
UNIT 8 MAINTENANCE AND PRESERVATION

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8.0 OBJECTIVES

After reading this Unit, you will be able to :

- describe preservation as an integral part of library management;
- discuss possible reasons for overlooking preservation needs in libraries in the past;
- explain the factors that have brought preservation to the centre of library's management of resources;
- identify various methods of carrying out stock verification; and
- discuss the advantages and disadvantages of stock verification.

8.1 INTRODUCTION

Preservation of library material is as important as collection building. Libraries are considered to be social memory of the society. Their survival is important for the generation and preservation of knowledge. However, the base for recording knowledge and information are perishable materials. These are affected by light, temperature, environmental pollutants, biological agents and human beings. In order to adopt measures that will ensure survival of the collection we must understand the role of these elements in causing deterioration and damage to library materials. In this unit we shall study how library materials gradually deteriorate, what are the factors that contribute to their deterioration and what measures should be adopted to prevent their deterioration.

The basic purpose of library collection is:

- To serve as source for providing information and knowledge to library users visiting library in person as well as those seeking the same through phone or e-mail.
- To function as a place of accumulation of human knowledge as part of the academic and cultural heritage of society. To serve the above two purposes the library performs two functions: a) Provide access to its resources and services with the help of various tools developed for the purpose, and b) Adopt various methods to ensure availability of the resources to the future generations. An efficient preservation of library collection, therefore, is an integral part of the management of library resources. In fact it is as important as acquisition and organisation of the resources.

Prior to the middle of the last century, libraries concentrated mainly on acquisition, organisation and facilitating access to the collection. However preservation in a way was implied in organisation as well as in facilitating access to the resources. Organisation of collection is planned, taking into consideration the need and behaviour patterns of the users. Obviously while organising the resources care is taken to safeguard it against damage. Resources are sorted by size, by nature of information, by category of users, etc. Most of these decisions ensure their normal safety from inadvertent action on the part of staff or users. Similarly in planning access, care is taken to ensure safety for all the resources including rare and fragile materials. But till the middle of the 20th century preservation as a planned mission in library management was paid very little attention.

Preservation or conservation, as it was called earlier, as a distinct activity was mostly associated with archives. Unlike libraries, archives had a distinctly stated preservation mission. An archivist, according to Sir Hilary Jenkinson, “has to take all possible precautions for the safeguarding of his archives and for their custody...Sir Hilary called it as the primary duty of the archivist”. In the past, preservation was confined to binding of damaged books and/or lamination of fragile documents or manuscripts. Most books on library science discussed binding in much greater detail than preservation. In the past preservation was restricted to segregation and selective access to fragile and rare materials. Conservation was the generic name used to what we now call preservation and the preservation got its due attention in management of library resources in mid Twentieth Century. If we could identify one single factor that was responsible for this change it was the publication of *Deterioration of Book Stock: Causes and remedies* by William J. Barrow in 1959. Barrow disclosed that the raw material used for manufacturing

paper from the early 19th century was wood pulp which contained lignin a chemical substance and cellulose fibers. Lignin is chemically unstable and readily deteriorates when exposed to high temperature and humidity. Since most of the books published from the early 19th century onward were printed on paper made of wood pulp they were going to be unusable by the next century. The disclosure alerted the national level organisations in the Western Countries to the imminent danger that the libraries were facing. The U.S. Council on Library Resources funded several research projects on the problem. The Library of Congress, which found it was losing through deterioration around 77000 books a year because of the poor quality paper on which they were printed, launched a massive de acidification programme. The British Library supported Dr. F. Ratcliffe’s project *Conservation: Need, Resources, Policies and Programme in British libraries (1982-1983)* on preservation at the Cambridge University Library. The European Community published a report entitled *Library Policy for Preservation and Conservation in European Community* in 1988. The US established Commission on Preservation and Access in 1986. In 1987 a film, *Slow Fire* was also made for general awareness.

Self Check Exercise

Note: i) Write your answer in the space given below.

ii) Check your answer with the answers given at the end of this Unit.

1) State how awareness about preservation developed in the 20th Century.

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The occurrences of a few natural disasters in quick succession causing large scale damages to some major libraries of the world also alerted libraries towards problem of preservation. The flood in River Arno in 1966 that submerged the world famous collection of Bibliotheca Nazonale in Florence, in flood water and which made UNESCO organise rescue and restoration work for the Library on international scale, also catalysed the situation in favour of preservation. UNESCO came up with its Memory of the World Programme with explicit aim of promoting the preservation of documentary heritage of mankind. IFLA launched its programme on preservation, known as PRESERVATION AND CONSERVATION (PAC) at the Vienna Conference on the Preservation of Library Materials in 1984. The goal before the PAC is to “ensure that the library materials, published and unpublished, in all formats, will be preserved in accessible form as long as possible”. Since its formation, PAC has held many regional level conferences; it has now shifted its headquarters from the Library of Congress to the National Library of France, Paris and opened regional centers at Washington, Caracas, Canberra, and Tokyo. It is also publishing a biennial news letter *International Preservation News*. In India a related activity was formation of Indian National Trust for Art and Culture (INTACH) in 1984. It has established a conservation centre in collaboration with the National Research Laboratory for Conservation of Cultural Property at Lucknow.

8.2 NEED FOR PRESERVATION

Libraries have suffered damage and deterioration of their collection throughout the history. Sometimes the cause is natural disaster and other times it is man-made, such as war. But silent damage through deterioration of paper, the leather used for binding and through bacteria, cockroaches and rodents have also been wide spread under preservation. Even then preservation as a major problem was not much discussed. Albeit need for preservation, by the name care for books, are found in books on Library Science. In fact, in early nineteenth century, quality of material available for recording words were superior and hence could overcome deterioration due to internal causes. This situation continued even during the period extending from 8th century to the beginning of the 19th century when paper had replaced all other media as base material for recording knowledge. Identifying the responsibility of a librarian, John Durie (1650) said that “to build collection, care for them and be dispenser to apply them for use”. Randolph G. Adams wanted librarians to demonstrate a greater appreciation of books as an object of art”. He expected librarians to accord “special treatment to rarities” and guard rare books against possible misuse by “unqualified reader”. Books were chained with almirahs and one can still see chained books in some old libraries like the Library of Oxford. Dr. Ranganathan also had called care of books as the first service of the library in his book *Reference Service (1940)*. Thus, for a long time care and service, i.e. access, were considered of equal importance. Care was given rather more importance. Perhaps care had not yet become interchangeable with preservation, though concern among the librarians for safety of material did exist. It was not yet sacrificed for the sake of providing access.

By the end of the Second World War there was great surge in scientific research which brought better library service to the centre stage. Education was spreading in the society and thereby increases in demand for books. Libraries were under pressure for efficient access to results of new researches. Emergence of indexing service, documentation, SDI services, user education, open access, etc. on the one hand, and developments in technology like Xeroxing and microfilming on the other led to the balance of service swing in favor of access to the negligence of care i.e. preservation. However around this time major world libraries discovered that a sizeable part of their book collection belonging to the period from 1830 to early years of the 20th Century was under imminent danger of being lost due to acidic nature of paper on which these were printed. Surprisingly, the need for preservation now received worldwide concern. Libraries have been always considered social memory. Therefore, Ranganathan (1940) called preservation as a social need and emphasised the need to identify library as a social memory because it:

- helped transmission of knowledge to future generations,
- helped in the cumulation and further building up of knowledge from generation to generation,
- helped in the contemporary development of knowledge without any wastage,
- building of knowledge by unintended and purposeless repetition of effort and consequent wastage in research potential of humanity.

The essence of Ranganathan’s views were echoed by John Agresto of the National Endowment for Humanities (US) in 1986 when he said “preservation of library and archival material is essential politically for the well being of democracy , for availability of primary source materials as a basis for good teaching.” He further added that “preserving the past is useful and practical to us living”. The preservation was now getting recognition as an important part of library management.

Self Check Exercise

Note: i) Write your answer in the space given below.

ii) Check your answer with the answers given at the end of this Unit.

2) Explain why Ranganathan calls library social memory.

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8.2.1 Definition of Preservation

There has been much confusion with regard to the exact connotation of the two terms, conservation and preservation. Both have been used to describe activities in which libraries engage themselves to protect collection from deterioration and damage. The confusion could be traced to earlier their being alien to the profession of librarianship. For considerable period these terms have been referred to in the context of protection of archival materials only.

Preservation in the modern usage refers to applying all the various methods and techniques and ensuring such climatic environments, including ways of their storage, as would prolong life of the artifact as well as content of the materials. According to Clayton and Gorman “preservation is a generic term and includes all activities associated with the maintenance of resources and preservation of information content. This is in contrast to conservation which refers to the treatment of the artifacts in order to extend their usable life”. The use of the term preservation to denote an all inclusive effort is rather of recent origin. Until the last two decades of the 20th century the term conservation was used to describe “all attempt to prevent damage or deterioration or further damage to library collection. Preservation referred only to specific effort to not merely to stop but to reverse the various negative and unwanted effects of destructive chemicals and other agents that could destroy the library materials”. The function of repairing “physical structure of the document” or the “artifact” to its original condition was restoration. As stated above, these terms were more frequently used in the context of archival materials. Even now the term preservation has not completely replaced conservation to refer to encompass all activities adopted to protect the library resources. Among the conclusion of Ratcliffe’s report “*On Preservation Policies and Conservation in British Libraries*” one conclusion reads “Libraries should seek to inculcate conservation as a major policy matter...” (conservation impinges on virtually all aspects of library activity and given an appropriate

order of priority is very much a policy matter). Under conclusion to the recommendation is “libraries should press for the inclusion of education for conservation within the curricula of library schools...” The National Conservation Advisory Council, US has also used the term conservation as an all encompassing term which includes examination (assessment of items), preservation (action taken to retard ...deterioration... by control of their environment and/or treatment of their structure) and restoration (action taken to return a deteriorated... artifact as nearly as is feasible to its original form...)” In a situation like this it is safer to use the three terms – preservation, conservation and restoration in the sense in which IFLA has used them in its publication *Principles for the Preservation and Conservation of Library Materials* (1986).

Preservation includes all the managerial and financial considerations including storage and accommodation provisions, staffing levels, policies, techniques and methods involved in preserving library and archive materials and information contained in them.

Conservation denotes those specific policies and practices involved in protecting library and archive materials from deterioration, damage and decay, including the methods and techniques devised by technical staff.

Restoration denotes those techniques and judgments used by technical staff engaged in making good of library and archive materials damaged by time, use and other factors.

Self Check Exercise

- Note:** i) Write your answer in the space given below.
ii) Check your answer with the answers given at the end of this Unit.
3) Explain why preservation was neglected for a long time.

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8.3 CAUSES OF DETERIORATION OF LIBRARY MATERIALS

The problem of preservation in libraries is a challenging job due to changing nature of its collection. For centuries new information and knowledge recorded on paper constituted almost the only form of library collection. It was only since the later years of the 19th century that the nature of the collection began to change. Microfilms joined paper to accommodate back volumes of serials and news papers. Microfilms were also used to create surrogate for manuscripts and other valuable materials. The introduction of audio-visuals in teaching brought in wax cylinder and shellac discs in libraries. Magnetic tapes and discs as compact storage devices were followed by optical media in the form of tapes and discs.

Each material has its own span of life and its chemical components. Deterioration in the material occurs due to change in its chemical composition. The causes of change may be inherent in the nature of the chemical components of the base material or may be catalysed by certain external factors.

8.3.1 Internal or Inherent Causes of Deterioration

Internal causes in fact exist in structure of the material concerned and work from within to lead to deterioration or disappearance of the recorded information.

Paper-based materials

Deterioration of the paper-based materials in the library collection, as a major problem, became a matter of concern for librarians in the middle of the 20th century. It was more serious in case of books published between mid 19th century and early 20th century. The reason as had been revealed by John Barrow was the structure of the wood pulp based paper. The strength of the paper depends on: a) length of the individual fiber, b) strength of bonding of fibers, and c) the process through which pulp is made. Wood pulp contains most of the chemical ingredients of the wood such as lignin which contain acid. Similarly resin used in sizing of the paper also contains acid salt. In order to obtain gluing effect aluminum sulphate was used. Papers manufactured from wood pulps are therefore acidic in nature. When they come into contact with high temperature and humidity two main types of deterioration, namely hydrolysis and oxidation, set in, leading to deterioration of paper. Hydrolysis takes place because of the presence of alum, an acidic material. Oxidation takes place from presence of small particles of metals that creeps in from paper making equipments during paper making.

