Theme 1: Handicrafts

Report of France

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CRAFTWORK BASED ON SHEEP PRODUCTS

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INTRODUCTION

Sheep supply a wide range of raw materials. Wool is the first "product" of sheep. Craftwork of wool has various stages. Shearing is the first, followed by cleaning the fleece and its transformation into yarn, and finally weaving. All of these techniques remained fairly rudimentary until the end of the XVIIIth century, for spinning using techniques which came from Antiquity in the use of the spindle and the distaff or the wheel from the XIIIth century. The loom has evolved. In the Middle Ages, horizontal looms were used (which were first recorded 1000 years BC). A stick is attached to certain warp threads to open the shed by lifting them up. Pedals are used to lift in turn a certain number of heddles to obtain more complex patterns. This is the principle of the weaving loom that is found in most museums. Technological evolutions appear from the XVIIIth century and their principle is the increased mechanization with the loom, the spinning jenny, the Jacquard loom (fig.1)… The method of passing the warp in the shed was for a long time based on the use of the shuttle which closes off the warp and which is slid by hand into the opening with the weft which limits de facto the width of the piece. In 1733, a British weaver, John Kay, invented a mechanical system to simplify the operation: the flying shuttle. This invention enabled passing from craft to industry.
From 1786, steam engines allowed fast mechanical looms to operate, the use of which became widespread in France from the beginning of the XIXth century.
Nowadays, wool based activity has largely disappeared or is confined to luxury crafts. Henceforth, wool is used as insulation in buildings.
Sheepskin is used to make clothes, shoes and leather goods. This leather activity remained very non industrial in France up to the end of the XIXth century. The activity was centred on certain towns Mazamet (Tarn) and in Millau (Aveyron), which are the areas where the tradition of sheep farming is important. These two activities have practically disappeared nowadays. Production of French leather goods is principally carried out by the shoemaking industry, for the luxury and safety markets. The town of Romans (Isère) has for a long time been one of the leading places for luxury shoes. Several luxury brands still use French products in watch straps or luxury leather crafts, such as Hermès or Longchamp, for example.
Tallow, a residual product obtained by melting sheep's fat, used to be used as burning matter for lighting candles and for soap, but also for making supple and waterproofing leather. It is also used as a lubricant or to render wine barrels leak proof.

Lanoline, fatty matter naturally present in wool and impermeable to water is used as a base for cosmetic products.

Sheep bones are used to make carved objects, in particular for marquetry such as games made of bones or buttons. Bones and cartilage are used to make glue and gelatin.

The sheep's intestine can be used as a sausage skin, lamb's intestine was used to make strings for musical instruments and strings for tennis rackets.
Sheep's droppings have for a long time been used as a fertilizer for land and this largely provided a reason for rearing numerous flocks in France, in the arable plains in the Ile de France or the poor scrublands of Brittany or in South West France, in the department which is now the Landes before its conversion, in the second half of the XIXth century, into an artificial pine forest.

1. PLACES CRAFTS AND INDUSTRIES ARE FOUND

The term « craft » linked to sheep products is no longer a reality in France since the beginning of the XIXth century. Looking at activities of wool and leather in a global historical perspective, these raw materials are the subject of manufactured transformation from the start of the industrialization of the country which emerges under Napoleon I and really develops in France under Napoleon III (second half of the XIX century). This does not mean that local crafts no longer existed, i.e. craftsmen working for a very limited market for a village. However, these craftsmen do not represent the overall situation of the country. They have progressively disappeared with the end of the proto-industry (in the second quarter of the XIXth century), which was characterized by the establishment of village micro-industries, gathering round a natural energy source (usually water) a rural population working mostly part time to obtain a supplementary income, in addition an agricultural activity. Industrial inventions coming from Britain, from the second half of the XVIIIth century and their adoption in France throughout the XIXth century, together with the spread of the steam engine, which produces a stable source of energy independent of natural conditions provoked the concentration of industrial activities.

