

14. FIBRE TO FABRIC: PLANT FIBRE

14.1 In ancient times people used to protect themselves from heat, cold and rain by using the bark and big leaves of trees, or animal skins and furs. Gradually they learnt to weave twigs and grass into mats and baskets. In the same way, animal fleece or hair was twisted together into long strands and were then woven into fabrics.

In those days, stitching was not known. People simply draped the fabrics around different parts of their body. With the invention of the sewing needle, people started stitching fabrics to make clothes. Stitched clothes have gone through many variations since this invention. Think of some un-stitched clothes we use even today. Make a list of these clothes.

14.2 Varieties in Fabrics -

Do you think the clothes that we use are made up of the same fibres/ thread or do they have any variety? Come let us do an activity to understand it.



ACTIVITY

1

Materials required: Fabric cuttings, pen for labeling

Visit a nearby tailoring shop. Collect cuttings of fabrics leftover after stitching. Feel and touch each piece of fabric. Is the feel of all fabrics same? Now, try to label some of the fabrics as cotton, silk, wool or synthetic with the help of tailor. Now, look at it closely. What do you notice? Can you see the weave?



ACTIVITY

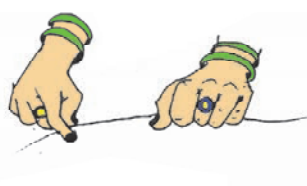
2

Materials required: piece of cotton fabric, needle

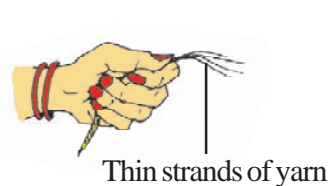
Select a piece of cotton fabric. Now, try to find a loose thread or yarn at one of the edges and pull it out. If no loose yarns are visible, you can gently pull one out with a pin or needle (fig.14.1a).



a



b



c

Fig.14.1 Yarn split up into thin strands

We find that a fabric is made up of yarns arranged together. What are these yarns made of?



ACTIVITY

3

You might have observed something similar when you try to thread a needle. Many a times, the end of the thread is separated into a few thin strands. This makes it difficult to pass the thread through the eye

of the needle. The thin strands that we see are made up of still thinner strands called fibres. Fabrics made up of yarns are further made up of fibres. Where do these fibres come from?

The fibres of some fabrics such as cotton, jute, silk and wool are obtained from plants and animals. These are called natural fibres. Cotton and jute are examples of fibres obtained from plants. These are called plant fibres. Wool and silk fibres are obtained from animals. These are called animal fibres. Wool is obtained from the fleece of sheep or goat. It is also obtained from the hair of rabbits, yak and camels. Silk fiber is drawn from the cocoon of silkworm.

For thousands of years natural fibres were used. But since last hundred years chemical substances, are also used to make fibres, these are called synthetic fibres. Some examples of synthetic fibres are polyester, nylon and acrylic.

What type of clothes should we wear during different seasons like summer and rainy season and why?

14.3 Some plant fibres -

These fibres are obtained from plants. These fibres are obtained from different plants, so their names are also according to the respective plants. Main plant fibres are-

1. Cotton - The fruits of the cotton plant (cotton balls) are about the size of a lemon. After maturing the balls burst open and the seeds covered with cotton fibres can be seen.

2. Silk Cotton- Kapok - The fibres of silk cotton are also obtained from pods as cotton. Kapok pods ripen after the flower withers off. On ripening they burst out and strands of fibres come out. These fibres do not have natural cohesion in them, because of which they cannot be drawn into threads. But these fibres are glossy like silk and of high quality. These are used for making mats and bedsheets.

3. Jute-

The fibres obtained from jute plants are commonly called 'taat'. Jute plant needs moisture and warmth. Jute plant grows to about 12-15 feet high. The plants are cut after their flowers wither off. The stem is soaked in water for days and decayed. The outer bark gets decayed and can be removed and from the rest, soft yellow coloured glossy fibres are obtained. Sacks, carpets and mats are made from jute.

4. Coconut Fibres (Coir)

These are found outside the coconut shell. It is used in the making of ropes and mattresses.



ANSWER THESE

1. What do you understand by natural fibres?
2. Write the names of the fibres which are obtained from the plant.
3. Name the fibre used to make sacks or gunny bags to keep the grains and mats (tat patti) you sit on.