Ink

Ink used in printing from early 19th century began to be made of iron gall which contained ferrous sulphate. Through oxidation it forms sulphuric acid. Ink together with paper's acidity leads to loss of text from the paper.

Leather

It has been found that leather used in binding after 1830 lacked protective salt earlier available in leather. This was due to change in method of tanning under pressure for more leather by the binders. Such leathers become dry over a period of time and begin to break up.

Photographs and Films

“As the production of photographs has many different chemical processes in the capture of the image, photographs, also have a wide variety of aging properties. Some materials were made of extremely self destructive components”. Cellulose nitrate films emit nitrous gases. The gases are not only oxidative but also toxic and explosive. In a self destructive process the film base and emulsion are eventually destroyed. It is inflammable at a fairly low temperature. Cellulose acetate films emit acetic acid vapor that acts to accelerate the rate of decay of the films. Motion picture films in rolls if in containers and lack ventilation have a tendency of self igniting.

Self Check Exercise

- Note:** i) Write your answer in the space given below.
ii) Check you answer with the answers given at the end of this Unit.
- 4) Explain why paper in old books deteriorates.

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8.3.2 External Causes of Deterioration

External causes have been categorised quite differently by experts. The following are however some common causes:

- Light, Temperature and Humidity,
- Environmental Pollutants and Dust,
- Biological agents and Disaster.

Ross Harvey adds human being cause as a cause/ important factors to the external causes. IFLA, has included magnetic stray field, Fire, water and theft and vandalism to the list due to increasing share in recent years, of non- book materials in library collection and human cause and other disasters are discussed under the heading mechanical forces.

R.S. Singh has categorised external causes under the following four groups:

- Physical agents: light, moisture, heat and particles
- Chemical agents: acidity, gaseous pollutants
- Biological agents: bacteria, fungi, insects, rodents
- Accidental agents: flood, fire, etc.

Ranganathan has identified fire, water, vermin and human beings as the four enemies of library. Increasing use of technologies such as AC, facilities for photocopying and microfilming added some additional external factors for deterioration of library collection. The nature of the internal causes of deterioration is such that it can be only slowed down but cannot be reversed. But the deterioration or destruction due to external causes can be checked if precaution against the probable cause is taken in anticipation of their occurrence or if the cause is removed.

Light

Light causes deterioration in three ways—through intensity, through exposure of the material under light for longer hours in a day and through longer period over a year. The two extremes of the light spectrum carry ultra violet and infra red radiation. Both are known to be as deteriorating agents for library materials. The ultra violet radiation from light causes photochemical deterioration in library materials. The infrared radiation heats up environment causing reduction in

humidity and dryness in the materials. Light speeds up rate of oxidation in paper. It may also bleach paper and ink and cause fading of images. Light makes paper containing lignin dark. It may affect dye layers used in recordable and erasable discs.

Temperature and Relative Humidity (RH)

Temperature and relative humidity are linked parameters. Both play major role in preservation. Simultaneous fluctuation in the two parameters is very harmful for the life of the library materials. Being organic in nature, materials expand and contract as moisture levels changes. But compared to fluctuation in temperature, fluctuation in relative humidity has a much greater impact on collection. Excessive humidity leads to proliferation of fungus in all organic, mechanical and magnetic carriers. Low humidity level leads to dehydration in library materials and makes them brittle and in case of films emulsion may fall off the supporting base. Control of RH is even more important in libraries and archives with photographic materials. Too high RH makes emulsion sticky, glass may turn foggy, and photograph on metal base may begin to corrode. High temperature accelerates deterioration process in all kinds of library materials. The resultant dryness leads to evaporation of humidity, making environment dry, which makes paper, leather and some plastic-based materials brittle. High temperature also speeds up chemical reaction in all library materials including nitrate films, cellulose acetate films and colour films. It also leads to dimensional change in magnetic carriers and affects optical carriers, eats up pigment layers of magnetic tape and floppy discs.

Biological Agents

Biological agents include mould, insects and rodent. Mould weakens and stains paper, and obliterates images. Insects like cockroaches, silverfish, termite and beetles cause damage to library materials all over the world. Rodents make their nest in books and harm library collection by shredding pages of books. The damage caused by insects and rodents are irreparable. Mould and fungi obstruct reading of optical information, eat up pigment layers of magnetic tapes and floppy discs. The damage through these agents remains unnoticed till it reaches such a level that it becomes beyond any corrective measure.

Air Pollutants

Air pollutants also called environmental pollutants in the form of gases, like sulphur dioxide or nitrous oxide and ozone, emitted from factories or motor vehicles cause deterioration through acid attack or oxidation. Solid pollutants like dust dirt and sand particles are abrasive in nature and are also source of growth of biological agents. They also help acid formation in materials. In case of mechanical carriers, dirt and dust may lead to deviation of pickup stylus from its proper path causing audible cracks. Through the process of aberration they attack the integrity of the carriers. Magnetic tapes and discs are affected by dust particles as they may prevent intimate contact for replay heads to media. It may also cause head crash to computer hard discs. Dust prevents proper reading of recorded information on optical carriers.

Human Causes

Human beings cause damage and deterioration through various acts of omission and commission. Library materials are damaged both by library staff and user

community. The impact can be seen under the following broad heads:

- Negligence and lack of respect for the material
- Theft
- Vandalism

Staff Negligence

Staff negligence can be identified at various stages: a) at the stage of planning building such as lack of provision against effects of ultraviolet and infrared radiation; b) in maintenance of building and equipments such as overlooking regular cleaning and dusting in stack areas; c) maintaining poor security system for library assets, awarding binding job to substandard firms; d) organising environmental system with an eye for comfort of readers rather than protection of life of the library materials. Carelessness in shelving and moving of materials, etc. sometimes inflict very heavy damage to the library materials.

Negligence by User Community

Developments in printing technology have created a situation of plenty in availability of books and the respect for books has gone down in the same proportion. Paper editions have created an attitude of “read and throw” among the readers. As a result, underlining, tearing out pages and chapters, using books as pillow, putting it on window sills are some common practices among the users. Repeated exposure of books to ultraviolet radiation in photo copying, defacing illustrations and their mutilation are some other examples of damage perpetrated by the user community.

According to UNESCO existence of an attitude of negligence in staff is mostly due to lack of training in preservation techniques and lack of understanding of consequences of negligence. The need for training has become more important in view of ever growing importance of machine readable material and increasing use of technology in libraries in recent years. The training should be organised on an ongoing basis. Users should also be educated through signage and posters and by holding occasional exhibitions of damaged materials.

Theft and Vandalism

Library collection suffers irreparable loss through theft specially theft of rare materials. Thieves generally take advantage of carelessness of staff. Often they befriend staff to gain access to restricted areas and wait for suitable opportunity to strike. The New York Public Library caught a woman in Brooklyn who had kept 800 books of the Library. The greatest thief of library books, Stephen Bloomberg is said to have stolen 22000 books from 327 libraries.

Vandalism includes damage to library building as well as its collection during wars or due to mob fury on the so called ideological grounds. In many cases it has been found to be a case of simple deviant behaviour.

Magnetic stray fields

“Stray magnetic fields are the natural enemy of magnetically recoded information. Sources of such dangerous fields are dynamic microphones, loud-speakers and head sets. Also magnets used for magnetic notice board, etc. possess magnetic fields of dangerous magnitudes”.

These are natural enemy of magnetically recorded information and must be kept away from magnetic optical discs. The safe magnetic field for analogue audio recordings is AC Field 400 amp. Per mt. and DC 2000 amp. Per mt.

Mechanical Deformation

Mechanical deformation takes place in mechanical and magnetic carriers due to mishandling of replay equipments. In case of mechanical carriers it results into scratches and distortion in groves while magnetic carriers suffer severe deficiencies in play back process.

Disasters

A disaster, natural or man-made, is an unexpected event which puts library collection at risk. Its damaging impacts are through fire or water flooding. In both cases books either burnout or become wet and, unless rescued immediately, become unusable. The loss from disaster is not confined to only books. A major disaster like wind or rain storm, earthquake or tsunami play havoc with buildings may cause flooding the building or result into major fire and even loss of human life. Few libraries have thought of disaster management policy or have developed disaster retardant plan. Such plan includes resistant measures in the building at the planning stage as well as taking such precautionary steps as ensuring safety of rare materials, provision of fire extinguishers and water sprinklers and sump pump in basement. The library should have a telephone tree, i.e. list of important phone numbers for contacting fire office, police and insurance agency and firms supplying materials required to meet emergency situation. Unit 9 deals with disaster management in greater details.

The library must have a permanent programme of disaster management. This will include regular inspection of risk areas i.e. roof, gutters etc. for possible clogging; fire extinguisher system and air conditioning plant, etc. should be professionally maintained. The library also must have an emergency plan to ensure that in case of disaster the essential human expertise and materials for rescuing documents are available.

Security Systems

Building design must incorporate all the various provisions for security of the library assets and collection. Rear windows should be fortified with iron bars. Entry and exit points should have efficient and vigilant security staff. Monitoring of reading rooms, especially rooms for rare materials should be done on an ongoing basis. Library should have enough lighting arrangements. All Keys should be with authorised persons only.

Self Check Exercise

Note: i) Write your answers in the space given below.

ii) Check your answers with the answers given at end of this Unit.

5) Explain how temperature and relative humidity affect library material.

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6) Explain what you understand by staff negligence.

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8.3.3 Common Causes of Loss of Digital Data

Digital preservation to prevent digital decay is yet most spiritedly debated issue. Apart from physical deterioration, obsolescence of hardware, software and storage medium and failure to save crucial format information may cause digital decay and loss of entire content of a digital document. Generally, digital data are much less ‘self-archiving’ than print documents, and often they require more human efforts to describe and to provide context for interpretation.

Accidental Erasure

Loss of data occurs when a file is accidentally closed without saving it or when we write over the file while we are thinking that we are saving it. It may also happen when one is in the process of changing a file and there is a sudden rise in power supply.

Virus and Worms

Worms and virus may invade computer via e-mail, diskettes, CD when one opens attachment with the mail. If a virus reaches a programme file the programme fails to function properly. Worms corrupt hard drive by copying their file over and over again leaving no space on hard drive.

Power Failure

Loss of data is also possible if there is a sudden power failure and no UPS or battery support is available for computers.

Software Life

No matter how new is your computer system the software becomes obsolete within eighteen months to three years therefore one must back up data on regular basis and keep the system and software application discs stored somewhere accessible. Sometimes hardware’s compatible to the software are not available which makes data inaccessible. The BBC created digital data on life in Britain in 1986 to commemorate 900 years of creation of Doomsday Book by William the Conqueror but now it cannot be accessed because the relevant hardware is not available. In addition, the tapes of 1975 Viking launch mission to Mars, and Space shuttle’s obsolete software and storage media are some of the examples where digital preservation was found to be fragile. Digital data preservation is largely experimental and replete with the risks associated and untested methods.

8.4 PREVENTIVE PRESERVATION

We have already discussed the factors responsible for deterioration in the previous unit. Here, we shall describe some preventive measures to be adopted for protecting the material from the deteriorating effects of each factor. The aim of preservation is to keep the information resources as close to its original condition as possible, and where it is not possible to transfer them to new format to prolong their accessibility. “The ideal environment” for preservation “ of collection is the one where the temperature and relative humidity are controlled, which is free from pollutants, which has good ventilation, where light is controlled, which is free from mould, insects, and rodents, magnetic stray fields and where good maintenance and security practices are applied”.

Light

To protect library materials from the infrared radiation of direct light, windows should be fitted with sun blinds, shutters, films or should be fitted with special kind of glass available for this purpose. Fluorescent tubes should be fitted with organic filters or with sleeves. Documents should be kept away from heat sources emitting infra red radiation. Light intensity for fragile graphic materials should not exceed 50 lux.

