



VISIT BOOKLET

DEPARTMENTAL

TEXTILE MUSEUM

of the



WELCOME TO THE DEPARTEMENTAL TEXTILE MUSEUM !

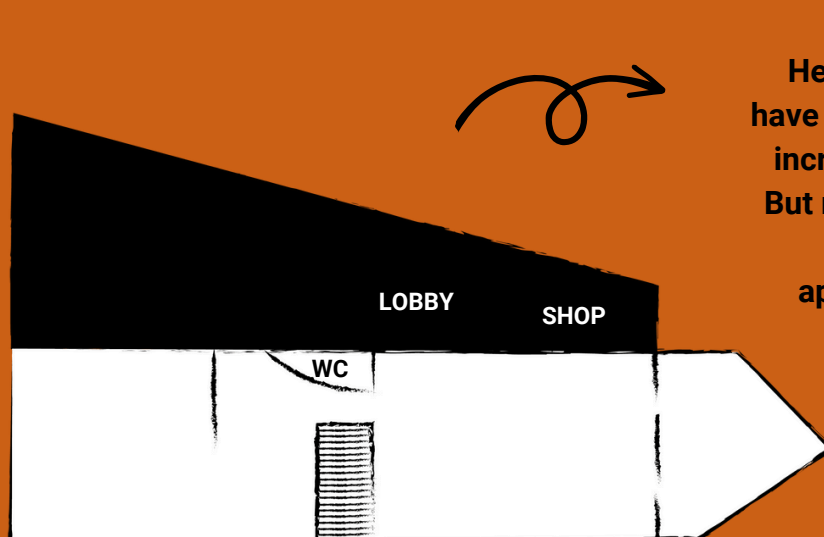
With the flocks of sheep present in the region, the many rivers and the quality of their waters, the use of wool dates back to the Middle Ages. Each family sheared their herds, washed the raw material, carded it, spun and wove it, within the farm itself. Until the 16th century, there was no productive unit organized around this wool industry. The arrival of the Protestants in the Montagne Noire allowed the creation of production centers oriented mainly on woolen sheets. The activity is developing and valleys are specializing. In the 19th century, the town of Mazamet became the world capital of "délainage" (process of separating the skin from the fleece) meanwhile Labastide-Rouairoux was known for producing textiles. The technical knowledge of the weavers, their creativity and also innovation, place the fabrics of the area at the forefront in France.

You are here, in the former Armengaud factory that closed its doors in 1968. The building is nowadays the Departmental Textile Museum, created in 1983.



AN INDUSTRIAL ARCHITECTURE

As you can see, there are **two different architectural style** from different times. The Armengaud factory was able to extend towards the river in the 20th century, revealing more than one century of history.



20th century

Here, there is a shed rooftop, to have more light and which used to increase the working conditions. But more light, means more heat during sunny days. Lime was applied on the glass roof in the course of summer.

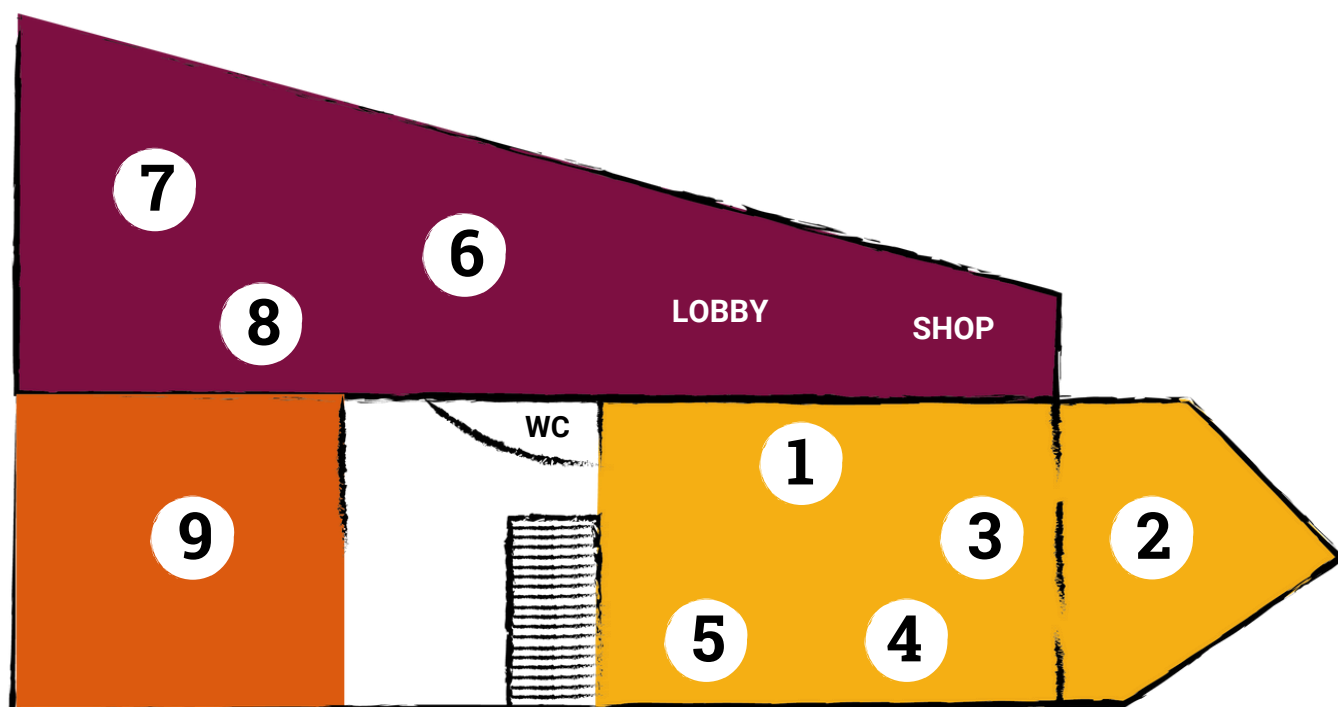
19th century

On the ground floor were the manufacturing workshops, directly on local stone. The more we went up the floor, the more we also went up in the company hierarchy. However, vertical organization was less effective for material transfer.

