

Preservation of Library Books

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Prelude

Books and printed materials are the basic carriers of knowledge for many centuries. The history, the past and the glimpses are preserved in it. The Golden rule "Books are for use", to be in use they need to be preserved with proper preservation methods.

Preservation of library materials is a challenge from the creation of the library. Deterioration and decay are part of natural factors affecting all materials. In order to transfer the knowledge of past generations to the future readers and researchers, preservation steps slows down degradation processes. A good preservation method is essential in order to preserve the materials.

Factors affecting books

Various factors affects the books and printed materials like Biological factors, Physical factors, Chemical factors, Human factors.

Biological factors

Biological factors like humidity and climate, weather conditions helps living organisms (bacteria, fungi, rodents and reptiles) to grow and affect the materials. This is bio-deterioration. This problem of bio-deterioration higher in tropical-humid climate which accelerates the growth and multiplications of living organisms.

Physical factors

Physical conditions like room temperature of library, humidity, lighting, arrangements of racks and reading tables, poor maintenance of the materials are sources of physical factors which affect the library books & the materials.

Chemical factors

The impurities in the atmosphere like hydrogen Sulphide, Sulphur dioxide, carbon monoxide, ozone, moisture, dust and other susceptible impurities in gaseous form are the main chemical factors. These materials deposited over the books will degrade the books. The Acidic form of Sulphuroxide and atmospheric moisture forms acidity in the library materials. The acidity break the cellulose bonds and makes the paper brittle which changes colour and affects the ink and all the other coloured drawings. Paste and glue made from flour (wheat or rice) and substance of animal origin which attracts insects.

Human factors

Rough handling and improper use of books other reading materials makes them to become weak. Crumpling of paper develops tears and covers gets damaged or lost.. Creases produced by folding and papers pressed hard will be torn. The theft and tearing needed pages by readers is greatest loss to the books. Every reader must think himself as a conservator instead of a reader alone which is the beginning of preservation.

Remedies to overcome factors affecting books

Biological factors

Insects and pests cause much anxiety to librarians. Here are some methods of controlling common varieties of insects.

- Fungi & Mildew/Moulds – Brushing them off and removing the books to dry in well ventilated place. Thymol fumigation has proved a satisfactory method.
- Book worms, termites, cockroaches, silverfish, firebrats, book lice, mud wasps and moths have to be treated preventive as well as curative – Sprinkling of borax, coating of copal varnish, avoiding damp and dark condition in the room and use of naphthalene in regular interval and space will reduce the chances of insect's attack.
- Termites/White ants – wood work should be painted with creosote oil at least every six months and wooden bookshelf should be kept six inches' distance from the

walls and the legs of the book shelf painted with coal tar or creosote oil once before the rains. Proper pest control mechanisms both inside and outside the library should be carried out.

- Rats/Mice – Use of traps, baits scented coconut oil, caustic soda, scattering of quick lime cantharidine, oil of rhodium, Camphor will make them leave the library.

Physical factors

- Books and documents should never be stored in direct sunlight, stored under unshielded fluorescent tubes – Special Ultra Violet filtering materials, such as UF-3 Plexiglas or Acrylite OP-2 may be used to shield windows or fixtures.
- Ultra Violet (UV) lights caused serious chemical deterioration of organic materials and should therefore eliminated or in any case reduced.
- By Humidity control measures taken humidity should be kept within reasonable limits i.e. 45% to 65% or $50\% \pm 5$ desirable. Humidity can be controlled in winter by using dehydrating agents like anhydrous calcium, silica gel, carpet, dehumidifier, electric fans with heater to maintain required condition.
- In seasons when the Relative Humidity is very high the judicious use of some chemicals such as sodium dichromate, calcium chloride, potassium carbonate, etc.,
- The control of heat and moisture needs a compromise for conditions in storage areas can generally be found in the temperature or indoor temperature must be kept between 65°F to 75°F . The ambient condition of temperature is $22^{\circ}\text{C} \pm 4^{\circ}\text{C}$.
- Moisture control to be done by proper ventilation, water disaster may be avoided by checking the water connection and sewage pipes in and around the library to avoid water seepage.
- Fire preventive mechanisms with different type of extinguishers for appropriate type of fire need to be installed in accordance with the requirements and advice of the local fire authority and proper training for the library staff need to be provided to face the fire fighting process if happens.