For materials on display in show cases light should be 50 lux for 8 hours and must not exceed three months in a year. Heritage materials should be divided into categories of sensitivity to light and relative humidity and their total hours of exposure should be as per international standard. Reduction of infrared radiation from a) natural light area should be achieved through additional equipments (shutter blinds, films, fitting of special type glass, b) In artificial light area should be achieved by keeping documents away from light sources, use of organic filters for fluorescent lamps and mineral filters for halogen or metallic halide lamps.

Temperature and Relative Humidity

The ideal level of temperature and RH for most of the library materials are:

Temperature	18 C°	± 2 C°
Relative Humidity	50%	± 5%

Each of 10C° decrease in temperature shall double the life of the materials. High or frequent change in temperature in environmental condition should be avoided as they will damage library materials. Relative Humidity should be stable. Fresh air movement or environmental control devices can reduce pockets of high relative humidity. Photographic collection should be divided into active and passive collection and passive collection, consisting of the originals should be kept at low temperature and low RH.

Atmospheric Pollutants

The library should provide for air cleaning in stack areas. Ongoing arrangement for effective cleaning and dusting of the whole library will ensure minimum deterioration caused by dust particles. Vacuum cleaner should be used only if it is fitted with absolute filters. Solid particles also can be checked by filtering the air coming from outside. Air ducts should be regularly cleaned to avoid dust or soot built up.

Biological Agents

The most effective way to keep the biological agents at bay is to maintain temperature and relative humidity at the recommended level. Regular cleaning of the library and its surroundings, free flow of fresh air will further improve the situation. Organic packaging materials of mechanical or magnetic carriers, and food items should not be permitted in the library. Water leakage of drainage pipes should be checked as they help develop dampness. Rodents should be controlled through regular inspection of the building for their nest and by using mouse trap. Use of insecticides are said to have temporary effect. Use of thymol and similar chemicals are now banned in most of the countries. According to Ross Harvey current practice is to avoid chemical controls wherever possible. Instead, reliance is placed on a programme of integrated pest management which incorporates environmental control, the use of freezing of affected materials and ongoing inspection and monitoring to detect the presence of pests and harmful environmental conditions.

Self Check Exercise

Note: i) Write your answer in the space given below.

ii) Check your answer with the answers given at the end of this Unit.

7) Explain what you understand by preventive preservation. What precautions are required against biological agents?

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Maintenance

Regular check up of building will include checking of drainage pipes, roof, electric fittings, etc. for their proper functioning and for carrying out required repair for fault. Regular collection checking will help spotting items for binding or repair or for transferring to rare collection. Equipments need checking lest they may result into some major accident. Inspection of emergency plan for the library at regular interval is also important part of maintenance work. Physical maintenance including preventive preservation is discussed in detail in the subsequent section of this unit.

Preventive Preservation; Special Category Documents

Photographs

Photographs should be kept in envelop or box which are free from lignin and oxidative residual chemicals. The collection may be divided into active and passive collection, active being the surrogate. The passive collection comprising the originals is kept at very low temperature. The active collection comprising surrogates should be available for general use.

Mechanical Carriers

Phonograph cylinders and shellac discs should be handled only by specialist personnel to keep their grooves undistorted. It must be protected from careless handling of replay equipment.

Magnetic Tapes

These are often damaged in replaying and therefore, replaying equipment should be maintained professionally to ensure against malfunctioning. Magnetic tapes should be protected from dust to ensure contact of replay heads to the media.

Optical Carriers

These include CD ROM, CD-I and CD-V, Optical Discs, Tapes and DVD. These are affected by high and low temperature and humidity. CDs must be handled with utmost care keeping in mind their mechanical integrity, and kept in special storage cartridges. In case of some carriers light may affect the dye layers used in recordable and erasable discs. Dust and dirt prevent the proper reading of the recorded information.

Electronic Publications

These are both off-line as well as online. Off-line are subject to the same influence from deteriorating factors as other magnetic carriers. In case of on-line databases the real problem is that of acquisition, selection, storage and access and not of preservation. However two preservation methods have been suggested:

Technology preservation strategy i.e. preservation of the original software and possibly hardware.

Digital migration strategy i.e. re-encoding digital information in new format before the old becomes obsolete.

Self Check Exercise

- Note:** i) Write your answer in the space given below.
ii) Check your answer with the answers given at the end of this Unit.
- 8) Explain preventive measures for special category materials.

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8.5 PHYSICAL MAINTENANCE, REPAIR AND BINDING

Library materials are both artifacts and intellectual content. Preservation of library materials deals with both aspects of the materials. But the two aspects are not always of equal value. Often a situation arises when the decision about the preservation has to overlook protecting the body of a badly damaged document

and in order to protect the text it needs reformatting in a microfilm or in digital form. Similarly sometimes a document is more important as an artifact and has to be protected in its existing form overlooking value of its intellectual content. Many books illustrated during the Mughal period are valued and deserve preservation not as much for the text as for the miniature paintings, or for binding art or for their calligraphy styles by a master calligraphers. An important part of the total preservation work is to pay attention to “those aspects of in-house physical maintenance and repair that prevent needless deterioration and return damaged items to useable condition”. However these aspects are, broadly speaking concerned only with preservation of artifacts and here too mostly the paper-based materials, more specifically the books. According to Ross Harvey the preservation work falls under two types of activities; a) refurbishing and collection maintenance, and b) binding.

Refurbishing and Collection maintenance

Refurbishing refers to carrying out thorough cleaning of each material in each shelf of each almirah. The cleaning operation should also cover the surroundings, the equipments and furniture. The process may reveal need for replacement of certain equipment or even repair. It may also help to upgrade the storage facilities for the books, adoption of better quality equipment such as humidifier, dehumidifier. Refurbishing is a sure way of identifying books which need only repair or full binding. The process helps to become aware of need for transfer of some more books to rare collection. Refurbishing is carried out with gap of few years.

On-Going Collection maintenance

The on-going collection maintenance activities are the same as that of refurbishing with the difference that a) these are yearlong activities, and b) the emphasis is on regular cleaning, tidying up of books and making them upright. The idea is to have every item in the collection examined at least once in two years.

Repair

Repair work involves preliminary examination of items to decide about the repair needs. The actual work of repair begins with first, cleaning of the materials and then patching torn areas with strong acid free paper. The paper used should be as near transparent as possible. The Japanese papers are more suitable for repair work. The adhesive used should be good archival type adhesive.

8.5.1 Preservation of Intellectual Content

An essential component of preservation is the reformatting the intellectual content of a material or a group of materials. Reformatting is transferring the text of the material in new form in which it is accessible for future use. It is usually done to make accessible the contents of a material which due to deterioration in its physical form is now beyond repair and restoration. However, sometimes reformatting of a material or a whole group of materials is also done due to original being too valuable and rare that it is likely to be damaged if made available as a matter of routine. Yet another situation when reformatting is done is the one in which the reformatted text is made to keep it as a safe copy to be available if somehow or other the original lost in a disaster or due to some other accidental factor. In brief the “four main reasons for reformatting are: physical condition of the material;

how heavily it is used; its rarity; and its economic, aesthetic, historical or other value”.

Reformatting can be done in any one or more of the three forms: a photocopy; a microfilm; and in a digital form. Microfilm is preferred over the other two as it is easy to store, is considered more durable and unlike digital material does not need relevant hardware/software for use. But reformatting being an expensive process complete bibliographic record of the material reformatted must be maintained to avoid repetition of the process for a material already processed.

8.5.2 Binding

Binding of Library materials is an integral part of the preservation of collection. Resources acquired by library need proper care to keep them useable for long period. Materials of certain categories are such that they need binding even before they are to be put in shelf for the users. Small pamphlets and paperback edition of text books are some examples. There are other resources which are received by library and if left unbound certain parts may disappear leaving the same incomplete. Major binding work in libraries is concerned with binding of books although periodicals are also bound when a volume is complete. A large number of books demands binding due to heavy use which results into deterioration of original binding. Very often carelessness in handling by staff and/ or users also results into disintegration of section and pages of the materials creating need for its binding. Binding is developed from a craft into a fine art. Many old books are specimen of binding art. But we are not going to study binding done as a piece of art.

Objectives of Binding

The following are some of the objectives for binding:

- To avoid damages to materials from mishandling.
- To safeguard materials against wear and tear of use.
- To avoid shabby looking face of materials.
- To preserve perishable and frail materials.
- To make materials attractive for the users.

a) Styles of Binding

The various styles of binding include Case binding, Library style, Flexible Style, The Sunk cord Style, Limp Binding, Loose-Leaf and Guard Books. Case binding is normally done by publishers. The text is sewn separately and when ready it is put in a Case of Cardboard covered with cloth. In library style the Card board is of split kind and is fastened in the text unit with tape inserted in between the split board. Flexible style is used for books that need fine binding. It involves exceptional technique in sewing, cutting and covering. It displays raised lining on spine numbering five, seven or nine. The style was popular till early Twentieth Century. The Sunk cord style required grooves cut in the spine to sink cord so that they are not projected above the spine. This makes binding extremely elegant. Spine and cover are decorated with gold impressions from finely cut tools. But the styles are weak for ordinary handling. Limp binding refers to books bound with vellum wrappers without hard covers, vellum extending beyond the normal squares

enclosing the foredge completely. Many devotional books, especially the Bible, are still bound in this style.

b) **Kind of Binding**

Libraries generally use library style for library materials. These are done in various kinds such as full leather, half leather, full cloth, half cloth and board binding. The library style which is a preferred style in libraries is not an elegant style, but it fulfills its purpose of withstanding heavy and constant use. Each type is selected as per quality of book and its preservation need. While the sewing method of leather and cloth categories is the same it is the covering materials which changes. Leather and half binding are more durable and are preferred for expensive books needing preservation for longer periods and also for reference books which are in heavy use, such as dictionaries, encyclopaedias and bibliographies. Cloth binding is less durable and is preferred for books likely to be available after some time in new edition. Coffee table books also normally get full leather binding. Pamphlets, being of small number of pages, are given board binding. Libraries prefer quality binding for their books. Library quality binding is also called reinforced binding. The Joint Committee of American Library Association and the Library Binding Institute have recommended details of reinforced binding quality. Dr. Ranganathan has also recommended reinforced binding as binding for library books. Normally heavily used books, such as text books and books of fiction deserve frequent binding.

The expenditure on binding is a heavy charge on library budget. Libraries have therefore developed certain criteria as guiding principle for selecting books in need of binding. The following are some criteria that help in selecting books for binding and deciding about the kind of binding that should be given to each material:

- Kind of the book— rare, manuscript, fiction or non fiction,
- Present value of the book,
- Future value of the book,
- Possibility of new edition becoming available, and
- The existing physical condition of the material to bound.

Based on the above criteria some books such as paperback edition or periodical volumes are released for circulation only after they are bound.

Reinforced Binding Process

The work of binding is divided in two parts, forwarding and finishing. Forwarding covers the operations required to complete the binding and finishing is embellishing it with a title and decoration.

Collation: Books received for binding should be first collated for completeness of the pages and their being in correct sequence. Before starting binding, all worn out, soil, torn and damaged pages should be carefully restored with Japanese tissue paper.

Sewing: Sewing should be done one sheet on. Linen and threads used should be unbleached separate leaves, plates, etc., should be first mounted on guard of linen and sewed like a section.

End papers: End papers used should be good tough opaque paper of approved mild colour.

Cutting Edges: Edges should be cut accurately leaving margin.

Forwarding: Unless otherwise advised all books should have French joint and tight or close flexible backs with the covering material attached directly to the back. Tapes are to be firmly inserted between split boards.

Lettering: Lettering also called finishing is to be impressed in best gold directly on to the materials which cover the book.

c) **Materials (Consumables) for Binding**

Binding craft requires use of various materials. Some of these have only one use while others are needed at different stages. Being organic in origin, these are affected by environmental condition. The binder must be aware of their acidity value before selecting an item for use. The acidity or alkalinity is measured on pH scale has a range of 0 to 14. The following are some materials which have major role in binding work.