Throughout this visit, you will discover the **major stages in the manufacture of a cloth**, from the raw material to the finished product that goes on sale.

You will pass through 3 spaces :

-  the spinning room
-  the weaving room
-  the finishing room



You are in a museum, please do not touch
the collections except when this
pictogram indicates otherwise



WELCOME TO THE SPINNING ROOM !

1 THE RAW MATERIALS OR FIBERS



You are in the first room which is dedicated to spinning and yarn making.
There're plenty of raw material :

Natural materials

Animals

Sheep, alpaca, camel, goat wool (for example cashmere or mohair), raw silk and silk fluff.

Vegetals

Cotton, hemp, linen and ramie (a kind of non-stinging nettle that comes from Asia)

Man-made

Artificial materials

Since the 19th century, chemists have created these materials from wood. Wood (bamboo, eucalyptus...) is transformed into pulp and **chemically** modified to obtain, for example, viscose.

Synthetic materials

Are you sure you know polyester, polyamide, acrylic or nylon, the leading fibers on the world market ? Entirely human-made, these fibers are derived from **petroleum**. Since World War II, ready-to-wear appeared with mass consumerism.

To make yarn, it's also possible to use recycled fabric obtained thanks to a **tearing machine** like a shredder. This machine is mainly employed to provide recycled material from used clothing called regenerated wool or *renaissance wool*.



The result is used to remake threads, for industrial felt, thermal insulation, or padding .



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2 THE DYE

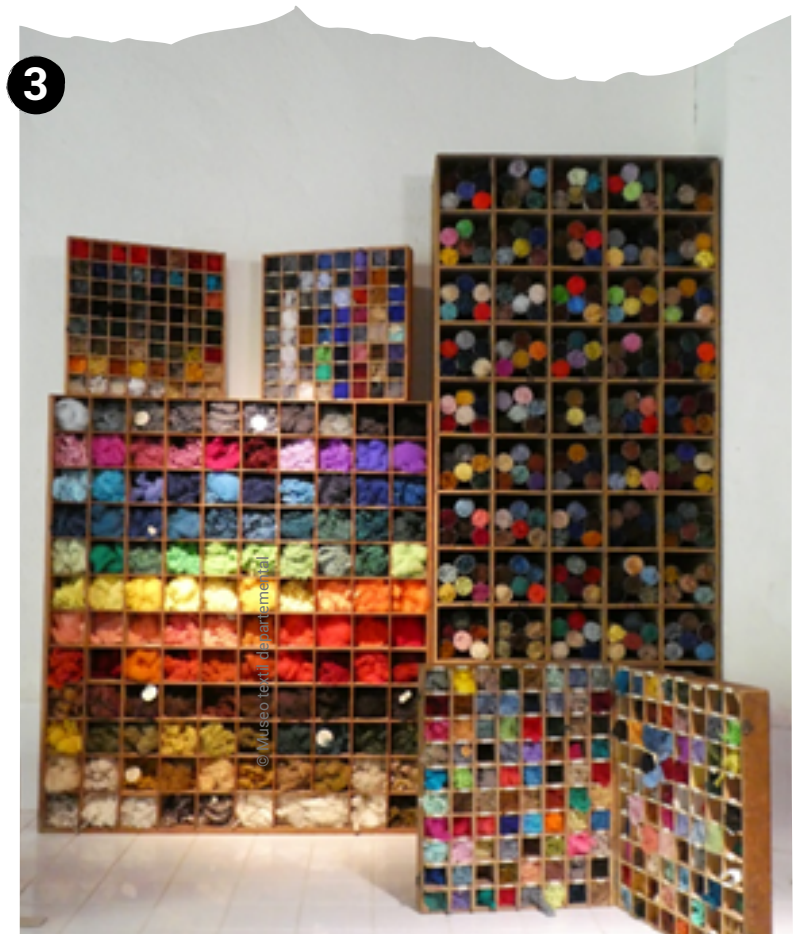
There are three dyeing processes :

Piece dyeing is the most widely used in the world. It is carried out at the end of the production line by immersing fabric in a color bath. This method allows you to avoid stocks : manufacturers adapt to fashion, seasons or customer demands.



Package dyeing, the same process but spools of thread are used. This is one was used for woven-dyed.

Stock dyeing : The raw wool is washed and colored directly. Material is placed into a tank, an autoclave, with pigments, initially naturals, nowadays chemicals. Thanks to heat, pressure and spinning, colors penetrate into fibers. **All wall colors result from this process !**



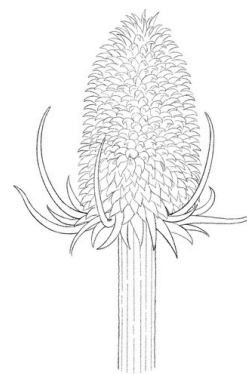
Inside the factory, laboratory tests include light fastness, abrasion fastness, wash fastness...



Chemical dyes were used since the first half of the 19th century in the area. The village elders told us that the river near the museum was sometimes red, sometimes blue, sometimes yellow. These dyes are so polluting that water treatment units are mandatory for factories.