14.4 Manufacture of Clothes

14.4.1 Spinning of Thread (Katai)

Fibres are the basic unit of any cloth. The first step of cloth manufacture from fibre is obtaining thread. Earlier the thread was spun by hands only. After the invention of hand spindle or takli and spinning wheel (charkha fig. 14.2) we could save time and the labour. Industrial revolution brought a new era to the

manufacture of cloth. Different machines were there for obtaining the fibres, cleaning them, making yarns from them and finally making clothes from these yarns.

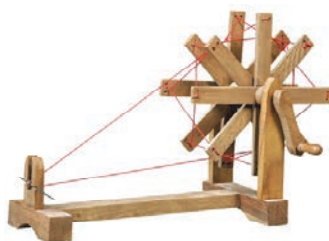


Fig. 14.2 Charkha

The process of making yarn from fibres is called spinning. This is the first step in making of clothes. After this the yarn is ready for weaving clothes.

14.4.2 Weaving on Looms



ACTIVITY

4

Material required - Two sheets of colour paper, scissors, pencil

Take two sheets of paper of different colours. Cut square pieces of length and width equal to 30 cm from each sheet. Now, fold both the sheets into half. On the sheets draw lines as shown in the (fig. 14.3 a). Cut thin strips along the line drawn on the first sheet, also cut the second sheet carefully along the lines drawn, leaving a border of one inch along the edges and then unfold (fig. 14.3 b). This sheet will form the base of the mat. Weave the thin strips one by one through the cuts in the second sheet of paper as shown in (fig. 14.3 c)

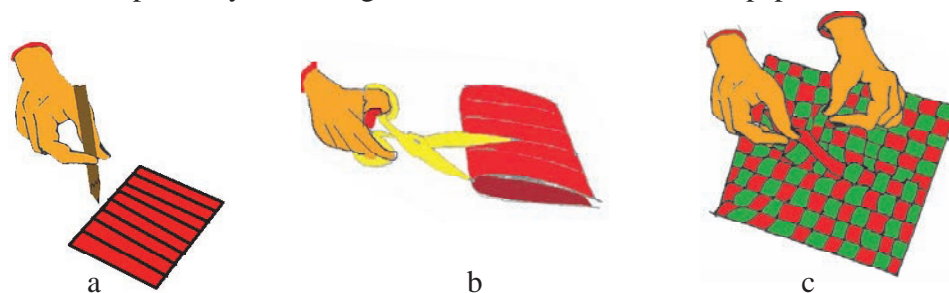
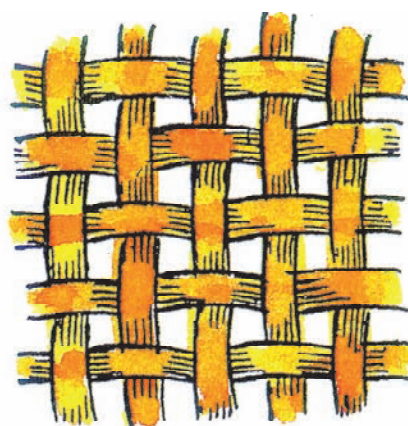


Fig. 14.3 Shows the pattern after weaving all the strips.

According to activity-4 two sets of yarns are woven to make fabric (fig. 14.4). The yarns are much thinner than our paper strips. Fabrics (cloth) are made from yarns, which in turn are made from fibres. So fibres are the basic unit of cloth. Weaving of fabric is done on looms. The looms are either hand operated or power operated.



a. Compact Weaving



b. Loose Weaving

Fig. 14.4 Simple Weaving

A cloth is weaved by intersecting the longitudinal threads, with the transverse thread. For this many methods are used. The main method is by using the loom. Mostly all the clothes are made by this method. For making a cloth the threads are placed from both sides, Weaving is done by interlacing the longitudinal threads, the warp i.e. "that which is thrown across", with the transverse threads, the weft i.e. "that which is woven".

With the invention of the handloom, weaving has become simple. Now a days cloth manufacturing is done in large scale by motorized looms in factories. In a simple weave, if you look at a cloth from one side, you will find the first warp thread over the weft thread, the second below and the third again above, the fourth below. In this way the pattern continues. Similar pattern is on the other side also.

14.4.3 Knitting with needles-

Along with weaving, knitting is also an important method of making the cloth. You must have used sweaters, jerseys, cardigans, banyans etc. These are knitted clothes. Such clothes have the ability to stretch and shrink as per requirement. They stretch and shrink and get adjusted to fit the body. So these clothes are useful in the field of sports. Come, let's do an interesting activity to understand this.



ACTIVITY

5

Materials required: - A weaved cloth like a cotton handkerchief and a knitted cloth like cotton socks.