Adhesive

Adhesive is a material which is used in almost every stage of forwarding. Many factors that are involved in its selection include durability, water content pH value, power of penetration and adhesive properties. No adhesive will satisfy all binding operation. Paste of root and cereal origin is a stronger adhesive. Organic gelatin and flexible glue are also used. From the middle of the last century synthetic glues have become more favorite with binders. However these should be avoided in fine, old and valuable books because of the difficulty of repair work in future.

Board

Board serves the need for guarding the text from the two sides of a book. Board quality is determined by the thickness or its weight. Various types of boards are available. The following are some often used boards:

- Mill board, Strawboard, split board and pasteboard.
- Millboard is very strong and durable. It is capable of bending without cracking and has satisfactory pH value. Millboard is used in all leather binding.
- Strawboard is manufactured from straw, sand and lime. Because of lime content it resists industrial atmosphere. It is used in case binding of low priced books.
- Split board is made of millboard and straw board. Straw board is on the inner side and mill board is on the outer side. Split boards are used for library reinforced binding. The slit is used to insert tapes after which the two are firmly glued.
- Paste board is manufactured from chemical wood pulp, esparto grass and other fibers according to quality. Usually it consists of laminated layer of thin white board or it may have a core of poor fiber lined on both sides with good paper. It is used chiefly for mounting.

Cloth

Mull is an open weave cotton material stiffened with size. It is used to reinforce any material to which it is attached by an adhesive. It is used extensively for strengthening the spine of book and reinforcing maps and documents. Buckram a closely woven linen of cotton cloth and is used as cover for good quality binding. Rexine or leather cloth is now used as cover for children books.

Leather

Quality of leather is very important for the durability as well as beauty of binding. Leather used in binding are known by the name morocco, pig skin, Vellum and parchment. Morocco is a general name given to goatskin. It is the most popular leather for quality binding work. Printing Industry Research Association, US, has developed standard for suitable leather. Standard quality leather carries stamp of PIRA to assure that in its preparation no injurious chemical has been used. Calf skin is used for its delicacy and beautiful finish but it is not as durable as morocco. Pig skin is considered strong leather and has been in use for centuries. Vellum and parchment are made from goat and calf skin. Its life is very long but it is easily affected by climatic changes. Vellum binding are beautiful, but Vellum is a little transparent and to subdue transparency it is lined with handmade paper.

Paper

Paper has been called the basis of the craft of binding. Decorative paper is used for the sides and end papers of books. Japanese papers are used extensively for repairing damaged papers or mending and replacing torn or missing parts of leaves. Paper used for binding should have a minimum pH value of 5.5 for the binding to be sound and lasting.

Thread

Linen thread which is made from flax fiber is much stronger than cotton thread and is preferred for reinforced binding. Now a day's synthetic thread are much in vogue. They can stand environmental variations better than linen or cotton.

Binding of periodicals need special attention in collation. In fact there is a view point that periodicals should not be bound. The arguments to support this view include delay that it causes to scholars in their research work; bound volumes deprive other readers from reading articles in some other issues of the volumes; create problems in getting photocopy of articles. It is suggested that secondary types of binding such as wrapping in a bundle and putting in boxes may provide safety and ease of use. But such binding suffers from the dangers of losing issues. Before taking up binding, presence of all the issue must be ensured. Superfluous pages containing advertisements should be removed. Title pages and content pages should be placed at the beginning and index pages at the end. The binding should be such that the pages of the volumes can easily lie flat for photocopying.

Binding is a time consuming process and calls for maintaining accurate record at the circulation counter for regular reference. The file containing the list of books arranged author-wise and book card arranged in classified order should be carefully maintained. Once the bound volumes are received from the binder each individual book/ volume is checked for the quality and correctness of style and for completeness of the text. Before sending the materials for shelving, pasting of due date slip, library label and book pocket is carried out and the relevant

book cards are placed in the respective books. Some libraries maintain a register for keeping a permanent record of materials sent for binding to satisfy the audit requirement.

Self Check Exercise

Note: i) Write your answers in the space given below.

ii) Check your answers with the answers given at the end of this Unit.

9) Write the considerations that determine need for binding a book.

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10) Describe why some people do not favour binding for periodicals.

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11) Describe the various style of binding.

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Binding library materials is an integral part of the library's preservation programme. Constant use of books and journals results into wear and tear of the materials. If not bound in time it may result into total loss to the library. Binding is, however, an expensive function and materials for binding should be identified with much care. There are certain considerations which help in this work. There are a number of binding styles developed over a period of time. The one preferred in libraries is called library style. Binding of periodicals requires special attention. Collation in binding work is an important function.

8.5.3 Maintenance of Collection

Maintenance of collection is an important function in collection management of library. In the absence of maintenance any arrangement of the materials shall collapse and the collection will not only become inaccessible but even deteriorate. Maintenance of collection involves two actions. At first the collection has to be

grouped according to certain characteristics in the documents. It is called arrangement by sequence. Next it is arranged in each broad group, in a systematic order based on certain scheme developed for classification of knowledge. It is called shelf arrangement. The arrangement has to be simple in operation and efficient in providing access to the desired document. Without organisation the mere richness of collection has no meaning for the user community. A rational organisation in collection is the sine qua non of an efficient library service. The next function of maintenance is making provision for the sustenance and preservation of the collection.

Arrangement of Material in Sequence

Information materials in libraries are varied in subject as well as in their physical form and format and hence they can be arranged according to their varied internal and external characteristics. In other words, these characteristics play an important role in arranging materials in sequence.

Internal Characteristics

a) Nature of contents

While most of the library materials are for sustained reading, there are some documents which are used only for looking up a certain formula, a data, a brief write up, an event, a person, etc. Such documents are put in one sequence called Reference Sequence. Library also acquires materials which are written as essential and recommended reading in a course study for students preparing for examination. These books are placed in separate sequence called Text Book Sequence.

b) Level of Content

Books meant for readers of a certain age group or for those belonging to a special category of readers, such children or adult, are grouped under Children Books Sequence or Adult Learners Sequence.

External Characteristics

a) Size

Though library shelves, of fixed type unit racks, are made to accommodate books of normal size, ie. 5.5"× 8.75", books in libraries come in a variety of dimensions ranging from very small books to some of a very large dimension. If small size books are accommodated in these shelves it will amount to wastage of shelf space. Large size books cannot be accommodated in these shelves. To solve this problem libraries create two sequences called Under Size Sequence and Over Size Sequence.

b) Infrastructure needs

Non book materials, which include microfilms, microfiche, tapes, Braille books, CDs, DVDs etc., need some sort of equipment for their use in libraries. These are therefore, kept in a sequence which may be called Non-book Material Sequence.

c) Security Needs

Manuscripts, personal papers of eminent personalities, autographed classics, are always kept in closed stacks. Access to such materials is provided under

vigilance. It may be called Special Sequence or Closed Sequence. Materials which are available for open browsing and borrowing are arranged in Open Sequence.

In addition to the above sequences, libraries often collect together materials from various sequences to build up a **Temporary Sequence** on the occasion of certain events such as a thematic conference in the campus, a major social or political event, or celebration of a centenary of an eminent personality. Sometimes an iconic figure like Mahatma Gandhi and Nelson Mandela can be the theme and libraries may go for **Permanent Sequence**. Dr. Ranganthan has given examples of GANDHIANA and NEHRUANA.

Arrangement on shelves

After the decision about placing the materials into such broad broken, the library has to arrange the books on the shelves under each sequence. It is called shelf arrangement. Traditionally one of the three types of arrangements is followed in libraries:

i) **Classified Arrangement, based on one or other standard schemes of classifications**

Classified arrangement is widely used throughout the world. Adoption of classified arrangement is very helpful in meeting the user need to browse and select material on topics of their interest. The system satisfies the needs of readers looking for specific books and also of those who are looking for literature on an area of their interest.

ii) **Alphabetically by author or title of the books**

Alphabetical arrangement, whether by author or by title, is simple to operate and it does not involve problem of fixing order as is required in classified system. But this system is more helpful in a small library or in a library where authors are the subject of study such as the Sahitya Academy Library.

iii) **Serial number as per accession register (Accession number)**

Arrangement by serial (accession) number is practical in library with a few hundred books like private circulating library where an unqualified person has to look after the library single-handedly. Sometimes even large libraries arrange fiction in alphabetical order in an independent almirah amidst racks where other books are arranged in classified order. Such arrangements are called Broken Order Arrangement.

Once the division in groups, i.e. sequence making and shelf arrangement in each group has been accomplished, the next job is to provide for maintaining or sustaining the order of arrangements and for preservation of the collection from, both internal and external damaging agents. From preservation perspective, the job of maintenance assumes more importance in libraries.

Shelving though mainly concerned with restoring order in the shelf through replacement of books received from circulation and from technical section, also contributes to the conservation and preservation of library materials. The duties of the shelving unit include shelving, shelf rectification and refurbishing.

Shelving

The aim of shelving is to put back books earlier removed from a shelf for reading or borrowing, to their assigned place. Broadly speaking the routines of shelving include cleaning and dusting of books, moving over books in the shelves create space for new addition in the same subject area. The shelving staff should:

- Strengthen the shelves constantly,
- Keep all books in a straight line by pushing books backward and forward,
- Keep the spines of books parallel to the front borderline of each shelf,
- Eliminate “lean” by pushing the loosely shelved books from the right to the left,
- Leave 20% space in each shelf empty,
- Use book support for partly filled shelf.

The shelving staff is expected to regularly dust the shelves and clean the books before putting them back in shelves. Daily dusting part of the shelves contributes to the preservation of collection.

Shelf Rectification

Shelf rectification of stack area is done to ensure that materials remain in their assigned place and they are in good shape is of paramount importance in open access system. It is carried out at fixed intervals. It includes the following routines:

- i) Maintenance of correct order in shelf,
- ii) Ensuring presence of book card, due date slip, book tag in their place and in good shape, and replacement of the missing ones,
- iii) Identifying titles severely damaged for replacement,
- iv) Identifying titles in need of minor repairs.

Refurbishing of Stacks

Refurbishing refers to organising through cleaning of the entire stacks. “An active and well organised refurbishing programme is a vital maintenance activity in library”. The work is carried out once in a year. However, it can also be organised as a routine by selected by choosing part of the stack area for a week or month. In selected areas all books are removed from the shelves. Each book is replaced after cleaning. Damaged books are removed and separated in to more damaged books needing professional conservation. These are assigned to the professional conservators. Books which can be repaired locally are repaired and put back in the shelves.

Self Check Exercise

Note: i) Write your answers in the space given below.

ii) Check your answers with the answers given at the end of this Unit.

12) List internal and external characteristics for sequence determination in book stack.

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13) Explain the formation of Temporary Sequence of book stack.

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14) Describe the duties of shelving staff.

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8.6 STOCK VERIFICATION

Stock taking or stock verification is the physical check up of the total collection at regular, mostly annual interval. During stock verification, borrowers are required to return books they have borrowed; libraries are closed to the user community. Books are verified with the help of accession register. On completion of checking list of missing books is prepared and placed before the authorities for writing off of lost material. In school and small college libraries, librarians are often made to accountable for the loss and in some cases even made to pay for the lost books.

The concept of stock verification might have its origin when books were scarce and were to be strictly guarded for their safety. Librarian was supposed to be more a custodian of the stock than a facilitator in providing access to users to their desired information. A system of counting the number of volumes at regular interval was in place to ensure that all the copies were in place. The attitude was understandable in the period when books were hand written and papers were yet to be made by machine. Even after the printing was invented books were printed page by page. With the advent of printing press and paper made by machine, the scarcity gave place to plenty. But the change in attitude takes time. The tradition of annual stocktaking persisted till the recent years when countries in the west replaced it with evaluation of collection. The accreditation bodies are not interested in numbers of book added or number of volumes issued. Now they ask libraries to show evidence of difference that collection has made to the service and “has help meet the institutional mission and goals”. It is held that a properly done survey gives library opportunity to see its strength, its weakness, the direction in which it has been developing and how well the collection is adapted to its clientele.

In India also various committees and commissions, both official as well as non-official, have spoken against the futility of stock verification and the injustice of holding librarian responsible for loss of books. But the attitude of authorities has

only partially changed as is evident from the circular dated Feb. 2, 1984 issued by the Department of Expenditure, Ministry of Finance. According to the circular “the position of the library books is different from that of other store”. But the circular still insists for annual stock taking for libraries with collection up to 20000 books. Libraries with collection above 50000 are allowed taking verification every five years.