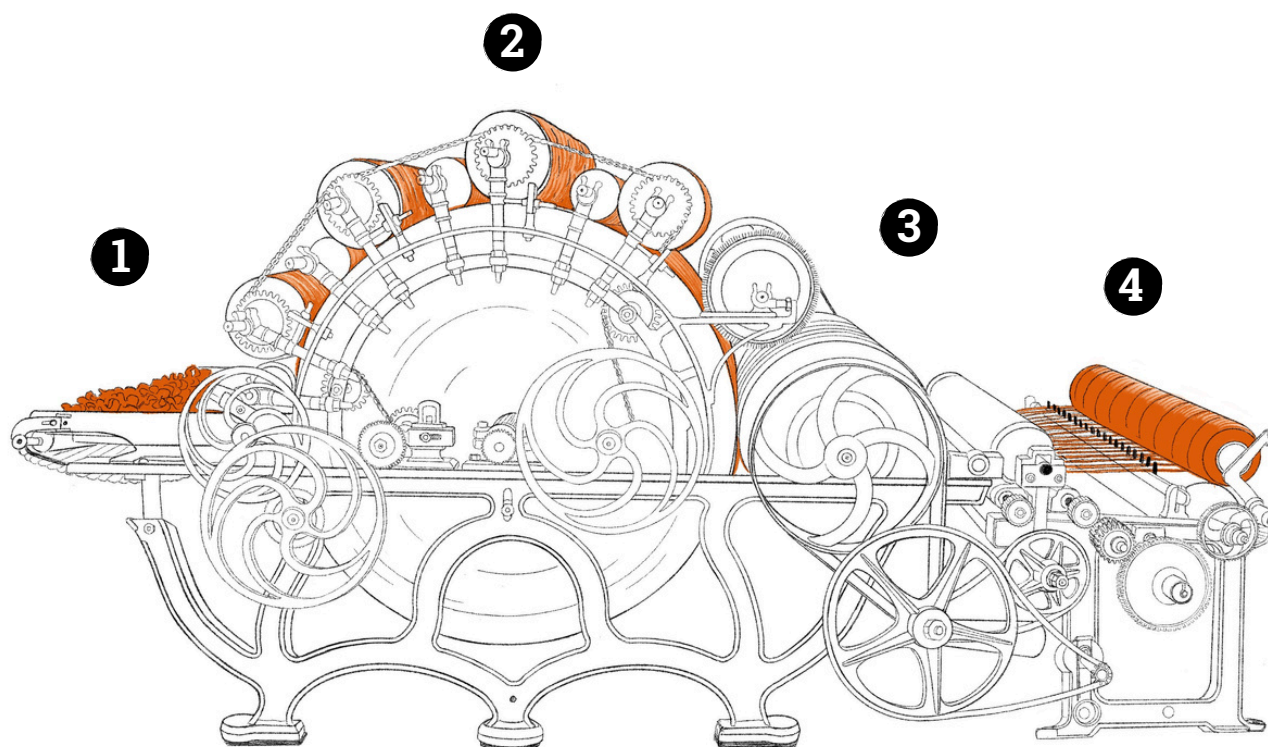
3 CARDING

In order to obtain a card sliver that can be spun, the material needs to be disentangled, brushed and fibers stretched. Teasels, called *cardère* (*Dipsacus sativus*), a sort of hairbrush, played this role.



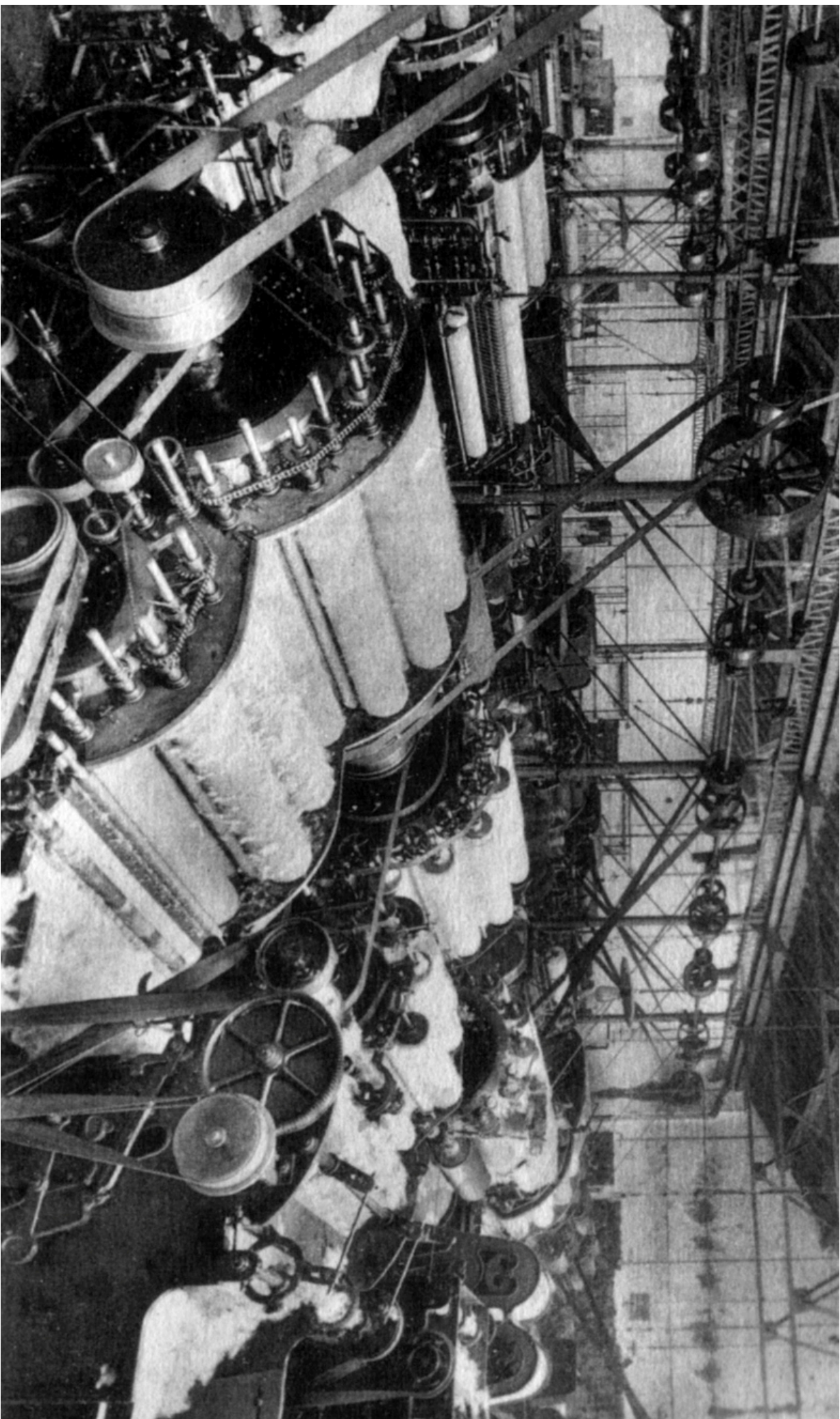
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Inspired by nature, **carding machine** facilitated this work. Coming from England, the first machine prototypes appeared in the 19th century. In front of you, a 20th century carding machine. How does it work ?