1.1. Leather

The bad smells associated with skins relegate leather works to out-of-town sites. Craftsmen in tanneries grouped together in the suburbs along waterways which were essential for their work. Leather crafts, very numerous, transform all animal skins, mainly from cattle, sheep and goats.
Whereas leather crafts are present everywhere in France, two towns have seen their destinies particularly connected to leather working: Mazamet (Tarn) and Millau (Aveyron)
Mazamet is a small town situated far from large transport networks, but it part of a powerful sheep rearing tradition. Firstly known for cloth making, particularly in the XVIth century, Mazamet specialized in the wool pulling industry in the XIXth century. Wool pulling consists of separating wool from the leather, using the skins sheep slaughtered for their meat. Traders and industrials of Mazamet have made this special activity a proper industry, giving rise to international trade of very wide impact. This speciality is very rare in the world, since leather came from all over the world (particularly Argentina) to be worked in Mazamet and then sold. 40 wool-pulling businesses existed in 1900. After the crisis of the 1880s, the activity thrived once more. Mazamet is also a landmark for French trade unionism and socialism; Jaurès came there to campaign for his election. The activity declined in the 1970s and disappeared in the 1990s.
Just as Mazamet, the town of Millau developed in the XVIth century around the cloth making industry and leather working. These industries were owned by protestants. After the war of religions between protestants and catholics in the XVIth century, cloth making industry was replaced by leather ad skin industries which developed after 1750. The XIXth century saw the development of the glove-making industry and the modernization and expansion of the town. The economic crisis of 1929 and the strikes in 1934 led to very serious social conflicts. Nowadays, Millau has kept a strong leather and skin activities and the businesses manufacture over 800 000 gloves per annum which represents one third of French production.

1.2. Wool

Even in the Middle Ages, the manufacture of cloth was organised in many different ways.

Sometimes it was integrated into rural life in the form of home industry which tends to be concentrated in a few towns. In the XVIIIth century, wool industry remains more often carried out by rural craftsmen, closely dependent for sales upon cloth traders, knitting cloths of ordinary quality (twills, cheesecloth flannel) destined for the rural market. These workshops are situated in the Paris suburbs, in the Oise department (Feuquières, Grandvilliers, Hauvoile, Bonneuil, Crèvecoeur, Mouy, Beauvais). The wool craft is also situated in the towns traditionally focused on military clothing: Châteauroux, Vienne, et especially Lodève. Other towns in the Aude and the Dauphiné have a wool based activity.

Up to the end of the XIXth century, France only produced poor quality wool such as those from the Languedoc (Carcassonne and Limoux) and from the Roussillon, or of average quality such as those from the Champagne and the Berry. Everywhere wool was spun into yarn by the use of a spindle and the distaff or the wheel. This activity was mostly carried out by women on a non professional basis, connected with agricultural work. The work of spinning could be, depending on the region, a professional or home-based activity, carried out by men or women.
The manufacture of cloth, so prosperous in the Middle Ages, declined in the XVIth century. In the reign of Louis XIV, Colbert established a manufacturing facility in Abbeville managed by a Flemish man Joss van Robais, which became one of the most powerful in Europe. Many French protestants took up this industry until the Nantes edit was revoked which lead to the closure of numerous workshops in Tours or Sedan.

In the XVIIIth century, French wool production was not sufficient and the quality of the wool was too poor to meet the demands of industry: France imported wool from Spain and America but also from non-European Mediterranean countries. In this fashion, the French economy became integrated into the great international trade routes. To resolve the problem of importing, Louis XVI purchased a flock of merino sheep from his cousin, Charles III, king of Spain, for the purpose of improving wool quality. This is "merinisation" which developed nationally then internationally until the beginning of the First World War. The royal sheep farm in Rambouillet was built in 1786 to habour this flock. Despite the existence of a large and unified domestic market after the French Revolution, French linen met with competition from British industry and also from the Verviers and Aix-la-Chapelle regions, which possessed new and excellent mechanical equipment. The technical revolution was a definite drawback for French industry which experienced the greatest difficulty in assimilating technical progress.
Textiles are one of the first sectors to be affected by mechanisation and thus to witness the disappearance of craftsmanship. Home working of wool had practically totally disappeared from the countryside from the second half of the XIXth century. The examples of textile crafts studied by ethnology museums do not reflect the general situation of France.