8.6.1 Advantages of Stock Verification

Stock verification helps in:

- 1) Identification of lost books in a library.
- 2) Opportunity to staff to get more acquaintance with library collection.
- 3) Identification of titles needing repair/replacement, etc.
- 4) Identification of titles fit for discarding.
- 5) Help rectification of record such as catalogue, shelf list regarding missing books.
- 6) Identification of titles in need of tag, due date slip, book card replacement.
- 7) Understanding effectiveness or otherwise of library security system.
- 8) Through dusting of shelves and cleaning of books.

8.6.2 Disadvantages of Stock Verification

- 1) Stock verification is a lengthy process, therefore, the library remains closed for a long period.
- 2) Patrons are required to return books borrowed from the library.
- 3) Accumulation of work in acquisition, technical processing sections.
- 4) Despite the best possible security system, no library can claim zero of books.
- 5) Staff time is wasted in futile activity.

8.6.3 Methods of Stock Verification

Stock verification or checking of resources against the inventory of resources can be done in many ways. Some important methods of stock verification are discussed below.

i) Stock Verification with Accession Register

A team of two persons is constituted to carry verification. One Person reads the accession number loudly; the person holding the register locates the number and puts a tick mark on the number, preferably, with pencil. This process is carried out through all the stacks holding library collection. On completion of the round on the books in the stacks, similar checking is done with issue record at the circulation desk as well as with the list of books sent for binding. The next step is to prepare a list of titles not ticked in the register. If the library has a policy of regular stock taking at a given interval, say one year or five years, the new list is tallied with the list of the immediately preceding year. Items which are in the previous list are struck off from the new list to get the final picture of loss.

The method of carried out with care is the most reliable and perfect. But in actual practice it suffers from many frailties:

- It is cumbersome and tiring as it calls for opening of pages back and forth each time a number is to be located.
- There are chances of accidentally putting tick mark on wrong number.
- Sometimes a book originally tick marked as missing is suddenly located but after it had been cancelled from the register. The only way is it re-enter it at a new number.

ii) **Dummy of Accession Register**

To save the original accession register from getting shabby with cutting and marking stock verification is carried out with a dummy of the accession register. A plain register with serial numbers printed in columns on each page is used for stock verification. The team proceeds with register to the shelves and one person speaks accession number of the book and the other person tick marks the relevant number in the register. The whole process is repeated as explained above. Next all left out numbers are checked with the accession register to get the bibliographic details for the missing numbers.

The method saves the actual register from getting dirty but the chances of making wrong number still persist. But it is a time consuming method as the bibliographic details are to be added to know the missing books.

iii) **Stock Verification with Book Card**

The method needs formation of two teams to carry out the work. One team collects book cards from books and arranges them by serial order of the accession number on the cards. The second team tick marks the relevant accession number in the register and replaces the card in the books after they are re-arranged in classified order. The entire collection is verified and at the completion of checking the list of missing books is prepared from the accession register. The method leaves the register clean but the method is very cumbersome. Another way to conduct Verification is to prepare two book cards at the time of preparing a new book for circulation. Keep one set in a catalogue tray arranged in classified order. The cards may be of two different colours. At the checking time the spare cards kept in the tray may be put in the book pocket along with the original book card. The book cards left out in the catalogue tray on completion of checking will show the missing books in the collection. Both the above two methods are time consuming.

iv) **Numerical Counting Method**

The simplest method of stock verification is to count the total collection available in the library, add to it the books out on loan and with the binder together with books awaiting processing and compare the figures with the number of book in the accession register. The difference will be the number of missing books.

The method, however, does not identify the actual titles that are missing from the collection. It cannot be of help in replacing the missing books.

v) **Stock Verification with Shelf list/card**

Shelf list is an additional catalogue of collection which is arranged and kept in exact parallel way of books in the library, sequence wise as well as shelf wise. The work of stock verification is done by a team of two persons. One person tells the accession number and the other person shall raise the corresponding card in the tray. In this method more than one team can function simultaneously, each taking up one sequence for the checking work. On completion of the checking work a list of missing books shall be prepared with the help of cards which have remained in the tray unturned.

Stock verification with shelf list give more reliable figure of missing books. It also takes less time as no turning of pages or putting tick mark is required in the method and more than one team can carry out checking work.

vi) **Sample Stock Verification**

Sample stock verification is carried out to get an idea of the vigilance system of the library. One may choose one of those subject areas which are more prone to mischief such as fiction, art books or music score. Any one of the various methods of verification may be adopted for this purpose. If the result shows more than normal loss total verification may be taken up.

vii) **Stock Verification through Blank Slips**

Stock verification through blanks slip is very much like the verification with book card with the difference that instead of book card uniform size slips are used. Accession number of each book in the shelf, in issue record and other places are recorded on each slip. Slips are arranged in serial order of accession numbers. The arrangement reveals the missing accession numbers. The list of missing books can be prepared with help of accession register. However the system requires much alertness in collecting the slips and during their arrangement in serial order.

Pre-Condition for Stock Verification (by some methods are)

- Circulation Work is stopped and issue records are frozen in the existing condition.
- Entry of staff other than the verification team to the stack and issue record area is closed.
- The verification work is not done in broken stages.

Stock verification is supposed to be an annual activity of library to see if library collection has remained intact and if all the materials are in good condition. In the western countries stock verification has been replaced by stock evaluation. In our country it is used as a punitive action and has been used as weapon against librarians in school and even college libraries. There are some positive gains in conducting stock verification. But gains have to be weighed against cost in terms of man hour devoted to the work and loss of service. Among all the traditional methods, stock verification with shelf list appears to be the most efficient. Yet in modern days, most libraries conduct stock verification quickly and at low cost without much disturbance to service and without closing down the library using library management software and portable bar code readers attached to data storing devices.

Self Check Exercise

Note: i) Write your answers in the space given below.

ii) Check your answers with the answers given at the end of this Unit.

15) Discuss the alternative to stock verification.

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16) Describe the disadvantages of stock verification.

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Precautionary measures against loss

Having carried out stock verification in a library, the very first question to be asked is that ‘are the existing precautionary measures against loss of library documents enough? and is there any scope to take further precautions?’ (This may even be one of the objectives of the stock verification). The preventive and precautionary actions normally cost much more than the value of loss. The usual precautions taken at the time of planning a library is to operate with one exit cum entrance, not allowing personal belongings inside the library and covering all windows of the building with suitable wire mesh or metal grills to avoid passing books through windows. Additional precautions like a check point at exit gate with a person and/or vigilance manpower including security guard, magnetised document checking/ burglar’s alarm and other electronic book security system, CCTV, insurance against loss, etc. cost substantially to the organisation in addition to being not fool proof. What additional precautions are to be taken depends on how much additional expenditure (i.e., in addition to the cost of stock verification) the organisation is willing to incur. Here two things need special mention. Firstly some of the costs like salaries of vigilance/ checking staff are often invisible. Secondly, any physical check by a security guard in reputed institution may not only bring resistance from users but also makes an ugly show. Apart from intensifying vigilance, another positive approach propounded is to liberalise services like extended library hours during examination time, liberal or subsidised photocopying service and liberal lending of books marked ‘not to be issued’.

It is natural to raise a question as to how library books are lost. Mysteriously, it becomes almost impossible to pin point at any individual or set of individuals. Nor it is easy to catch red-handedly such thieves. Where they are caught also, surprisingly the legal process is so fragile that it becomes difficult to establish a

theft. Any way librarian is not a police officer. While discussing various security methods Pierce (1980, 271-249) says "... maintaining the security of library materials has changed from a minor irritant to a major problem. Many libraries have discovered that they are losing more than one percent of their collections each year [and] vandalism, arson and wanton destruction have become more common in libraries and will probably continue and even possibly increase".

An analysis of types of books lost and the distribution of value of books lost as against the strength of collection and average cost of books acquired should provide some guidelines about type and nature of books lost the need for vigilance, the need for change in arrangement and organisation of collection.

Responsibility and write-off of loss

After accepting and probably implementing wherever possible the additional precautionary measures against loss of library documents the ordeal does not end. No precautionary measure without fully undermining the service function in an open access library can ensure total elimination of loss. A negligible number of perverted, possessive, habituated persons responsible for loss and mutilation are likely to continue in spite of liberalised services and strict vigilance. Further what has already been lost and what is going to be discovered as lost in the future stock verifications need to be explained to and got write-off by the competent authority. At this stage the question of who is responsible for loss of library documents often surfaces with an indirect hint at librarian or librarian together with his staff. In some libraries, the librarian may be directly held responsible for the loss.

Loss of moveable property, stores and consumable is a universal phenomenon. Individuals, institutions, departments, public and private enterprises incur loss of many types of moveable property, stores and consumables. An individual library user, who loses a book borrowed from the library pays the 'replacement cost' to the library, rightfully and sometimes vengefully feels that what is lost by librarian should be made good by librarian. But s/he conveniently forgets to distinguish librarian as individual user from librarian as a functional head of the library.

In no other area of loss like that of minor equipment and consumable in any organisation so much of fuss about responsibility of loss arises as it happens in case of loss of library documents. As such stock verification is covertly viewed as a tool to punish librarians. Librarian in the process of providing service to users antagonises those who loose documents borrowed in their names and earns a psychological dislike or hatred by recovering the 'replacement cost' of documents. It is extremely rare to see a situation in an organisation where recoveries are made for loss of minor equipment and consumables even though they are issued in the names of individuals for keeping in their exclusive possession.

Compared to the magnitude of losses in many types of stores items in an organisation, the loss of library documents is meager. Secondly the stores items including smaller equipments would have been kept under exclusive possession in lock and key and there may not be a need to share them with others. In fact, many times books issued to individual departments are also lost. Further all other types of items are subjected to strict security with gate passes. On the other

hand, documents in an open access library are meant for shared use by many. Library staff is not meant to keep custody of library documents alone. This comparison of the circumstances in which loss of library documents occur with that of stores items clearly shows that loss in libraries are inevitable. For argument sake, an anti-service attitude can be taken by a library and advocate for having security guarded closed access library with gate pass system. But it takes away the essence of library services. Results of stock verification should not be used to impose restrictions. In any organisation, if librarian and his colleagues have to take the full responsibility for the loss of documents and make good the loss from their salary, it is obvious that s/he and her/his colleagues who share the responsibility be given a 'risk allowance' on line with allowances given for jobs like that of cashier in offices in addition to providing freedom in amending the policies and procedures of library to minimise loss.

However, the more reasonable way of clearing the deadlock of responsibility is to treat the loss of library documents like any other loss in the organisation and the competent authority write-off the same unless the situation warrants an enquiry about negligence and dereliction of duty on the part of librarian and library staff. The rules governed by the institution would indicate the financial powers and limits for write-off and the extent of loss allowed. In case of Government of India institutions, librarian in the rank not below that of a Deputy Secretary to the Govt. of India or Head of the Department who has financial powers can write-off loss of library documents to the extent of financial powers and monetary limits. Further rare books and books of special nature may be kept under closed access. There is also a provision in the above rules that there should not be any objection to the disposing of mutilated/damaged/obsolete volumes to the best interest of the library as long as it is based on recommendations of a three member committee appointed by the Department.

8.7 WEEDING

The fifth law of library science (Library is a growing organism) is more visible in the area of library collection. Few libraries are in a position to keep on adding additional storage area to accommodate ever increasing collection. At the same time a good number of books become out dated in terms of subject matter and become a liability as well as drain on the resources of the library. Many books become worn out and unfit for use. Books printed on poor quality paper under unfavorable environmental condition become easy prey to all sorts of bacteria. Research in science and technology make most of the science and engineering books irrelevant in a short period. The same is true in case of most of ready reference books such as yearbooks directories, etc. Holding in the racks such books become a source of obstruction for books which have relevance for the present needs of users.