Try to pull both the clothes horizontally and vertically.

Now write the answers to the following questions in your copy -

1. Which of these clothes stretches more?
2. Does this cloth retain its shape after it is being stretched?

Now observe each of the cloth minutely with the help of hand lens and see how the threads are arranged. (Fig. 14.5)

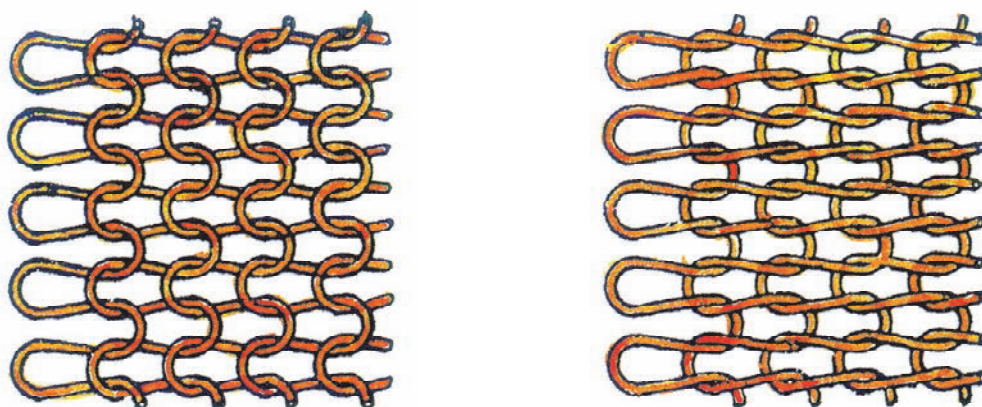


Fig. 14.5 Knitting from both side

Weaved cloth have the warp and weft threads at right angles to each other. So if they are pulled horizontally or vertically, they don't change. But the knitted cloth is made by interlocking loops of one or more yarns. Loops can stretch in all directions, so when the cloth is pulled vertically the loop stretches up and downwards and shrink horizontally. In the same way when it is pulled horizontally its length decreases and it stretches to the sides. The knitted clothes have the characteristic property of stretching and shrinking. So they fit properly and are comfortable to wear.



ANSWER THESE

1. What is the process of getting yarn from fibre known as?
2. What do you know about warp and weft?
3. What is the difference between knitting with needles and weaving on looms?
4. Observe any stretchable cloth with a lens and draw its pattern.



WE HAVE LEARNT

- There are different kinds of clothes (or fabrics) such as cotton, silk, wool and polyester.
- Natural fibres are obtained from plant- trees, animals and worms.
- Natural fibres are of two types - plant fibres and animal fibres.
- Plant fibres are obtained from cotton, coconut, jute etc.
- Silk, wool etc are obtained from animals.
- Man has made artificial fibres by chemical process. These are called synthetic fibres.
- Yarns are made from fibres by spinning.
- Yarns are weaved on looms to make cloth.
- Knitting using needles is also an important method of making cloth.
- Knitted cloths have the ability to stretch and shrink as required.



EXERCISE -

1. Identify the true and false statements. Correct the false statements and write them in your notebook -

- (a) Mostly jute is used to make carpets and rugs.
- (b) Yarn is made from fibres.
- (c) Jute is the outer part of coconut.
- (d) Silk yarn is obtained from the stem of a plant.
- (e) Polyester is a natural fibre.

2. Fill in the blanks -

- (a) Coir is obtained from.....plant.
- (b) Making of yarns from fibres is known as
- (c) Natural fibres are obtained from and
- (d) Nylon is a fibre.

3. Answer the following questions -

- (a) How do you obtain jute yarn?
- (b) What are the characteristics of knitted cloth?
- (c) Name two items made from coconut fibres.
- (d) Explain the process of obtaining yarns from fibres.
- (e) How do you select clothes according to the seasons? Explain.

THINGS TO DO

You can do an activity under the guidance of your teacher or parents to identify the fibre of any cloth. Pull out six to eight strands of threads from a cloth. Hold one end of the thread with forceps and bring the other end over a burning candle. Does the thread shrink away from the flame? Does the thread melt or burn? Is there any smell when it is burnt?

If it is a cotton cloth, it will burn but will not shrink or melt. Burning cotton gives out a smell of burning paper. Silk fibre shrinks away from the flame and burn but does not melt. It gives out a smell of burning flesh. Woolen fibres also shrink and burn but do not melt. They give out a strong smell of burning hair. Artificial fibres burn, shrink and also melt, they give out a smell of burning plastic.

