UNIT 8 HISTORY OF BINDING

Structure

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8.0 AIMS

The aim of this unit is to give learners a historical perspective on stages that binding of books have gone through. It will introduce, chronologically, the development and growth of the book binding processes, both of which have undergone many changes and played an important role in the preservation of books from the time man invented scripts and learnt the art of writing. The unit will unfold the various manifestations of binding of books.

It will also highlight how the major inventions like paper, ink and printing have revolutionized the craft of binding and created a need for more and more binding of books. It will also throw light on how history of the world and cultural and religious movements had influenced the binding of books. After going through the unit the learners will have an idea of how binding came to India and how with the development of printing the demand for books grew and how machines took over the art of binding.

8.1 INTRODUCTION

Books are repositories of knowledge and wisdom. They are mirrors of our culture and civilization. They are records of our history and have been treasured and preserved from time immemorial. Books are also the most important tool of teaching and learning.

Binding is a link in the production process. If binding is not done adequately and securely, in the required style and strength, the whole labour on designing and publishing a book may go waste, as the product will not last long. This unit will give a bird’s eye view of the evolution of binding from the most innovative yet primitive to the fast and most sophisticated techniques that have evolved along with the book—from the Codex (earliest known form of the book) to the present-day automated binding.
8.2 NEED FOR BOOK BINDING

It is generally said that necessity is the mother of invention. The shape of books gave rise to the need for binding. Books in one form or the other were always there since ancient days. The clay tablets of Mesopotamia and papyrus rolls of ancient Egypt, the first century parchment pages bound on one side known as codex, the religious works produced during the Middle Ages, were the various manifestations of the book.

Then came the oriental era of palm leaves. To keep the leaves, flat wooden planks were used on both side of the written material. This was followed by the period of scrolls or papyrus roll--a material derived from a plant and slitting the stems and cutting into fibrous strips. The problem with papyrus was that it was very brittle and could only be stored in roll form.

Binding, therefore, was and is needed for saving books for as long a period as possible. Binding provides the first step in preserving them in the shape and form in which they are created. The main purpose of binding, therefore, is to hold pages of a book together and protect them.

Modern day bookbinding began with the change from the continuous roll, to the book made up from separate sheets. Early books were composed of single sheets of vellum, followed by paper, folded over and collected into sections of suitable size. The leaves were held together in the correct order by sewing through the centerfold onto flexible bands held at right angles to the back. Modern binding has undergone many changes along with the change of materials for book writing.

The multiplicity of books published in the post-Gutenberg period made it necessary to distinguish one book from the other. So binding started serving another purpose also-that of identification of the contents by putting the name of the author and title of the book on the binding itself. When books became a commercial commodity, it necessitated making their binding attractive and inviting.

8.3 BINDING DEFINED

Definition of book binding: Bookbinding can be defined as a method of folding and uniting leaves of paper within protective covers. It is a process of fastening together printed or plain sheets of paper and enclosing them within a protective cover in such a way as to facilitate reading and viewing. Bookbinding is the process of physically assembling a book from a number of folded or unfolded sheets of paper or other material. It also usually involves attaching covers to the resulting text-block.

The Concise Oxford Dictionary defines a book as ‘a portable printed work filling a number of pages, a number of sheets fastened together into a cover’.

A book is also defined as a ‘written work of substantial proportion, printed and bound in a unit of one or more volumes’. One common requirement of the printed matter to qualify as a book is that it should be held together or bound.

The process of book binding can also be defined as the art or technique of securing printed or plain sheets of paper in a loose or folded form in a proper sequence in order to protect them from dirt and damage during handling and storing.
Activity 1

Define the term ‘binding’.

(Check your answer with the hints given at the end of the unit)

8.4 A BRIEF HISTORY OF BINDING

The Shape of Earlier Books: The craft of bookbinding precedes the invention of printing by movable type. Manuscripts written on palm leaves were given a special treatment so that they could be preserved for a longer period. This was perhaps the first attempt by man towards preserving the written material for posterity. From this urge grew the techniques for holding the written material together which in later days came to be known as binding. We list for you some of the looks of the earlier books.

8.4.1 Codex

Before the first century B.C. Greeks and Romans used wax tablets framed and backed with wood for writing. At times, more than two tablets were joined with thongs or cords. This was called a Codex. This remained the shape of the book for some time.

8.4.2 Clay Tablets

As far back as 3800 B.C. in Mesopotamia, Sumerians used clay alphabets pressed in clay with blunt instrument. These were the first books known to man. These were called clay tablets as they were made of moist clay and were dried in sun / fired for longevity.

8.4.3 Palm Leaves

The first true books, that we would recognize as such, were of oriental origin. They were made from narrow strips of palm leaves or strips of bark. The writing was then scratched on the surface and then filled with lamp black to make the characters stand out. In order to keep the leaves flat it would then be common to place pieces of wood either side of the pile of the palm leaves.