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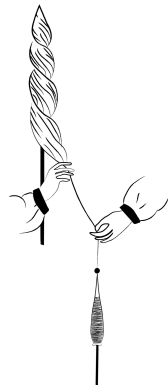
- 1 The raw material is placed on the endless belt, on the side of the machine.
- 2 Once started, it will be sucked into the various spikes equipped rollers called workers, which will untangle and stretch the wool.
- 3 Then the carded matter is divided into different slivers
- 4 These card slivers are wound on a beam. They are not yet strong and robust threads. In order to be weaved, they will have to be twisted.



TARN - Labastide-Rouairoux - Bourquet factory, interior of the spinning mill

4 THE SPINNING AND THE TWISTING

Spinning wheel and **spindle revolving** have been used for a long time, but in factories, were replaced by **spinning ①** and **twisting machines ②**

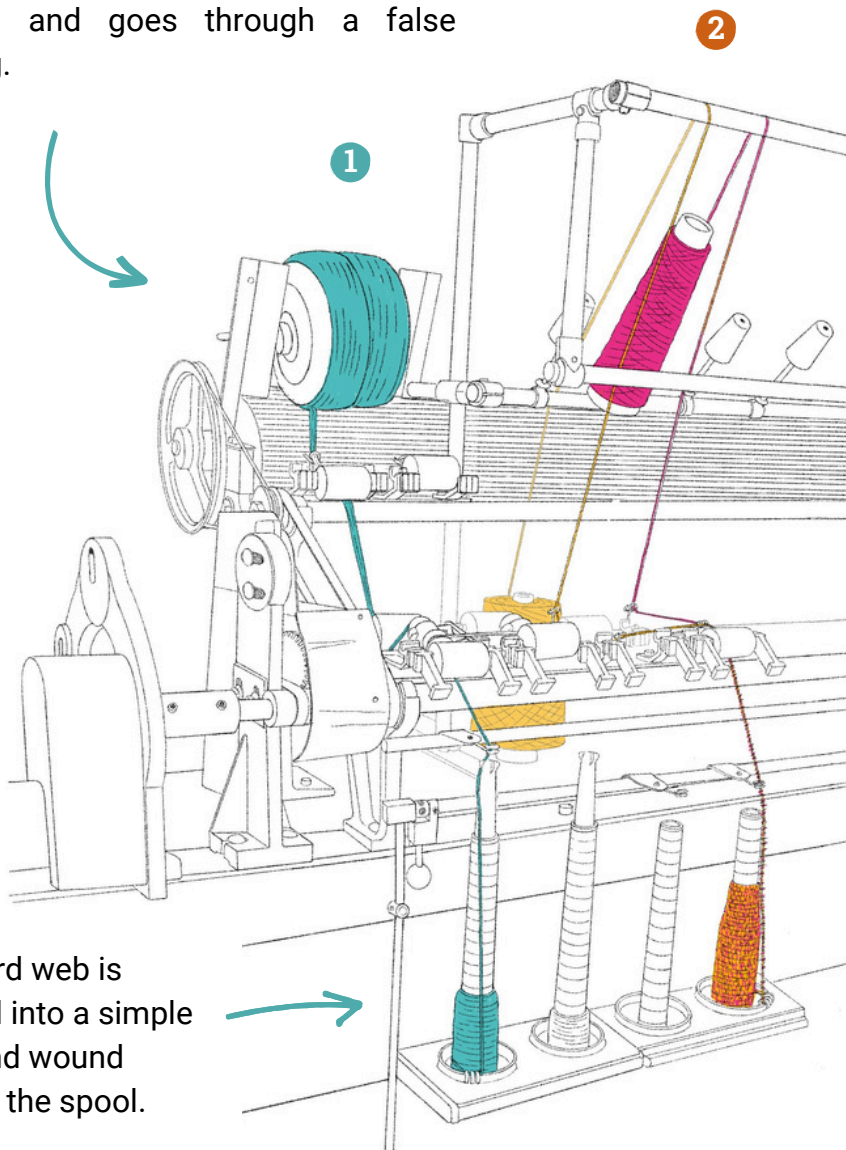


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© Canva

Here you find our card sliver. It on a spinning frame, it passes under three weights and goes through a false twisting.



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The twisting machine assemble several threads.

Labastide-Rouairoux is well-known for its fancy yarns such as loop yarns (used for Chanel's tweed), very eccentric yarns for novelty fabrics and even knitted items.

Spin yarns can then be plied into a two fold yarn used for weaving.



The card web is twisted into a simple yarn and wound around the spool.

When spools are filed, they can't be sold as is to industrial manufacturers. Well, it is necessary to rewind the yarn in larger cones to have a greater length.

5 THE YARN CONDITIONING

The winding drum : This device is used to unwind the yarn from spools to cones.

Factories in the valley sold cones only to manufacturers, but not to individuals who needed much smaller length.

The yarn was packaged in a smaller reel or in a ball of wool.



© Departemental textile museum



© Departemental textile museum

The ball winder can make twelve balls of 50g to be wound simultaneously in just 1.30 minutes.



© Departemental textile museum

Each spindle (cylindrical piece) rotates on itself. The guide winds the yarn around the spindle. Once the weight is reached (twelve times 50g), the counterweight automatically stops the machine. It took much more time to change each spindle by removing ball of yarn than make them with the device.

After all these steps, for marketing, the threads and samples produced in the factory will undergo several quality tests : robustness, elasticity, torsion...

Before moving on to weaving room, take a look at the **braided cords**.