Around 1815-1830, the shock of the technological revolution touched a few operations : carding, spinning, to the exclusion of weaving where the flying shuttle was still the only innovation to be used; the most important was of course the mechanization of spinning, for which critical savings of time and wages were made.

In the XIXth century, the wool industry had a two-fold spread geographically and technically, which have approximately the same extent. The wool industry is mainly situated in the north of France, in the north-east of the country. These industries are associated with great industrialists in the North of France, with the towns of Elbeuf, Louviers, Reims, Sedan having to compete with Belgian/German towns of Vesdre and Roer, and also with Yorkshire in England.
Furthermore, the XIXth century is marked by a wide movement of democratization of the

consumption of clothes, involving all fibres, which ended with the victory articles of clothing only of average quality, but both lighter, softer, more comfortable and cheaper, which were rapidly renewed and affordable by many strata of the population.

1.2.1. Wool industry founded on the technical distinction between carded and combed

The issue of combed and carded is central. Generally, the carding industry is firstly dominant in France at the beginning of the XIXth century. During the course of the century, this situation is reversed and the combed becomes dominant. This situation is far from being the same throughout the territory, since other parameters are added to technical evolutions such as supply of wool, the long movements of demand and also the changes in fashion.

Since the Middle Ages, wool professionals distinguish two types of wool:
- combed linen which is light and which weighs less than 400 grams per meter and show the way the thread is crossed which is called the weave;
- carded linen which is heavier, thicker and which hides the weave under a layer of hair.
These differences between the two techniques comes both from the choice of materials the processes of preparation of the spinning and the finishings which are destined to give the tissue its final look.
Carding wools are short – less than 10mm – fine and fluffy and combed wools are longer – from 30 to 40mm- bigger and smoother. The use of materials has a impact on the finished product.
The preparation and spinning of these fibres reinforces further this distinction : the combing process is much longer and more complicated. After washing, sorting and pulling out the fibres the wool is subjected to the carding process where it is it is caught in the bobbins which have fine metal teeth which spin in opposite directions.
Wool leaves the carding process after stretching, in the form of a sheet where each fibre is clearly separated from the one which surrounds it.
Next, the combing process transforms this sheet into a yarn and eliminates fibres which are too short. The ribbon of combed wool which comes from these processes is the raw material of weaving; a strong spin is applied to it and the strength of the yarn depends on the type of spinning.

Carding process is much simpler since after washing and eliminating vegetable particles the wool is carded in an assortment of three cards, different from those used in combing and the spinning of these fibres is not to make them parallel, but to interweave them. The yarn thus obtained is less fine than before, but more supple and hairier.
Finally, at the end of the weaving, the carded cloths (made with this bigger and hairier yarn) are subjected to a great number of finishing processes which are designed to give to the fabric its final aspect. Amongst these finishing processes, fulling gives thickness and volume to the fabric. On the contrary, fabrics which are combed are subjected to far fewer finishing processes and they are not subjected to fulling.

In the end, carded wool is used to make many types of fabrics not only fine fabrics but also rough fabrics, whereas combed wool is more often used in a wide range of fabrics of average quality.

Carding machines of Douglas and Coquery, invented at the beginning of the XIXth century, spread more rapidly and allowed the carding technique to dominate that of combing, since the combing machines had to await the middle of the century to be operational.

The progressive replacement of the combed for the carded was stimulated by the changes in fashion and the development of garment making. When it comes to the fashion revolution, the main point is the reduction of the weight of fabrics. Throughout the XIXth century, seamsters ad seamstresses demanded lighter fabrics which are more supple and more comfortable, more practical, better suited to modern living. The introduction of wools from the colonies, coming from South Africa, Australia, Latin America enabled to supply the need and widely competed with domestic wool.