To hold the pieces of wood and palm leaves together, holes would be bored through the back and a cord or leather thong woven through. Sometimes the cover would be decorated with an extremely complex design using gold and silver with elaborate
carvings and intricate inlay work. However, it is unlikely that the book that we are
used to would have descended directly by this route.

8.4.4 Invention of Papyrus

Following to the clay tablets, the next major type of book is the scroll or papyrus
roll. Here the basic material was made by slitting the plant stems and cutting them
into fibrous strips. These strips would then be laid out side-by-side and a further
layer placed at right angles. These were then soaked in water and then left to dry
in the sun. When dry, they were hammered into sheets and polished with ivory to
make a smooth writing surface. These sheets were then joined together and rolled
for convenience of handling.

These scrolls were in prolific use during this period. It is estimated that by 295 B.C.
King Ptolemy had a collection of over 700,000 volumes of this type of binding in
the famous library of Alexandria. That was a large library even by today's standards
especially when you consider that every roll had to be written by hand. It is
interesting to know that in 47 B.C. when Julius Caesar besieged Alexandria, about
forty percent of the collection of the library was destroyed in a fire. Later it was
ravaged by civil war in late 200 AD and again around 400 AD. The Arabs, who
according to history were able to keep 4,000 baths hot for 6 months by burning all
the volumes, further destroyed the library in 640 AD. Nothing was left of the great
library of Alexandria.

The invention of the papyrus by Egyptians in 4000 B.C. is an important landmark
in the growth and development of binding technique. Since papyrus was created
with great skill from the papyrus plant, a greater need to preserve the fruits of the
labour was felt. Books were produced in scrolls. The rolls of papyrus used to be
of different sizes. Some of them reached the size of forty meters, but usually they
varied from six to ten meters in length.

At each end of the scrolls, a roller was attached. For better preservation of papyrus
material, the rolls were wound on special wooden or bone sticks with round-shaped
endings. The two rollers served as the binding mechanism for holding and reading
the scrolls.

The text was located in columns from left to right, thus making it mandatory on the
reader to roll at one end and unroll at the other while reading through the line and
again reverse the process to read the second line. Even where the lines began to
be written in columns instead of the length of the scroll, reading still was a
cumbersome process.

To solve this problem, the pages were folded instead of being wound on a roller.
This type of arrangement of written material was known as Concertina and with
this, folding came into being. To make the use of this folded concertina more
convenient, the back folds of the books thus folded began to be fastened and that
became the stitching which is an important process in modern day binding. The
production of papyrus in the fourth to the sixth centuries was a monopoly of Egypt.
8.4.5 Use of Parchment

The use of parchment—an early writing and book binding material made from skin of sheep, goats and other animals—made it possible to create books with flat folded sheets. Parchment is made from the skin of an animal. The process of transforming the animal skin into a clean white material suitable for writing manuscripts in medieval period was the task of the percamenarius, the parchment-maker or parchmenter. Its strength and finish made it possible to write on both the sides of the leaves and written leaves were folded, forming a section, and many such sections were stitched together and thus became a section which is an important aspect of today’s binding.

Parchment is extraordinarily durable, far more so than leather, for instance. It can last for a thousand years, or more, in perfect condition. Good parchment is soft and thin and velvety, and folds easily. The grain side of the sheet, where the hair once was, is usually darker in colour, creamy or yellowish (especially with sheep parchment) or brownish gray with goat parchment.

The sheets were tied together with a lace, passing through the hole made on the back of the sheets and kept between two boards. The place of rollers in scrolls was taken over by the boards. Thus covers with a lace became the oldest form of stitching. In the late Middle Ages parchment-makers took their place among the artisans and tradesmen of every town.

Activity 2

What are the four forms of earlier books?

(Check your answer with the hints given at the end of the unit)

8.5 INVENTION OF PAPER AND WRITING INK

Two major inventions gave impetus to produce books in large quantities. These were the invention and paper and the invention of writing ink. These two developments made the writing of books easier and more economical.

During the year A.D.105, Ts’ai Lun, a Chinese, invented paper. The raw materials used were said to be old rags, hemp waste, bark of trees etc., though the manufacturing process was kept a closely guarded secret. However, in 750 AD, the Arabs captured some prisoners amongst whom were skilled Chinese paper makers and so the secret got out and the art of making paper was introduced in the Arab countries. It took sometime for it to reach Spain and from there to Britain.