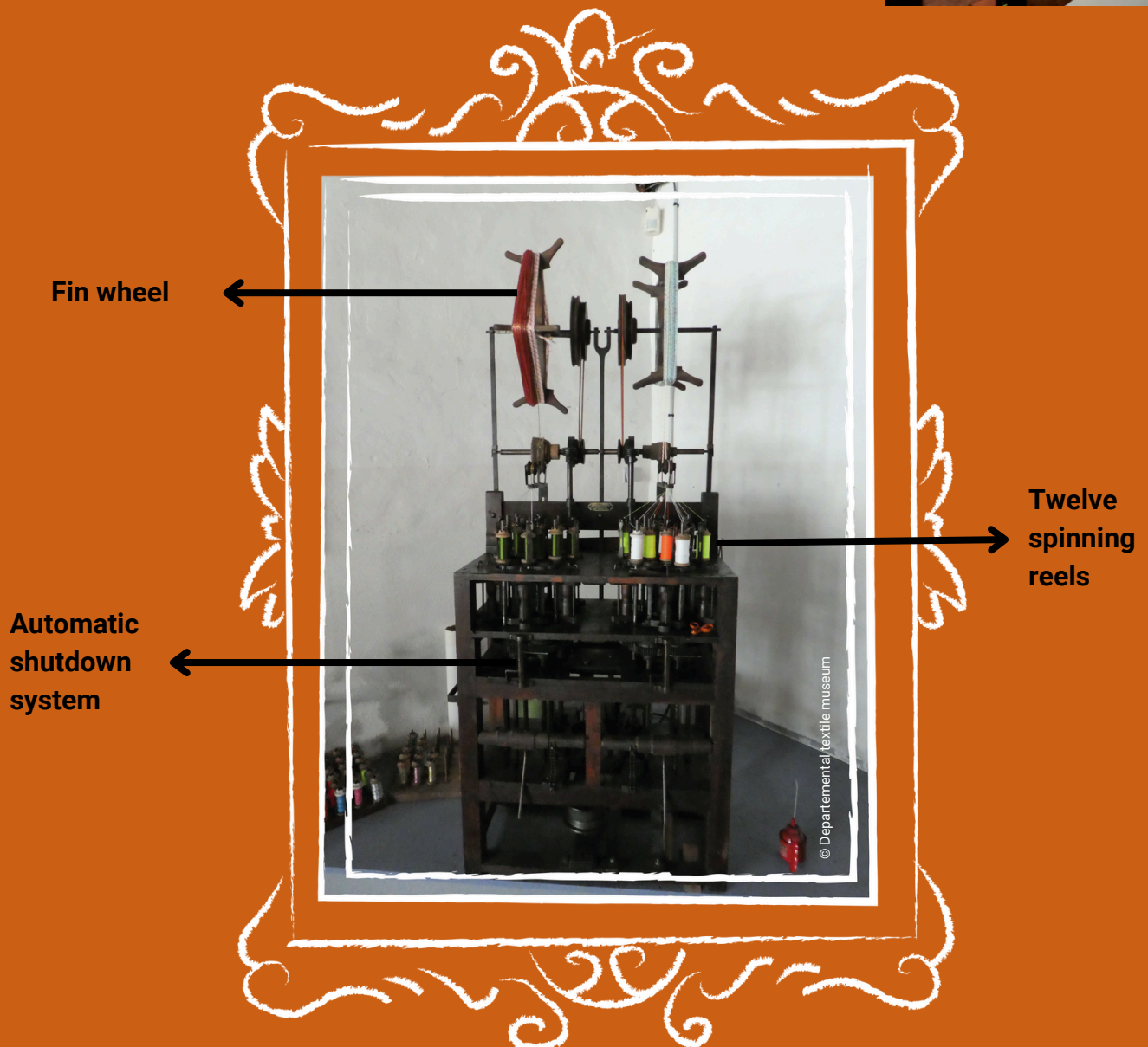
The crown jewel of the museum : The braiding machine

Designed during the second half of the 19th century, this machine is still working despite being the oldest in the museum ! It was used to make circular braided cords to make machine belts.

The braiding is very solid and is used in various applications : climbing ropes, shoelaces, fiber optics, artificial arteries...



© Departemental textile museum



Now that you know how to make yarn, you can weave.

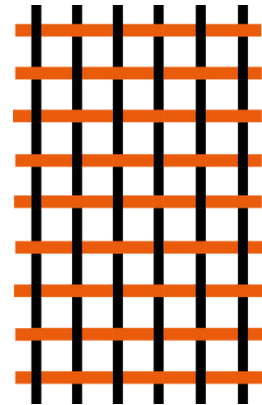
WELCOME TO THE WEAVING ROOM !

What is a fabric ?

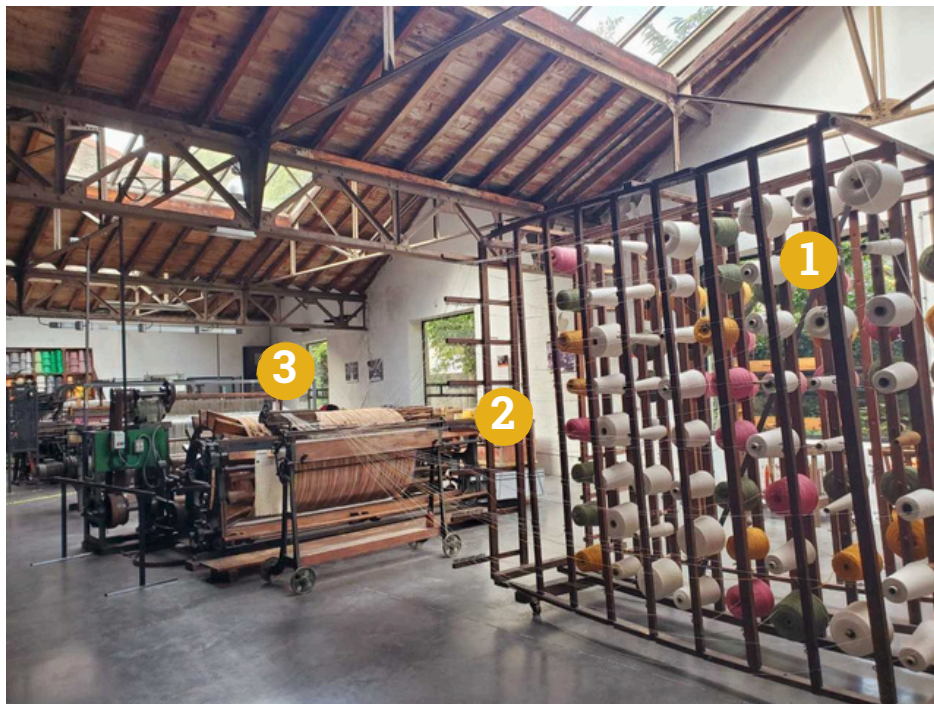
It's the assembly of several yarns, intertwined perpendicularly.