Definition

Removing books not needed for one reason or other, from collection of a library, is called weeding of books. Another term used for weeding is deselection. Weeding is also called relegation in some countries although in this case books are not discarded but transferred to a secondary storage area. Weeding has been defined as "the practice of discarding or transferring to storage, excess copies, rarely used books, and material no longer in use". It has also been defined as "removing

non collection from the primary collection area”. Libraries have some policy of removing unwanted books from their collection. As for disposal of such books is concerned, Libraries have two alternatives before them: either transfer them to some secondary storage, if they have one, or discard them from the library.

8.7.1 Aims of Weeding

Weeding has been justified as it helps library in:

- Saving space for adding new resources to the collection,
- Improves access to resources and thus improves efficiency in service,
- Saving money being spent in maintaining additional copies and unused/ rarely used materials specially in open access system which is more expensive for maintenance,
- Keeping the collection to library’s optimum size.

However some of these criteria have been criticised by scholars. It is contended that some older and seldom used materials housed in a remote storage facility, it may take some time to determine whether the library owns the item, in addition to the time needed to retrieve it. Here the argument of improving accesses does not hold true. Similarly the argument of cost saving is questioned on the ground that there are hidden cost in relegating the materials at alternative place. These include cost of modifying records, cost of transporting to alternative shelves and cost of retrieving on demand.

Weeding of books is tricky and difficult function. It requires in persons engaged in the work quality of assessing the value of a book vis-a-vis space it is occupying. It has been suggested that the issue record in the book may be taken as sign of its value for retention or for discarding. Persons involved in the work must consider all library purposes and activities while identifying title for weeding.

Self Check Exercise

Note: i) Write your answers in the space given below.

ii) Check your answers with the answers given at the end of this Unit.

17) Explain what you understand by weeding.

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18) Describe the aims of weeding.

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8.7.2 Criteria for Weeding

Although criteria for weeding are highly subjective, never the less however, some guidelines that have been developed are as follows:

- Information is outdated (old books in science and technology)
- Volume physically damaged beyond repair
- Old edition superseded by new available edition
- Additional copy of title not much in demand
- Material not needed due to change in user needs
- Institutional objectives have changed
- Material was wrongly purchased.

There are certain materials which though fall under one or other of the above category but are not weeded. These include classic in literature, works of seminal nature in social science and pure sciences, volumes valuable otherwise such as autographed copy, material known for calligraphy, binding and illustration by eminent artist.

8.7.3 Barriers in Weeding

Despite obvious justification for weeding materials which have out lived their relevance, the word weeding have few takers, both among librarians as well as among the authorities or the academics. Eugene Garfield is reported to have said that weeding in library is like examining an investment portfolio..... Like frustrated tycoons many librarian cannot face the fact that some of their guesses (in selection of title) have gone wrong. However one cannot deny the fact there are many a hurdles in discarding books which deserve weeding.

- Psychological – No matter how useless an item may seem at least one person in the world will find it valuable,
- Lack of time – Weeding is time consuming work and hence decision gets postponing,
- Fear of making mistake – Possibility of withdrawing wrong title,
- Anti library culture – Library culture is identified with collection building not collection breaking,
- Lack of user support – Users cooperation is rarely very positive,
- Prestige of size of collection – Till the recent librarians and authorities both valued library by the size of collection,
- Fear of faculty opposition – Lack of user support and faculty opposition is the main hurdles in the way of weeding. This factor is not peculiar to India but is a world over phenomenon.

Apart from the above barriers there are certain practical barriers to the weeding process. Beginning with preparation of proposal to selling the proposal drawing up a schedule, training staff in the mechanism of applying identified criteria, withdrawing records for each item from various places, calls for great patience. The application of certain criterion also poses problem. Identifying change in the user needs requires great expertise. The mere fact that some books have not

been borrowed for certain period is not enough evidence of change in reader's preference. Similarly decision has to be taken whether the title is to be relegated to a secondary storage or is to be discarded.

Self Check Exercise

Note: i) Write your answer in the space given below.

ii) Check your answer with the answers given at the end of this Unit.

19) Explain the barriers to weeding.

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8.7.4 Weeding Process

The following steps are required to carry out weeding:

- Constitution of a team of senior staff
- Identification of titles for Weeding out
- Examination of the title by faculty members/ selection committee, in case of public library
- Final approval of the library authorities
- Separation of materials fit for relegation and those fit for discarding
- Preparation of list books for discarding
- Preparation of list for secondary storage
- Modification of various library records (catalogue, shelf list, accession register) for weeded materials
- Decision on ways of discarding (shredding, sale to second hand booksellers, free distribution as gift to other libraries).

The experience of librarians the world over is that however desirable the weeding may be the actual success in accomplishing weeding is very difficult to come by. Many a times materials considered to be suitable for weeding have been collected by librarians, but due to lack of interest in the faculty and authorities, decision on weeding could not be finalised. Ultimately it comes to only those books which are mutilated damaged or have become brittle that are approved for weeding.

8.8 SUMMARY

For long time preservation remained a marginal topic in librarianship. As a topic for study it was considered to belong to archive. The discovery by major libraries in the Western countries in the post second world war years, especially in the Library of Congress, of the imminent danger of losing a substantial number of their early Nineteenth century books sounded an alarm bell. The library launched a major project of mass de acidification. In the late fifties William j. Barrow

published his study on the chemistry of paper which disclosed that papers had inherent deficiency for survival due to presence of acid in wood-based raw material used in the manufacture of paper. Preservation now became a subject of worldwide interest. The British and American Governments and The European Community established bodies to study the problem. IFLA launched its preservation and Conservation programme. There has been much confusion about the exact connotation of the word preservation. It is safer to follow the definition given by IFLA.

The causes of deterioration of library material are both internal as well as external. The internal causes include residual acidity in paper. In case of films, it is the emission of nitrous gases and acetic acid vapor from films that results in their deterioration. Among the external causes, ultra violet and infrared rays emitted by sunlight, fluctuation in temperature and relative humidity, careless handling by staff and users, biological agents like fungus, etc. are important. In case of electronic sources/ digital data, it is magnetic stray fields, mishandling of replay instruments, virus and worms and sudden interruption in power supply. Disasters, both man-made and natural, have also inflicted irreparable loss to libraries throughout the history. Earthquake, tornado, rainstorm, wars and vandalism have destroyed many valuable collections.

Various preventive measures have been suggested to check the deterioration and damage to library resources. Use of acid free paper, protection from direct sun light on library materials, controlled environment in the library, provision of fresh air, installation of equipment such as water gaseous fire extinguishers, water sprinklers, and above all training staff and users in proper handling of library materials will go a long way in checking the malice.

Preservation of digital information can be done either by preserving the software or through re-encoding in new format. Library documents are valuable either for the content or for the style of the material. If text is important and needs preservation it can be reformatted. However if it is important for style of binding, calligraphy, painting etc., it should be given a quality binding. In all such cases while carrying out repair only such material and methods should be used which can be removed easily whenever it is required.

Maintenance of library material is an important activity of library. Without maintenance of materials in an orderly manner, identification of required book by users shall become a daunting job. Maintenance involves action at two levels. In the first place the collection is divided into certain broad groups called sequences.

These sequences are based on internal and external characteristics of the documents.

The commonly followed methods are called classified method, alphabetical by authors name or title method and serial number method. Classified methods are by far the most popular and helpful method. The other two methods are followed by libraries having small collection.

8.9 ANSWERS TO SELF CHECK EXERCISES

- 1) The following are some of the examples:
 - i) Publication of *Deterioration of Book Stock: Causes and Remedies* by W.J.Barrow.
 - ii) U. S. Library of Congress discovery that it was losing 77000 books a year due to deterioration.
 - iii) Dr. F. Ratcliffe's report *Conservation: Need,Resources, Policies and Programme in British Libraries(1982-1983)*.
 - iv) Flood in River Arno in 1966 submerging collection of Bibliotheca Nazonale in Florence.
 - v) IFLA Programme Preservation and Conservation launched in 1984.
- 2) Libraries are called as social memories because they:
 - helped transmission of knowledge to later generations,
 - helped cummulation and further building up of knowledge,
 - helped development of knowledge without any purpose less repetition of efforts.
- 3) The main causes are:
 - Prior to 19th century the quality of paper used was strong and had no inherent cause of deterioration.
 - Preservation was considered to be the job of archivists.
 - Librarians were more concerned with providing access than preservation.
 - Library Science courses laid more emphasis on the method and materials of binding.
 - Preservation meant protection of rare books and manuscripts.
- 4) Books published from early 19th century to the recent periods deteriorated due to internal as well as external causes.

Internal causes include wood pulp used as raw material and process of paper making.

Wooden pulp retains lignin which contains acid. In the process of paper making alum is used as sizing agent which is aluminum sulphate. The presence of acid leads to chemical reactions. The reactions are of two types: bond breaking because of hydrolysis, and because of oxidation. Oxidation results from presence of small quantities of metals from paper making equipments.

External causes include light and relative humidity in the atmosphere. Which accelerate the process of deterioration through their impact on the acidity present in the paper?

- 5) Library materials being organic in nature are affected by changes in temperature and relative humidity. Excessive humidity leads to growth of fungus and other insects. Low humidity leads to dehydration making materials brittle and breakable. High temperature speeds up chemical reaction in all

library materials. It also leads dimensional change in magnetic carriers and eats up pigment layers of magnetic tapes and floppy discs.

6) Staff negligence mean:

- negligence at the planning of building when no provision is made against effects of ultra violet and infrared radiations.
- negligence in maintenance of building and equipments.
- negligence in making provision for environmental control in which more care is given to comforts for human beings than for library materials.
- negligence in awarding binding work to substandard firms.

7) The preventive preservation is related with:

- Light: Protect library material from infrared radiation.
- Temperature and Relative humidity: Temperature 18 °C. Relative humidity 50%.
- Atmospheric pollutants: Ongoing arrangement for effective cleaning and dusting of the whole library.
- Biological Agents: Adapt integrated pest management system.
- Human Factor: Ongoing training both for staff and user group.
- Security: Building design must incorporate various provision required for security, enough lighting system, regular monitoring of sensitive areas.
- Disasters: A written disaster management plan with regular revision for changing situations.

8) The preventive preservation for special category materials is:

- Photograph: Keep in acid free envelop or box, Divide into active and passive collection only active collection should be accessible.
- Mechanical Carriers: Shellac discs and replay equipment should be handled only by specialists.
- Magnetic Tapes: Protect from dust, replaying instruments to be handled only by specialists.
- Optical Carriers: Protect from dust, CDs should be kept in special storage cartridges.

9) The considerations that determine need for binding a book are:

- Kind of books i.e. rare, manuscript, fiction, nonfiction, etc.
- The present value of the books.
- The future value of the books.
- Whether a new edition would replace the existing edition.
- The exiting physical condition of the book.

10) Some people are not in favour of binding of periodicals because:

- Delay affects research work.
- Bound volume can be used by only one person at a time while issues might contain articles for other too.

- Create problems in getting photo copy of articles.
- 11) The various style of binding are:
 - Case binding
 - Library style
 - Flexible style
 - Sunk cord style
 - Limp binding
 - 12) **External characteristics:** Size, Infrastructure needs and Security needs.
Internal characteristics: Nature of content and level of content.
 - 13) Temporary sequences are formed on the occasion of some thematic conference, celebration of centenary of some event of certain personalities by putting materials from the various subjects into one sequence.
 - 14) Shelving staff is required to shelve books, rectify collection and refurbish collection.
 - 15) Stock verification has its origin in early days of libraries when collection consisted of manuscript. Librarian was considered to be custodian of books and not a facilitator in the promotion use of the collection. The system has persisted despite opinion of various library committees against it.
 - 16) The following are the disadvantages of stock verification:
 - Library remains closed.
 - Users are required to return books.
 - Work load accumulates in other sections of the library.
 - Books are lost despite security.
 - Staff time wasted in futile activities.
 - 17) Weeding is process of identifying material in the collection which has lost its utility for users. It is also defined as the practice of discarding or transferring to storage, excess copies, rarely used books, and materials no longer in use.
 - 18) The aims of weeding are:
 - i) saving space for new addition,
 - ii) improving access to resources,
 - iii) saving money on maintenance of books,
 - iv) keeping collection at optimum size.
 - 19) The main barriers of weeding are:
 - Psychological- No matter how useless an item may seem at least one person in the world will find it valuable.
 - Lack of time- Weeding is time consuming work and hence decision gets postponing.
 - Fear of making mistake- Possibility of withdrawing wrong title.