The invention of making ink from lamp black dating back to 400AD made writing easier and brought paper into universal use in preference to other materials. This was another landmark, which revolutionized the writing of books. The ink was made of lampblack, burnt ivory, charcoal etc.
The invention of paper coupled with the invention of writing ink gave an impetus to the writing and preserving of books. Since the writing was done by hand and scribes who used to write books, took a long time to complete one book, only very rich and affluent people could afford to keep books. Rich owners, therefore, lavishly spent a lot of money in protecting and preserving books.

### 8.6 DECORATIVE BINDINGS

Early bindings were often splendidly decorated, but the typical artistic bookbinding is of decorated leather and was first produced in the monasteries of Egypt's Coptic Church. Rare books, historical documents, and manuscripts were bound by hand. During this period, binding developed as a craft, one that has endured to this day. Over the years as books proliferated, the need for bookbinding increased. The invention of printing provided a new impetus to the craft. The earliest printed books were issued by their printers in unbound sheets; those who purchased them arranged to have them bound according to their individual requirements and taste.

This was the era of decorated covers. Goldsmiths and silversmiths were involved in decorating the covers, which were made either of wood or leather. Even inlay work (with pieces of metal, gold and silver set with jewels) was used to engrave blocks to make the cover beautiful. During this period binding was done by two types of people - one a binder and the other a decorator. Books were few and therefore each book was bound separately. Sometimes, each copy had individual designs on the covers.

**Activity 3**

Which country is credited with the invention of paper and ink?

(Check your answer with the hints given at the end of the unit)

### 8.7 INVENTION OF PRINTING

Then came the invention of printing by movable type and followed, in turn, by the Renaissance period when the need for books multiplied and the invention of printing made it easier to print several copies of one book in much less time. Speed, therefore, became the hallmark of binding and the glorious period of individualistic decorative covers took a backseat.

The practice of making extra copies of manuscripts goes back to ancient times when there were scribes who used to produce copies of the books. The copying of books by trained slaves reached considerable proportions in ancient Rome. The author, the printer, and the publisher of a work were sometimes all the same. It was this period when book publishing turned into a lively enterprise.

The German printer named Johann Gutenberg came up with the idea in 1456 of making each letter into a small block so that each line of text and page could be assembled from these little letters. These could then be broken down and reused time and time again. He was the printer of the Bible bearing his name.
The masterpiece of his press has been known under several names: the *Gutenberg Bible*; the *Mazarin Bible*; and in modern times, as the *42-line Bible*, for the number of lines in each printed column.

The introduction of printing in the 15th Century gave a great impetus to bookbinding. As the number of books increased so the occupation of printer and binder became separate. With the introduction of gold leaf from the East into Venice and the use of fine delicate tools for impressing the gold designs and different colour leathers for inlays and inlays on the covers the foundation was laid for the exquisite art for decorative binding. The early 16th Century was one of the finest periods in the history of decorative bookbinding.

**Activity 4**

*Who invented printing by movable type? Describe the process.*

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(Write your answers here)

(Check your answer with the hints given at the end of the unit)

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**8.8 ISLAMIC INFLUENCE**

In the West, book binding of *Codices*—books using wooden blocks as their protecting covers—had reached a standard of opulence and excellence in the ancient and middle ages. The craft of binding during this period had reached the level of a perfect art. In the twelfth century, bindings with elaborate and decorative leather covering and tooled with pictorial and geometrical designs were produced in Paris.

The Arabs who had learnt the craft of paper making from the Chinese revolutionized the craft of bookbinding. Writing skills of calligraphy and miniature were developed. The books were sewn with silk thread for longevity and covered with pasteboards. It is believed that the world of Islam has produced some of the most beautiful books ever created. The books were illuminated with gold and vibrant colours and protected by decorative bindings.

The art of book binding reached its zenith during the 15th century and after. Due to invention of printing, there was tremendous demand for printed literature and the art and craft of book binding flourished in these centuries, during this period the cover material was generally made of wood and covering was done with leather, silk, velvet and tooling was done with gold and silver. The binding in these days was so attractive that people started possessing books because of their rich binding rather than the contents. Many examples of such bindings exist even today.

Some researchers believe that gold tooling and decorative motifs is the gift of the Islamic influence, though there are some examples of gold tooled binding covers during the 12th century as well.

As the art of calligraphy developed in parallel with the Islamic religion, texts of important religious works, particularly of the Koran, proliferated. These were protected by bindings that maintained a degree of refinement, beauty and elegance, evolving concomitantly with other Islamic art forms, and achieving a level worthy of the high value of the books they contained.
In the process of gold tooling, the surface of the leather was first painted with
treated egg white or ‘glair’ as it was called, over which the gold leaf was placed.
The tool with decorative motifs was heated and impressed into the leather covering
through the gold leaf. The heat cooked and set the egg white bonding the leather
with the pattern. Gold and silver having become too precious these days, tooling is
now done with paper coated with golden and silvery pigments.