The vertical threads are called **the warp threads** and correspond to the length of the fabric. The horizontal threads, **the weft threads**, correspond to the width of the piece.

To weave, by hand or industrially, it is first necessary to prepare and wind the vertical threads, that is, the warp yarns. In the factory, we are going to use **the creel** (in French, the *cantre*) to do it.



6 THE WARPING



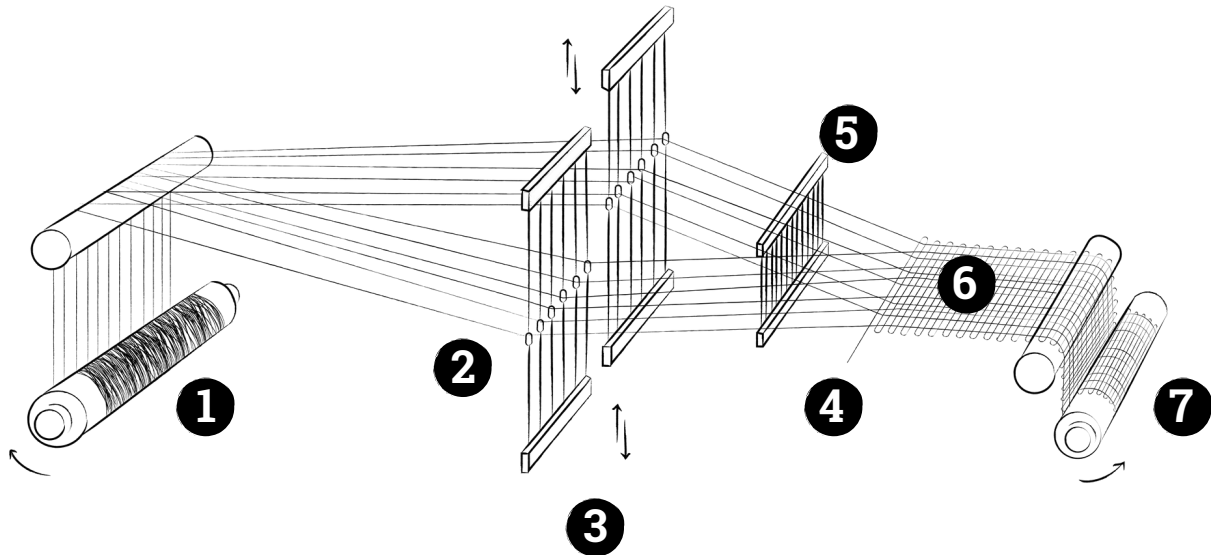
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- 1 The yarn package must be placed on **the creel** according to the final design of the fabric. You have to unwind yarns (if you want a fabric of 50m at the end, you have to unwind 50m of thread).
- 2 The threads pass through a cross comb.
- 3 You have to hook threads on the warper and wind the desired length. Now, repeat the process, thanks to sectional warping machine, until you have the width you want ; here there are like 1500 threads !

After, it is necessary to remove the threads from the warping machine to rewind them on a beam, large coil that will later be hooked behind a loom.

7 WEAVING LOOM

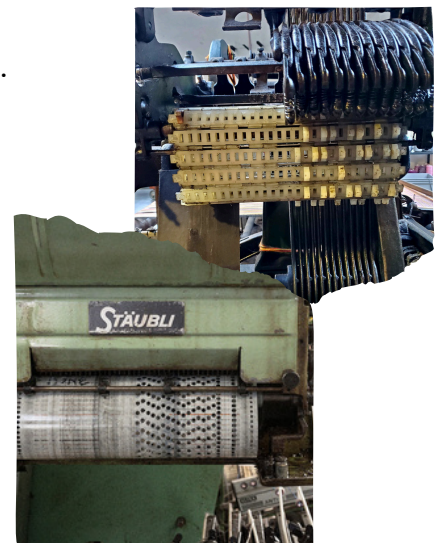
What is a loom made of ? And how does it works ?



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- 1 **Beam** of warp threads
- 2 The warp threads are threaded onto **heddles** attached to the **harnesses** of the loom. It is a very long and meticulous step, since each thread must go through the correct heddles according to the chosen pattern.
- 3 The harnesses (some kind of frames) go up and down.
- 4 The **shuttles** or **rapiers** go through between the shed, which is two tapes of warp threads with the unwinding weft thread.
- 5 The **reed** pushes the weft thread against the fabric.
- 6 The fabric is formed by the intertwining of threads.
- 7 Unwound : the fabric is rolled up on a beam.

Looms are controlled by a **card programing system**.



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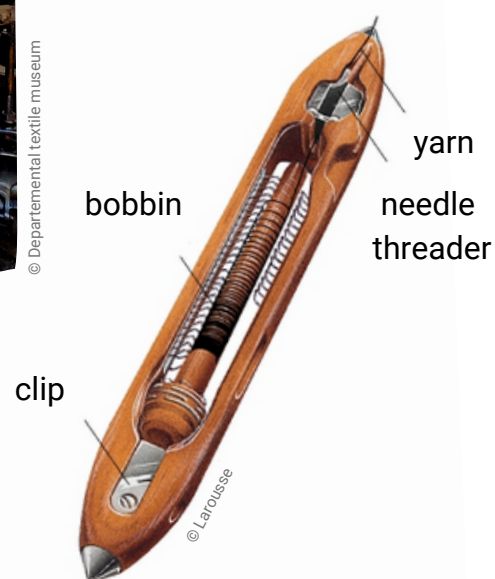
There are many different weaving combinations.
With this technique, it is possible to make many fabric designs such as twill, tabby, satin...