- Anti library culture- Library culture is identified with collection building not collection breaking.
- Lack of user support- Users cooperation is rarely very positive.
- Prestige of size of collection- Till the recent librarians and authorities both valued library by the size of collection.
- Fear of faculty opposition- Lack of user support and faculty opposition is the main hurdles in the way of weeding. This factor is not peculiar to India but is a world over phenomenon.

8.10 KEYWORDS

Cellulose Acetate	: An organic compound of acetic acid.
Cellulose Nitrate	: An organic compound of nitric acid.
Collation	: Thorough checking of bound book for correct pagination, sewing quality and other details.
End Paper	: Blank paper of mild colour placed at the two ends of the book before the cardboard covers.
Forwarding	: operation required to complete the binding.
Fungi	: Plural of fungus organism feeding on organic matter. It includes mould that grows in moist warm condition.
Hydrolysis	: Chemical reaction in a substance that leads to its decomposition.
Infrared Waves	: Part of the light spectrum having a wave length just greater than the red end of the spectrum.
Iron Gall	: Iron rust.
Lignin	: Chemical found in wood that binds together plant cells.
Lux	: Unit of measurement for light intensity.
Open Access	: Free entry to book storage area.
Oxidation	: Organic matter getting covered with oxide.
Relative Humidity	: Water vapor in the air as % of maximum amount that the air could hold at the same temperature.
Sheet on Sewing	: Sewing style in reinforced binding. Reinforced because sewing in final Section gets double stitch.
Split Board	: Board made up of a laminated mill board and straw board with a slit to contain the flange of tapes.

- Square** : The projected end of the board beyond the text of the book.
- Sizing** : Reducing papers ability to absorb liquid by using gelatin or animal glue.
- Social Memory** : Library as store house of accumulated human knowledge is called social memory.
- Tanning** : Converting raw hide into leather through dipping it into chemical liquid.
- Telephone Tree** : List of phone numbers to used in emergencies.

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UNIT 9 DISASTER MANAGEMENT

Structure

- 9.0 Objectives
- 9.1 Introduction
- 9.2 Historical Background
- 9.3 Causes of Disasters
 - 9.3.1 Natural Disasters
 - 9.3.2 Man-made Disasters
- 9.4 Disaster Management Planning
 - 9.4.1 Aims and Objectives
 - 9.4.2 Disaster Prevention Measure in Building Design
 - 9.4.3 Disaster Management Plan
- 9.5 Security System
 - 9.5.1 Insurance
- 9.6 Summary
- 9.7 Answers to Self Check Exercises
- 9.8 Keywords
- 9.9 References and Further Reading

9.0 OBJECTIVES

Protection of library resources from damages caused by various kinds of disasters has now become an integral part of preservation. Natural disasters such as flood or earthquake or manmade disasters such as negligence of maintenance of library building and the various equipments have often led to the total destruction of a library.

After reading this Unit, you will be able to:

- describe the nature of disaster and know about some disasters that have affected libraries;
- explain national and international measures to safeguard libraries against disasters;
- describe disaster management planning including provision for disaster management in library buildings;
- identify the stages of disasters and prepare suitable plan for each stage; and
- highlight the security measures against manmade disasters.

9.1 INTRODUCTION

Disaster is an event that inflicts sudden disruption to the functioning of a system under its impact. It causes such a wide spread, material and environmental losses which exceeds the ability of the body affected to cope with, using only its own resources. In the context of library it has been described as “an unexpected event with destructive consequences to their holdings. It may be a small scale incident

or a full blown emergency, but in either case it requires prompt action to limit damage”. Disaster causes harm not only to holdings, it might cause harm even to buildings, staff, and users and disrupt normal services for considerable period.

9.2 HISTORICAL BACKGROUND

Libraries have suffered damages due to disaster of one kind or other throughout the history. The famous Alexandria Library, established around 300 B.C. is said to have contained between 400,000 and 700,000 documents in its peak period with literature from Assyria, Greece, Persia, and India. The Library was completely gutted in wars during the reign of Caesar (100 BC-44 BC) The libraries of Nalanda and Texila which had attracted scholars from China, Mongolia and Sri Lanka are now found in the pages of books only. Lightning in 188 AD in Rome, in 1300 AD in France and in 1674 in Spain were responsible for the destruction of several libraries in the respective countries. The libraries that flourished during the medieval period in India and were established by Kings of Vijyanagar, by the Great Mughals, Tippu Sultan and by Nawabs of Awadh, were vandalised by the British who later transferred the entire booty to England. To this day scholars working on Indian history have to travel to England to look at the basic sources on Indian history now available in the British Library.

The story of disasters did not end with the medieval period. The modern period has also witnessed destruction of libraries world over through wars, lightning, floods, tsunamis, theft and vandalism. The two World Wars are responsible for the destruction of many famous libraries in Europe. One example is of the library of the University of Louvain, Belgium which was destroyed in German invasion in the First World War resulting into loss of about 300,000 books. The Serbian attack on Bosnia-Herzegovina in 1992 is reported to have destroyed the National Library of Sarajevo resulting into loss of almost its entire collection of 1.5 million volumes including some 70000 rare manuscripts. Large scale destruction was caused to archives, libraries, and other cultural institutions during American invasion on Iraq in 2003. It included Iraq’s National Library, National Museum the National Archives. *Bait-al-Hikma* in Iraq lost, according to IFLA, 500,000 books and serials including 5000 extremely rare books.

The flood in River Arno, in 1966, damaged one million volumes of Florence Biblioteca Nazionale Centrale of Italy. Floods in Europe in 2002 damaged libraries in Austria, Germany, Hungary, Slovakia and Czech Republic. In 1985 a fire caused by lightning at the library of The Dalhousie Law School, Nova Scotia destroyed 60000 volumes, much of the library’s furnishing and fittings, including its card catalogue. The library of the USSR Academy of Sciences lost about 400,000 volumes in fire in 1988. Flood in Hyderabad in 2005 submerged in flood water Sunderayya Vignana Kendra library’s more than 1.25 lakh books, periodicals, manuscripts and other rare materials.

The library of the Sanskrit University, Dang, Nepal lost its valuable collection of manuscripts in an attack by mob in 2003. The library of the Bhandarkar Institute of Oriental Research was ransacked by an ill-informed mob over publication of a book on Shivaji which contained some reference to a manuscript available in the Institute’s library. A fire started by arsonists in 1986 destroyed about 400,000 books of the Central Library of the Los Angeles Public Library system.

The terrible tsunami that hit coastal areas of the Indian Ocean in December 2004 caused damage to 177 school libraries, 53 public libraries and 68 religious libraries in Sri Lanka alone. Libraries in Maldives also were reported to have suffered damage. Water damage was also reported by the Madras University Library. A devastating Hurricane, Katrina in the Gulf of Mexico, caused considerable damage to libraries in the area.

National and International level awareness

Though the occurrences of disasters have long history, the planning for preventive measures to meet the situation, both at national and international level are not very old. According to Ross Harvey “it was not however until the late 1970s that it could be said that disaster planning was widely recognised as an essential part of good library management.” The planning at the national level began in Canada, US, and UK towards the end of the last century. At the international level organisations like the International Council on Monuments and Sites, International Council of Museums, IFLA, International Council on Archives joined hands to form an International Committee of Blue Shield in 1996. The Committee is to collect and disseminate information on disaster management policies and, coordinate action plan in emergency situations. The main objectives of the Committee are:

- To facilitate international responses to emergencies threatening cultural properties.
- To encourage safeguarding and respect for cultural property especially by promoting risk preparedness.
- To train experts at regional and national levels to prevent, control and recover from disasters.
- To act in an advisory capacity for protection of endangered heritage items.
- To consult and cooperate with other bodies including Unesco, International Committee of Red Cross, etc.

The activities and functions undertaken by the Committee to fulfil its objectives are:

- Collecting and sharing information on threats to cultural property worldwide;
- Raising public awareness about damage to cultural heritage;
- Promoting good standard for risk management among those responsible for cultural heritage at all levels, from institution to government;
- Working to make decision makers and professional staff aware of the need to develop preventive preparedness, response and recovery measures;
- Providing professional expertise to help meet emergencies;
- Identifying resources for disaster prevention and for rapid intervention in emergencies;
- Encouraging the establishment of National Blue Shield Committees’.

The Unesco launched its Memory of the World Programme in 1992, with the objective that “world’s documentary heritage belonging to all should be fully preserved and protected for all and with due recognition of cultural mores and practicalities should be permanently accessible to all without hindrance.” It has also published a book with the title, *Lost Memory: Libraries and Archives Destroyed in the Twentieth Century* written by J. Van Albada and H. Van Ha.

Self Check Exercise

Note: i) Write your answers in the space given below.

ii) Check your answers with the answers given at the end of this Unit.

1) Give a brief summary of disasters in Europe in modern period.

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2) List objectives of Blue Shield Committee.

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9.3 CAUSES OF DISASTERS

Libraries like any other institution are exposed to various kinds of disasters which destroy building, burn or submerge books and other valuable records in water. Many a times these damages are irreparable. Fire and or water as source of disaster may be the primary factor or they may follow a disaster like earthquake, flood, lightening, etc. The causes of disasters have been categorised by nature of their origin. Those that occur in the form of natures' fury, such as earthquake, tsunami or flood in rivers are called natural disasters. Natural disasters are so unpredictable that they often take the organisation by surprise. These include flood, earthquake, volcanic eruption, wind or rain storm, lightning and tsunami. Disasters that are caused due to negligence or deliberate criminal acts of human beings are called manmade disasters. These include arson, vandalism, war, theft, building deficiencies, and/or negligence of staff of their assigned duties.

9.3.1 Natural Disasters

Some examples of natural disasters are:

Floods: As mentioned earlier, flood in River Arno, in 1966, resulted into flooding of the Florence's Biblioteca Nazionale Central of Italy. During August 2000 flood in Hyderabad priceless collection of Sunderayya Vignana Kendra Library was submerged in water. Flood waters destroyed basic source materials on famous Urdu poet Iqbal's original letters preserved by the Jammu University.

Earthquake: An earthquake in Muzaffrabad, Pakistan-held Kashmir, in 2005, made people who were rendered homeless, burn 1000 books to keep themselves warm in the biting cold of the winter months.

Tsunami: Tsunami in 2004 destroyed school, and public libraries in Sri Lanka and Maldives.

Lightning: Lightning in 1985 destroyed 60000 books of the Dalhousie Law School US, library.

9.3.2 Man-made Disasters

Under this category we may put such emergency situations that occur due to an unintentional or deliberate action of people (staff and users). It includes act of war and terrorism, fire following short circuit, flooding of library due to pipe burst or leakage. Building design deficiency and poor maintenance of the building also may lead to an emergency situation. Sometimes power failure also leads to emergency situation. Flooding, once the water subsides, leaves dampness in its aftermath which becomes cause of biological agents that inflict damage to the books.

War and Arson: The earliest example of destruction and damage to library due to war, as mentioned earlier, is that of Alexandria Library which was burnt in war during the reign of Caesar in the second century BC. In the first half of the last century the two World Wars inflicted irreparable damages to libraries in most of the European countries. The recent examples are those of the Serbian attack on Bosnia-Herzegovina in 1992, US attack on Iraq in 2003 and USSR attack on Afghanistan in 1979. In the US in 1980-81, there were 23 reported cases of library fires and of which 17 or 85% were listed as arson fires.

Theft: Thefts have caused damage not in terms of scale as in terms of value to libraries. Most of the books pilfered from libraries are scarce and very rare books with painting or some other artifacts. “Within a few days of forces entering Baghdad, the looters ransacked the National Museum and stole about 15000 priceless artifacts” (The *Hindu* 18. 9. 2010).

Building Deficiency and Negligence: The US National Fire Protection Association while investigating causes of fire at the Los Angeles Central Library of 1986 observed that the disaster could surely have been avoided by the utilisation of an automatic water sprinkler system. The cause of the 1988 fire in the Library of the USSR Academy of Sciences was traced to defective electric wiring. In the Patent Registration Office library, Government of India, Kolkata, 1.56 lacs Indian and 8 lacs foreign patent literature are facing decay due to lack of adequate preservation measures .