Chemical factors

- The effects of chemical factors largely eliminated through air-conditioning the stack rooms where books, manuscripts and documents are stored. It can solve many

problems of preservation of old and rare materials and money spent on this item is served many times over in the saving in repairing and rebinding expenses.

- The process of neutralizing the acidity is called de-acidification, which prolong the potential life of paper need to be evolved. Restoration process which strengthens the paper is done by mending.
- Air pollution commonly controlled by air filtration as part of full ducted air conditioning system.
- Dusting and cleaning of books with vacuum cleaner, which can suck in the flow out dust from all corners and racks is better than manual dusting, were dust cleaned from a rack get deposited on the other.

Human factors

- The unnecessary and over use of books may be restricted by controlling the access.
- Usage of steel paper clips, pins and stapler may be replaced with brass or plastic which prevents damages caused by them.
- Theft and pilferage need to avoid by security measures like vigilant security officers, electronic systems and secreting or deposit of bags. The usual precautions are either bag check, nowadays electronic tagging of books.
- Rare documents access may be restricted to general display but with authentic access, and may be kept in lockable cupboards.
- Book trolleys need to be used for Handling of books from one place to other. Too weak, weak by constant use, documents should not be used until they are consolidated and covered.
- Very rare and valuable document's microforms such as microfilms and microfiche, micro card may be used instead.(Fig.1)
- In the process of collating, cataloguing, accessing and stamping of books also causes damage, proper care therefore be taken.
- Less the marking, less the danger of deterioration, marking should not be done in the books. .(Fig.2)

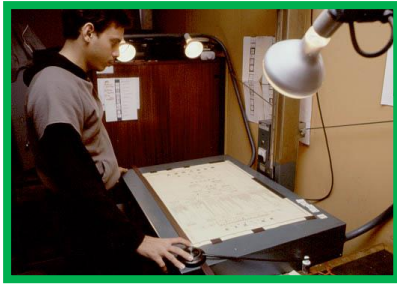


Fig1: Microfilming library materials.

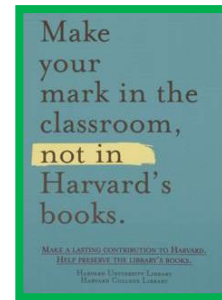


Fig 2: Do not mark or highlight library materials

- Do use bookmarks that are thin, clean, non-acidic, and will not damage or distort bindings. Do not use post-it notes, paperclips, pressure sensitive tape, or rubber bands on library materials. .(Fig.3) .(Fig.4) .(Fig.5)



Fig 3: Use thin bookmarks Fig 4: Do not use paperclips Fig 5: Do not use rubber bands

- Shelving with appropriate number of books with proper book support should be stored on shelves, special care to be accorded to miniature, over-sized and abnormal size books.
- Never overstuff or under fill the storage boxes may lead to cramps and creases and allows sagging and bending.
- A Book should be removed from the shelf by grasping firmly the center of the spine (Fig.7) and not by pulling at the top of the spine (Fig.6), which is vulnerable part that spine can tear or go to wrack and ruin.



Fig 6. Wrong

Fig 7. Right

- While photocopying, the spine of the book should not be pressed down which affects the book (Fig.8), should be placed gently (Fig.9).