Activity 5

What was the influence of Islam on binding?

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(Check your answer with the hint given at the end of the unit)

8.9 RENAISSANCE AND AFTER

The invention of printing by movable type by Johann Gutenberg revolutionized the
printing industry. Development of paper manufacturing machines increased the
output of books to a very high level. Wooden boards, gold and silver tooling and
other embellishments began to give way to binding methods which were cheaper
and faster so that books could reach a larger number of people in shorter time. Until
now the printer was his own binder, but as the speed and number of books produced
increased, bookbinding became a separate trade.

In the years that followed, the printing industry developed many-fold. High-speed
machines for composing and printing were invented and put to use. This necessitated
the need for high-speed binding to cope with the printing speed. Thus were invented
different kinds of machines which helped high-speed binding of books to meet the
challenge of the time.

8.10 DEVELOPMENT OF BINDING MACHINES

Though binding machines came on the scene much later, the invention of Gutenberg
led to the demand for more and more books and binding systems. Books for the
first time became accessible to commoners as well. Binding was still very much
a craft done by the hand.

During the latter part of the nineteenth and early twentieth century, bindery
automation took several leaps forward. In 1868, David McConnell Smyth patented
one of the first sewing machines designed specifically for bookbinding. Over the
next three decades, Smyth went on to develop machines for gluing, trimming, case
making (hard covers), and casing-in. (These concepts will be detailed in the Unit
on Binding Operations). The process of sewing through the fold in a signature is
still referred to as “Smyth Sewing.”

Some of the machines that were developed during the 19th and 20th century
included the paper cutting machine (1840) invented by one Wilson. This machine
was known as the Guillotine machine and could cut a pile of paper sheets in one
stroke. The folding machine was invented in the year 1850. Improvements to this
machine were made in the following decades.
In the year 1850, Starr invented the rounding and backing machine. Machines for gathering and collating the gathered sections were also invented and put to use. In the last decade of 19th century the casing machine was also invented. (You will learn about these in the Unit on Binding Operations)

Perfect binding was invented in 1895, but was not put to common use. A German publisher introduced the first paperback book in 1931. Penguin adopted this format in 1935. This was followed by America and paperback books became a popular format for low priced books. In the 1940s the DuPont Company developed a hot-melt adhesive binding process, which made for more durable and longer lasting books, and improved the binding process.

- The 1950s saw a drastic change in office management and documentation methods. New methods of plastic comb binding and Velo binding and spiral binding inspired the development of new machines for faster bindings. Most of these office systems were based on the two-step process of punching the sheets and then loading them into the binding element. Other punch-and-bind systems include Wire or spiral binding .In 1983. Kevin Parker started the Fastback Binding System. It offered a method for binding that did not require the tedious punching and page insertion process of the punch-and-bind systems. The Fastback Binding System uses special strips coated with thermoplastic adhesives to create the binds. It represented a crossover, using materials and techniques that were previously only available to professional bookbinders. These days all the operations in the binding process are mechanized.

### 8.11 BINDING IN INDIA

The art of binding in India is as old as books. During the days when scriptures were written on Bhupatras and arranged in loose-leaf form, a covering of hard and thick material was provided which served as the outer protective covering of the scripture. Examples of scrolls and other forms of ancient books with covering material are also available.

The art of binding in the conventional style with tooling had arrived in India with Persian influence during the 13th century. During the Mughal period the art of leather binding with medallions and corners stamped with calligraphic and geometrical designs with gold tooling reached its zenith. Simultaneously the use of painted and illustrated wooden covers for ancient Hindu, Jain and Buddhist. Manuscripts called Pattas also flourished.

Multifunctional binding machines are in operation these days. There are binding machines, which contain complete assemblies required for various operations of binding. Machines have also been developed for perfect binding - a process in which signatures are trimmed into loose sheets, which are then glued. Developments are still taking place to further improve the technology and achieve refinement in this craft, which provides aesthetics to the art of book production.

### 8.12 SUMMING UP

In this unit we have traced the historical growth of the craft of binding of books. We have explained the following

- Why there is a need for binding a book.
- What was the shape of earlier bindings
• How inventions like paper, ink and printing revolutionized the need for binding

• How historical, cultural and religious movements helped in the progress of bookbinding

• How mechanization has changed the face of binding operations, and

• How the craft of bookbinding traveled to India.

Information about these areas will prepare you for understanding the following units in this block binding operations and materials for binding.

8.13 AIDS TO ANSWERS

1. Bookbinding can be defined as a method of folding and uniting leaves of paper within protective covers.

2. Codex, Palm Leaves, papyrus roll and Parchment.

3. China.

4. The German printer named Johann Gutenberg.

5. The art of calligraphy, gold tooling and decorative motifs.