Self Check Exercise

- Note:** i) Write your answer in the space given below.
ii) Check your answer with answers given at the end of this Unit.
- 3) What are natural disasters? Give examples.

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9.4 DISASTER MANAGEMENT PLANING

Disaster planning is a matter of basic security for libraries and archives and has now become an integral part of library preservation planning. It has been called as one aspect of good library administration practice. Though called by names such as disaster control planning, disaster containment, contingency planning and risk management, in essence it is a set of rehearsed actions to minimise the effect of a disaster. It requires the library to always remain in a situation of emergency preparedness. Emergency preparedness is a continuous and integrated process and aims at:

- 1) Increasing the efficiency, effectiveness and impact of disaster emergency response mechanism;
- 2) Strengthening staff and user based preparedness through dissemination of guidelines for warning system, evacuation and exit routes, salvaging activities;
- 3) Developing activities that are useful for day to day preservation problems and also for responding to disaster situation.

The preparedness calls for taking certain basic steps which include:

- Study of the library for potential problem in consultation with local fire and safety services agency.
- Preparing a disaster planning manual and keeping it up-to-date.
- Develop list of items in the collection for storage with safety priority. (It is normal to put the materials into three levels, irreplaceable and costly materials, materials that are difficult to replace, rest of the materials).
- Preparing and keeping up-to date toll-free telephone phone numbers for use in emergency.
- Preparing and keeping up-to-date a complete inventory of library assets (excluding reading materials) to be used for insurance claim. The claim for collection can be based on accession record.
- Preparing a list of external resources experts, and organisations to be used in emergency and constituting a planning team for handling emergency situations.

9.4.1 Aims and Objectives

The aim of disaster management is the creation of a scheme to handle an emergency situation that may affect a library and its holdings. The objectives of such a scheme are: 1) to prevent a disaster whatever its magnitude, 2) to protect library materials in the event of a disaster and 3) In its aftermath to restore and stabilise library materials prior to restoration and conservation.

The disaster relief plan helps the situation in several ways:

- 1) By increasing the efficiency effectiveness and impact of disaster emergency response through:
 - Development and regular testing of warning system,
 - Plan for needed evacuation and other measures during emergency alert period,

- Education and training of staff and users and of first aid and emergency response team,
 - Formulating emergency response policies, standard, organisational arrangements and post disaster operations.
- 2) Developing activities useful for addressing both every day risks and for responding to disaster situation e.g. first aid and social welfare program me for affected people.
 - 3) Strengthening library based disaster preparedness education in and restoration work.
 - 4) Making staff confident that orientation and training given is sufficient to meet an emergency situation.
 - 5) Making staff confident that public and private agencies on the list for contact in emergency situation are aware of the special needs of library.
 - 6) Succeeds in restoring normalcy promptly and efficiently in post disaster situation.
 - 7) Makes staff able to reduce recurrence of disasters in the light of experience gained during a disaster.

9.4.2 Disaster Prevention Measure in Building Design

You have already noted in brief the disaster prevention as part of planning the building in Unit 6. In fact, planning for disaster management is done at two stages: 1) While planning the building by incorporating features necessary for retarding the possibility occurrence of disaster. 2) In post-construction stage planning with all other measures and activities to face the disaster and also post-disaster situation. In designing the building, the first and the foremost is to select site outside the seismic zone. Site should also be slightly elevated and easily accessible for fire engines and other emergency vehicles. Other points for consideration include:

- Building structure based on the principle of compartmentalisation,
- Separate room for storage of inflammable liquids,
- Use of fire retardant materials in construction,
- No storage provision for rare materials in basement and at the top floor,
- Pitched roof with no water or drainage pipes over book storage areas,
- Provision of fire suppression system,
- Openings in building for air and light to be vandal and thief resistant,
- Provision of fresh air flow around HVAC areas.

Self Check Exercise

Note: i) Write your answer in the space given below.

ii) Check your answer with answers given at the end of this Unit.

- 4) Explain how disaster relief plan helps libraries in the event of disaster.

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9.4.3 Disaster Management Plan

A disaster plan involves activities under four phases, namely prevention, preparedness response and recovery.

Phase 1: Prevention

Prevention phase is primarily concerned with such measures as are expected to be taken at the stage of planning the building. These are to Identify and minimise the risks posed by the building, its equipments and fitting and the natural hazards of the area and include activities as below:

- Carry out a building inspection and alter factors which pose a potential hazard.
- Establish routine housekeeping and maintenance measures to withstand disaster in buildings and surrounding areas.
- Install automatic fire detection and fire extinguishing systems and water sensing alarms.
- Take special precaution during unusual periods of increased risks such as building renovation.
- Make special arrangements to ensure the safety of rare and archival material when exhibited.
- Provide security copies of vital records such as collection inventories and store these off site.
- Protect computers and data through provision of uninterrupted power supply.
- Have comprehensive insurance for library or archives, its contents the cost of salvage operations and potential replacement, re-building and restoration of damaged materials.

Phase 2: Preparedness

Preparedness is concerned with making preparations for facing an actual occurrence of a disaster. The activities to face the situation include:

- Develop a written preparedness response and recovery plan.
- Keep the plan up-to-date with regular test.
- Keep together supplies and equipment required in a disaster and maintains them.
- Establish and train an in-house disaster response team. Training should be in disaster response techniques, identifying on floor plan enclosures of irreplaceable and important materials for priority salvage.
- Prepare and keep a set of documentation including:
 - Building floor plans with locations of cut-off switches and valves.
 - Inventory of holdings, with priorities for salvage marked on floor plans.
 - Telephone tree i.e. List of names, addresses and home telephone numbers of 1) personnel with emergency responsibilities 2) In-house disaster response team 3) of trained conservators who could offer various technical supports.
 - List of disaster control services, in-house supplies and equipments, of suppliers of services and additional equipments/supplies.

- Arrangements for funding emergency needs.
- Copies of insurance policies.
- Keep the plan and documentation at appropriate places on and off-site.
- Institute procedures for notification to appropriate people of the disaster.

Phase 3: Response

The steps that should be taken when disaster strikes are termed as response and include:

- Following established emergency procedures for raising the alarms, evacuating personnel and making the disaster site safe.
- Contacting the leader of the damage response team to direct and brief the trained salvage personnel.
- When permission is given to enter the site, make preliminary assessment of the extent of the damage, and the equipment, supplies and services required.
- Stabilize the environment to prevent the growth of mould.
- Photograph damaged material for insurance claim purposes.
- Setup an area for recording and packing material which requires freezing, and an area for air drying slightly wet materials and for other minor treatment.
- Transport water -damaged items to the available facility centre.

Phase 4: Recovery

Recovery phase involves activities carried out to bring back normal situation in the library by taking the following steps:

- Draw a programme to restore both the disaster site and the damaged materials to a stable and useable condition.
- Decide priorities for restoration ,consult conservators about the best methods for restoration and options along with cost under each method.
- Determine item by item needs for retaining, discarding, and rebinding or needing special treatment.
- Clean and rehabilitate the disaster site.
- Replace treated materials in the refurbished site.
- Analyse the disaster and the steps taken in its wake for needed revision and modification of the steps for the future.

Self Check Exercise

Note: i) Write your answer in the space given below.

ii) Check your answer with the answers given at the end of this Unit.

5) List measures to be taken in prevention phase of disaster plan.

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9.5 SECURITY SYSTEM

The security of the library is concerned with the safety of the staff and the users. It is also provision against theft of library resources and assets and general protection of the library building. Studies in US revealed that loss to libraries through theft has been as serious as loss through fire and is estimated to be around 50 million per annum.

Safety and security provisions should be incorporated both at the time of design of building and on a regular basis.

At the stage of designing building:

- Avoiding unnecessary rear doors and strengthening essential access point.
- Interior layout design should allow for maximum visibility of public areas.
- Providing burglar resistant bar/grills on rear windows.
- Installing an alarm system and necessary emergency exits.
- Provision for installation of CCTV and RFID.
- Adequate provision for lighting both in the interior and exterior of the building.
- Fitting of turnstile door at the exit point.
- Intrusion alarm system in special collection areas.

On a regular basis:

- Adoption of closed access system for special/ rare collection.
- Main door and rare material room door keys should have authorisation and recorded transaction system.
- Use of standard quality locks.

9.5.1 Insurance

The financial loss suffered by a library under disasters are often huge and it includes loss of content, cost of salvage operations and potential replacement, re-binding and restoration of damaged materials and re-building of damaged portions of the building.

There is, therefore, enough justification for taking a insurance policy against disaster. The policy should be comprehensive enough to cover all likely losses. However, since the insurance cover negotiation involves use of many technical terms it must be negotiated by a person conversant with the insurance terminologies. In case of occurrence of a disaster the losses must be reported to the company promptly once the situation stabilises. The library therefore must preserve the records of all its valuable materials to be covered in the policy and it must be preserved at a safe place away from the site. The insurance schedule must be reviewed periodically for enhancement of the value of the items covered as they keep changing. In this regard a written disaster management plan is helpful in making claim with the insurance company.

9.6 SUMMARY

Disasters are disruption or damage to the library by natural factors such as flood or earthquake or due to negligence or deliberate action of human beings such as war, arson and theft. There is a long history of disasters which destroyed many libraries. There is now national and international level awareness and preventive measures to safeguard libraries from disasters. Disaster management has now become an integral part of library management.

9.7 ANSWERS TO SELF CHECK EXERCISES

- 1) Major disasters in Europe in modern period are:
 - First World War, Library of University of Louvain, Belgium.
 - Herzegovina, National Library of Sarajevo.
 - Flood in River Arno, Italy.
 - Second World War, Libraries in Austria, Germany, Hungary, Slovakia, Czechoslovakia.
 - Russia: Academy of Sciences Library.
- 2) The objectives of Blue Shield Committee are:
 - 1) To facilitate international responses to emergencies threatening cultural properties,
 - 2) To encourage safeguarding and respect of cultural property especially by promoting risk preparedness,
 - 3) To train experts at regional and national levels to prevent, control and recover from disaster,
 - 4) To act in advisory capacity for protection of endangered heritage items,
 - 5) To consult and cooperate with other bodies including Unesco, International Committee of Red cross, etc.
- 3) The examples of natural disasters are:
 - Flood: River ARNO, Italy 1966
 - Earthquake: San Francisco 1989 Los Angeles Library
 - Tsunami: 2004, Sri Lanka, Maldives
 - Lightning: US 1985, Dalhousie Law Library.
- 4) The disaster relief plan helps libraries during disasters in the following ways:
 - 1) By increasing the efficiency, effectiveness and impact of disaster emergency response.
 - 2) Developing activities use full for addressing both everyday risks and for responding to disaster situation.
 - 3) Strengthening library based disaster preparedness education and restoration.
 - 4) Making staff confident that orientation and training given is sufficient to meet an emergency situation.
 - 5) Making staff confident that public and private agencies on the list for contact in emergency situation are aware of the special needs of library.

- 6) Succeed in establishing normalcy promptly and efficiently in post disaster situation.
 - 7) Makes staff able to reduce recurrence of disasters in the light of experience gained during a disaster.
- 5) The measures to be taken in prevention phase of disaster plan are:
- Carry out building inspection to remove any potential hazard,
 - Establish routine housekeeping and maintenance measures to withstand disaster,
 - Install automatic fire extinguisher and detection system and water sensing alarm,
 - Take special precaution during unusual periods of increased risks,
 - Make special arrangements to ensure the safety of rare and archival materials during exhibits,
 - Provide security copies of vital records such as collection inventories, to be stored off site,
 - Protect computers and data by providing uninterrupted power supply, and
 - Take out a comprehensive insurance policy for total estimated loss.

9.7 KEYWORDS

Compartmentalisation	: Construction of library building so that compartment/ unit can be sealed in case of emergencies like fire.
Cultural Properties	: Items which display the life and culture of a social group.
Heritage Items	: Products of craftsmanship and art such as old buildings, sculpture.
Pitched Roof	: Sloped roof to allow quick water flow.
Telephone Tree	: List of telephone numbers showing who will call whom in which order.

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