In the museum there are two looms :



A Schoenherr, a **shuttle loom** from the 1930's that can reach up to 90 RPM (ninety rounds and turns per minute).

Here, a shuttle :



The shuttle unwinds the weft thread at 200 km/h !

A Dornier, a 1970's **rapier loom** that is twice as fast, that is to say three round and turns per second. Before, the shuttle ran the full width of the fabric to unwind the weft thread. Here, two rapiers meet in the middle of the fabric to give each other the weft thread before returning to initial position.



8 FABRIC CHECKING - DARNING

After weaving, the fabric doesn't go directly to sale. Loom state fabric is checked and darned by hand, final step before finishing.

Quality control is done on a **light table** to search for flaws.

If there are any defects, a red string is sewn on selvedge of the fabric. Later, the fabric is repaired or downgraded. If mending is chosen, this step is called darning and will be done by hand. Otherwise, if there were too many defects, the part was sold on sales.



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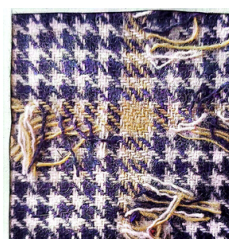
Do you think there are any defects in this fabric? Look at the back, it has been darned!



Front face



Back side



Here, we see on the front side and on the back side the repair carried out by hand and with great care.

Extract from weaving and tucking course notebooks, 1950s, Gautrand Fund.



The first inspection of woolen and worsted fabrics is called perching. Workers installed the fabric in front of the window on a lapping-beam then looked inside. Thanks to daylight, by transparency, defects could be spotted.

9 THE FINISHING ROOM

The finishing industry includes many treatments to give various appearances, properties and functionality to fabric. These are mechanical processes such as shearing, brushing or chemical processes such as softening, waterproofing, etc...



These are some examples of **mechanical finishes**.



When fabric comes out of the loom, it has to be washed. In the wool industry, a **rolling mill** is used (a kind of milling machine that beats fabrics in order to felt, to fix the length and width and to remove the grease).



Jean-Pierre Veaute factory in Brassac, April 26, 1984 Mr. Patrice Rouanet

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How to use ?

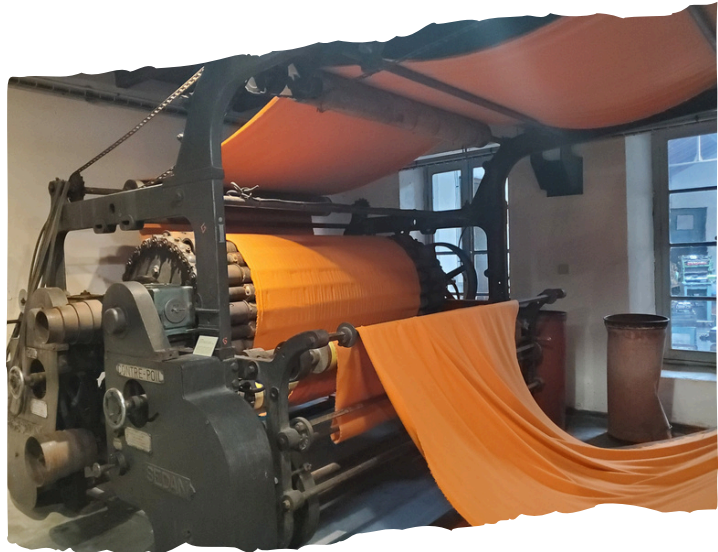
- 1 Sew the ends of the fabrics to form a gut.
- 2 Put the fabric in the machine.
- 3 Add water, sodium and above all, soap.

These ingredients, combined with kicking, allow the fibers to shrink. This process is gradual and irreversible. It can only be applied to fabrics that contain natural materials.

With the advent of synthetic materials, the fulling mill is almost forgotten, except in countries where wool industry is still active, like in France.



To make a fluffy blanket, which is both warm and soft, you have to thicken and scrape the fabric.



© Departemental textile museum

In traditional **teasel gig** the pins of the teasels stretched each thread of wool. But pins got stuck in the fabric and workers had to remove them by hand. They were gradually replaced by metal pins in a device then called a **raising machine**.

In order to obtain wool velvet, you can then pass the fabric in a **shearing machine**. The finished velvet could then go on sale for the haute couture industry.

Nowadays, in french wool industry, there is 80% mechanical and 20% chemical treatment during the finishing process (softening, anti-stain, waterproofing).

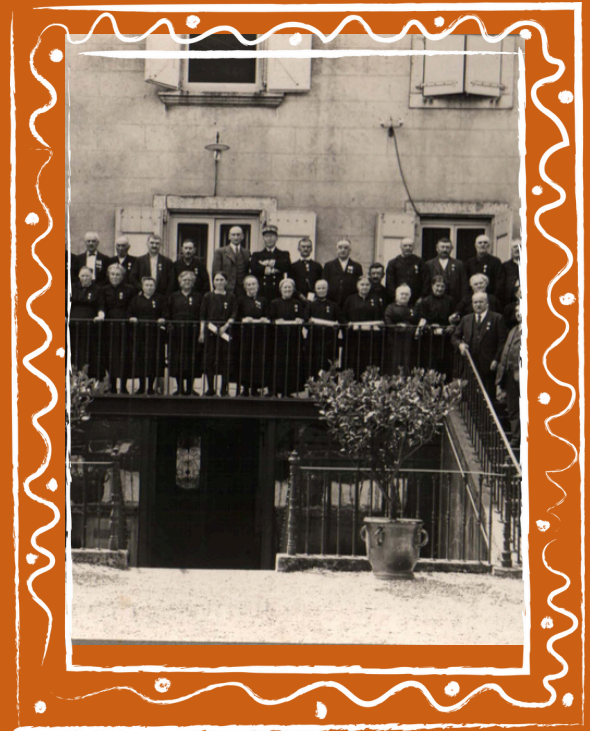
THE MEMORY SPACE

In the 19th and 20th centuries, everyday life in towns in the area revolved around the textile industry. The need of workforce aroused several immigration waves, as a result there were a lot of hispanic and italians workers in the factories.