Furthermore, one witnessed both in mens' clothing and in womens' clothing, transformations which required precisely this kind of fabric. As for mens' clothes, the adoption of the suit made of three pieces which are for the first time made of the same fabric and which require a soft fabric for wearing. As for womens' clothes, one witnessed at the end of the XIXth century, the triumph of the suit which is also made of combed fabric, lighter and cheaper than the traditional materials produced by the carding industry.

1.2.2. The technical choices (carded or combed) of the wool territories

However, the various wool territories, whether those of the carded, Elbeuf, Sedan or the centres of the South of France or Vienne, or those of the combed, Roubaix, Reims, Fourmies reacted in very different ways to this evolution in demand by adopting very different strategies and positioning. This is because the alternatives were indeed multifarious: combed or carded, plain or novelty, mixed fabrics or pure wool. The factories which managed to adapt efficiently to the revolution in consumption saw their sales increase whilst the other workshops saw them stagnate or even fall drastically.
However it would be a mistake to oversimplify the issues, since in reality, one cannot simply contrast the innovative centres to those who appeared simply traditional since account must also be taken of sales areas and the circulation of types of clothing. The wool industry is not therefore a homogenous whole but rather is organized into centres which have histories, different evolutions and a very specific product culture.

1.2.3. The techniques of carding and combing : main places in France

The first stage of this story is that of the domination of the carding centres. Then the replacement of carding by combing resulted in a total modification of the geography of the woolen industry since there was a complete reversal in favour of combing centres, firstly Reims and Fourmies, then, later on, Roubaix.

Sedan (in the East of France)
This centre has existed since the Middle Ages and experienced at the beginning of the XIXth century slow but regular growth before experiencing decline at the end of the century. Sedan suffered constant competition from Elbeuf in Normandy (West France). Throughout the XIXth century, Sedan concentrated on quality with classical manufacturing of beautiful black fabrics. However, Sedan was not able to adapt to evolution in demand for cheap textiles; the industrialists were not in touch with fashion and did not realize that their materials no longer corresponded to demand, and finally, they were not capable of making their production equipment evolve. Towards the 1890s, only a few mills evolved towards a really popular and low cost production made from "Renaissance wool" taken from by-products of wool and torn cloth, much less expensive than virgin wool.

Louviers and Elbeuf in Normandy (in the North West of France)

Textile production dates back to the XIth century in the Elbeuf region. It develops in the XVIth century with the establishment of many spinning and weaving workshops. In 1667, Colbert, Louis XIV's prime minister, created the Manufacture Royale de draps d'Elbeuf, (royal fabric mill of Elbeuf) specialized in the production of carded plain fabrics, the quality of which constantly increased through mechanization. The rise of Elbeuf dates back to the 1830s, with the launch of multi-coloured fabrics which were very successful (to the detriment of plain materials) The opening, in the 1860s, to the British market is not favourable to Elbeuf whose articles are more expensive for the same quality than those made in England. Competition with the cotton market is also difficult in Normandy. Around 1880, Elbeuf was manufacturing materials which were too expensive and which required many finishing processes which gave the town its reputation, but which were no longer in line with increasing demand for light and cheap fabrics. In the 1870s, following the annexing of Alsace by Germany, the textile manufacturers, the Blin & Blin and Fraenkel families, set up in Elbeuf and were capable of adapting to demand. They launched production of summer products, with a finesse of patterns and colours for reasonable prices. These families then produced the *cheviotte,* a fairly rough material but which was suited to mens' fashion, colourful fabrics for womens' fashion (until then made in Germany) and flannels (Reims speciality) adapted to sports and in particular to cycling. These businesses, coming from Alsace, are the exception in a town which could not adapt and whose production was henceforth destined to the manufacture of uniforms for the army, the post office, the railways or the customs. From the 1960s, the town suffered from the textile crisis which affected all of France. Between 1952 and 1975, 39 mills closed down which marked the final disappearance of the Elbeuf fabric. The last great mill Blin & Blin, closed its gates in 1975.