Fig 8. Wrong

Fig 9. Right

- Support book spines and covers when holding books open (Fig.10). Keep work surfaces clean and uncluttered (Fig.11). Do not “dog ear” a page (Fig.12). Never force a book open

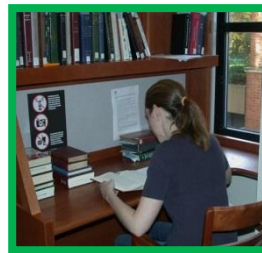


Fig 10. Support book spines **Fig 11. Clean work surfaces** **Fig 12. No “dog ear” a page**

- Handling of books with care – acid free paper to be used to mark or flag pages, wet fingers should not be used to turn pages, hands should be clean otherwise both skin oil and perspiration stain paper, books should not be left open face down, which creaks the spine.
- Encapsulate brittle maps or pages of heavily illustrated books between two sheets of polyester (Mylar). The sealed Mylar envelopes can be bound together into a book that can be handled safely. (Fig.13).

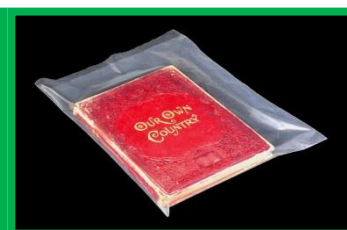


Fig 13. Encapsulation **Fig 14. Artifact boxes** **Fig 15. Polyethylene bags**

- Protect books by placing them in metal edge boxes or artifact boxes, which are acid- and lignin-free, (Fig.14).which will prevent light and other damaging elements from coming into contact with your books. If you're very concerned about keeping your rare or sentimentally/monetarily valuable books safe, it is always recommend to go the extra mile by placing them in unsealed individual polyethylene bags (unsealed so the books can "breathe") (Fig.15).which can further protect books and bindings from dust, moisture and various household pollutants.

Ancient preservation technique

The Thanjavur Maharaja Serfoji's Sarasvati Mahal Library at Thanjavur use a mixture of the following in powder form: Black cumin 4 parts, Sweet flag 4 parts, Cloves 1 part, Pepper 1 part and Bark of Cinnamon 4 parts, 20 grams of camphor is to be added with the powder mixture and wrapped in a small cloth as bundle. These bundles are kept in the cupboards as insect repellent, which has an effect for six months. This information is itself recorded in the documents in the library which is followed even now. Dried Neem leaves and Neem seed powder, Tobacco, Snake slough, Peacock feathers was also used as insect repellents. Same ingredients should not be used continuously since the insects get acquainted to it and will not have result.

Preservation technique in GVG College

In our Sri GVG Visalakshi College for Women's college's GVG Govindasamy Library books and palm leaf manuscripts are preserved under organic method, which is practiced in Saraswathi Mahal Library, Thanjavur. This method is followed since the inception of Saraswathi Mahal Library, Thanjavur by Serfoji the Maratha King. The Ingredients: Cinnamon, Clove, Sweet Flag (Vasambu), Turmeric powder (Fig 15) are filled into small cloth packets and are kept in every racks and replaced in uniform interval of time which prevents organisms grow due to biological factors (Termite, bugs, rodents etc.,).



Fig 15. Ingredients: Cinnamon, Clove, Sweet Flag (Vasambu), Turmeric powder



Fig 16. Palm Leaf script as received from donor



Fig 17. After preservation

Palm Leaf scripts donated by donors are preserved by cleaning the dust sediments and coating with organic paste and let it dried and preserved. (Fig 16.) & (Fig 17.)

Finale

All the reading materials, are paper based in the form of manuscripts, books, periodicals, reprints, pamphlets, leaflets, maps, etc., which are organic in nature subject to deterioration if not properly manufactured , stored and handled. Atmospheric pollution, radiation from light and heat, moisture and growth of micro organism, physical, chemical and human factors is major cause of deterioration. It is better to protect the materials from this degradation by ways of using some preservation methods. Preventive measures be formulated in systematic way and conservation system should be applied to protect library materials from deterioration.

REFERENCES

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