Russian State Library (see article on page... of the present issue) to start investigation in the preservation of digital carriers.

Olga Perminova

Russian State Library
3/5 Vozdvizbenka
10100 Moscow, Russia
Tel. +7 095 290 6062
Fax +7 095 913 69 33
E-mail: irg@glas.apc.org

April 98 - Moscow

Seminar on the Prevention of Biological Damage

By the Russian State Library, address above.

18-28 May 98 - Tunis and Kairouan

Preservation Workshop

JICPA's (Joint IFLA-ICA Committee for Preservation in Africa) will held its second wokshop for Arabic-speaking conservator- beginners. Stress will be laid on practical training to make delegates aware of existing low-cost preservation methods.

Moncef Fakhfack

Archives Nationales
La Kasbah, Tunis, Tunisia
Fax: (216) 1 569 175.

16-18 September 98 - Paris

Art et chimie - la couleur

International Congress on the contribution of chemistry to works of art. The impact of analytical chemistry and molecular physical chemistry at the different stages in the life of works of art will be demonstrated, together with the use of chemistry by artists and the techniques employed in preservation and conservation.

Congrès international sur l'apport de la chimie aux oeuvres d'art. L'apport essentiel de la chimie analytique et de la physico-chimie moléculaire dans les différentes phases de la vie des oeuvres, dans les utilisations par les artistes et les procédés de conservation et restauration.

Société de Chimie industrielle
28, rue Saint-Dominique
75007 Paris, France
Tel: 33 (0) 1 53 59 02 10
Fax: 33 (0) 1 45 55 40 33

21-25 November 98 - Teheran

4th International Conference on the Biodeterioration of Cultural Property

Call for papers
Topics will cover paintings, wood, ethnological materials, paper and paper-based materials, stone and building materials, aerobiology and ecology, control methods.

More from Dr. A. Vatandoust

Organizing Committee, ICBCP - 4
Research Centre for Conservation of Cultural Relics
P.O. box 11365 - 4834 Teheran - Iran
Tel: (+98 21) 67 26 67
Fax: (+98 21) 67 17 47

Calendrier de stages pratiques au Centre de Conservation du Livre - Coopération - Formation - Prévention

9-13 mars 98

Restauration des papiers et documents graphiques (niveau 1)

Prix du stage : 3 200 FF (fournitures comprises)

16-18 mars 98
Restauration des affiches moyen et grand format
Prix du stage : 2 500 FF (fournitures comprises)

30 mars - 3 avril 98
Réalisation d'une reliure d'archives en parchemin "reliure de Lyon"
Prix du stage : 3 200 FF (fournitures comprises)

23-24 avril 98
Sélectionner des matériaux de conservation pour le conditionnement
Prix du stage : 1 500 FF

5-6 mai 98
Numérisation des collections iconographiques
Prix du stage : 2 500 FF

12-14 mai 98
Entretien, petites réparations et conditionnement des archives
Prix du stage : 2 100 FF (fournitures comprises)

25-27 mai 98
Entretien, petites réparations et conditionnement des livres de bibliothèques
Prix du stage : 2 100 FF (fournitures comprises)

4-5 juin 98
Systèmes de gestion informatisée des banques d'images
Prix du stage : 2 500 FF

8-12 juin 98
Restauration des documents d'archives : stage pratique d'initiation
Prix du stage : 3 200 FF (fournitures comprises)

22-26 juin 98
Restauration des reliures de cuir
Prix du stage : 3 200 FF (fournitures comprises)

18, rue de la Calade - 13200 ARLES - France
Téléphone : 04 90 49 99 89
Télécopie : 04 90 49 66 11

Courses at the Centre for Photographic Conservation

20-24 April 1998
Rediscovering Historic Photographic Processes. Ref: Prog 98/7

20 April-5 June 1998
The Preservation and Conservation of Photographic Materials. Ref: Prog 98/1

27-29 April 1998

The Preservation and Conservation of Photographic Materials (Theory). Ref: prog 98/2

30 April-1st May 1998

Preservation of Colour Photographic Materials. Ref: prog 98/10

4-6 May 1998

The Identification of Photographic Processes. Ref: prog 98/4

7-8 May 1998

Preservation of Photographic Negatives: Glass, Nitrate, Acetate and other Sheet and Roll Film Systems. Ref/prog. 98/11

233 Stanstead Road, Forest Hill
LONDON SE23 1HU, United Kingdom
Tel: 0181-690 3678
Fax: 0181-314 1940
e-mail: xfa59@dial.pipex.com
Web page: dspace.dial.pipex.com/cpc.moor/

In 1689, Janez Vajkard Valvasor wrote the history of Slovenia in his great Encyclopedia Slava Vojvodine Kranjske - one's Glory of the Carniola Duchy.