Industrial paternalism was very present. The industrialist directed the professional life of workers but also take part their private lives. Employees could benefit from healthy housing at reduced prices, food cooperative, sports and school facilities, a health insurance fund... Of course, it was a way to get the loyalty of workers for generations, and to keep to hand the workforce and know-how.

Despite these benefits, their daily life and working conditions were very harsh. With them, there were children ; they worked with heat, noise, and were poorly paid. To improve working conditions, very soon, workers' unions appeared and were very active in the area.

Here, an example of a union banner, established in 1881, three years before the law authorizing trade unions in France.



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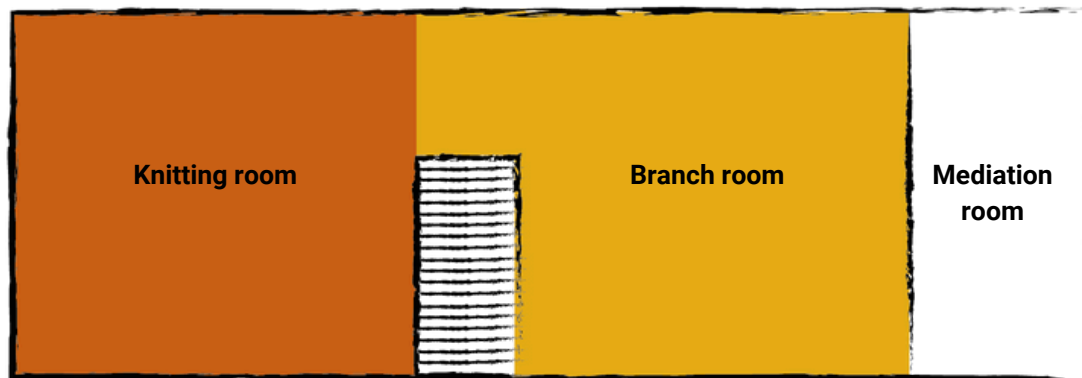
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Do you know ?

The rate of union members was also higher than today : about 83% of the French against only 10% today.

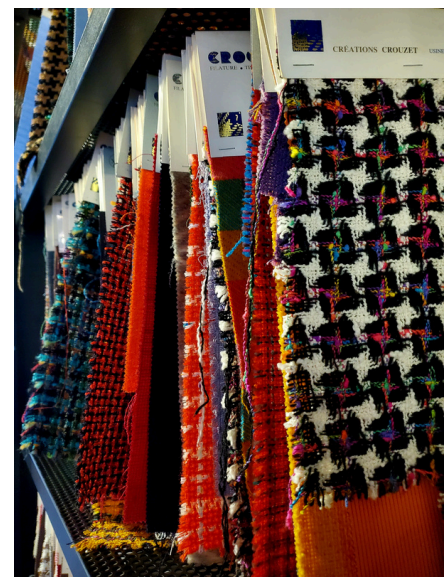
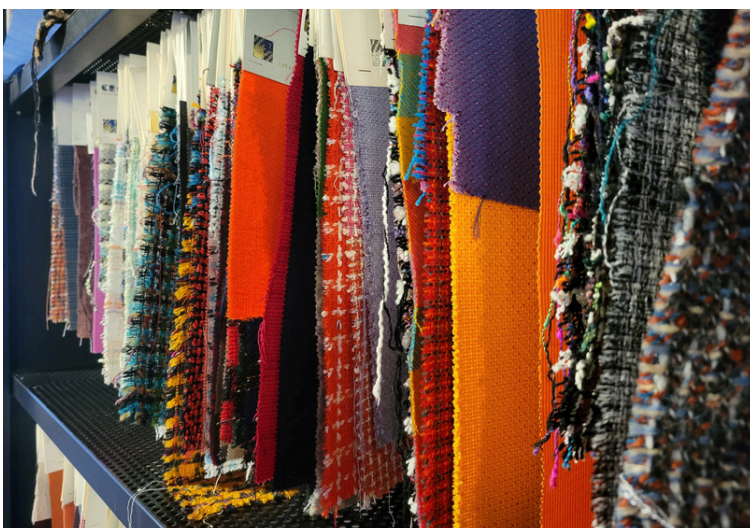
To continue the visit, you can go up to the first floor :



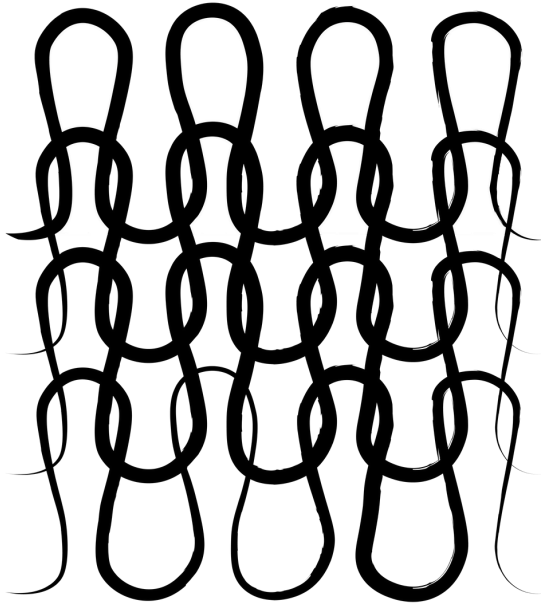
In the **branch room**, you can discover the diversity of samples fabrics produced here. Most factories sold their productions to wholesalers or to major fashion houses such as Dior or Chanel. They also produced uniforms for the post office, army ...



Advertising for the Ourson RMC brand, around 1970. "The bear guarantees quality coverage." Bourguet Fund



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Knitting was another important fabric-making technique. First specializing in socks and berets, Tarn manufacturers then invested in sophisticated machinery to produce a wide range of products, from sweaters to haute couture models.

Here, the threads are intertwined in the form of loops. The fabric is much more flexible and elastic.

Now you can visit the first floor as you wish. You will see knitting machines and what can be done.



Everyone knows that socks can be knitted, but did you know that tights can also be knitted ?



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Thank you for your visit ! We hope you had a good time.

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