Vienne, Isère (in the South Est of France)
Vienne is a small textile centre compared to Sedan or Elbeuf. Despite this, its development strategy paid off. To avoid competing head on with silk production from Lyon, Vienne turned, at the end of the XVIIIth century, to the production of carded fabrics of two qualities: a very mediocre plain and grey one, sold in Beaucaire and throughout the Mediterranean, and the other of good quality for the manufacture of uniforms in particular, during Napoleon I's time. Towards 1820, Vienne succeeded in manufacturing materials in "Renaissance wool" coming from the by-products of wool and torn up cloth. Vienne succeeded in making entry level fabrics which Elbeuf and Sedan refused to manufacture. Nevertheless, these fabrics were made with great care and had a fine appearance which made them successful. Vienne's production was designed for peasants who were getting richer and benefitted, in addition, from the establishment of the railways (PLM-Paris Ly-Mediterranean). The town was always seeking to improve the quality of its production and founded a school to train qualified workers and foremen. The Pascal-Valluit company, created printed woolen fabrics which were very successful.

Reims in the Champagne region (in the North Est of France)
The town specialised in combed fabrics and its development commenced at the end of the XVIIIth century, thanks to merino sheep bred in the area. Contrary to the other towns, Reims was not into mono-production and made combed and carded products and adapted constantly to fashion. Moreover, the town perfected the "merino" textile or shawl, which came from sheep of the same name and flannel, which were very successful throughout the XIXth century. The "merino" invented by Guillaume Ternot in 1804, was sold as « Scottish cachemire" and "Scottish merino" the weft and warp of which are made from combed wool with a very fine yarn. Flannel, already woven in the XVIIIth century, but relaunched from 1820, also called "flannel for health" is offered in various widths and with an equally varied number of threads

per square centimeter. After enormous success, 1878 marks the beginning of Reims' decline, although nobody is capable of explaining the reasons. There are various causes. Demand for fabrics diversified, flannel and merino were not sufficient for demand. The Roubaix Tourcoing centre, not far away, produced the some fabrics at less expense. The companies in Reims refused to reduce quality and were incapable of renewing productions. The best workers, who were capable of renewal, went to other centres. The alliance of art and industry was not able to gel, and finally the weaving equipment became obsolete: hand looms were still being used in Reims whereas in Great Britain, automatic looms spread.

Roubaix and Tourcoing near Lille (in the North of France)
The textile workshops developed in the XVIIth and XVIIIth centuries. Roubaix was called the "French Manchester" in the XIXth century and rivaled English textile. It is the textile town which had experienced the greatest growth in France, through its multi-activity. Both towns have not always been wool orientated, but also cotton at the end of the XVIIIth century. The wool industry returned in 1833 with the use of the Jacquard loom. Up to around 1850, as many carded as combed fabrics were produced. Moreover, Roubaix also manufactured cloth of jute, flax and silk. The dynamic nature of the textile business was partly due to the fact that the machines were imported from England and Germany. In 1820, the steam engine appeared; in 1843, the great mechanized workshops developed. Contrary to the other French centres, technical innovation was not due to mills in the town, nor even to commercial innovations. Nonetheless, mill owners knew how to manufacture materials at the right time and with great dexterity. The only local production "the Roubaix article", mixed fabric of wool and cotton, then of wool (towards 1880) was appreciated for its lightness (250g per m² instead of 400g per m² elsewhere in France). "The Roubaix article" came between the proletarian fabric of Vienne and the luxury fabric of Elbeuf or Reims. Its average quality greatly contributed to the growth of the town.
Roubaix even exported to England, which is extremely rare: whereas England produced standard fabrics of average quality and relatively cheaply, France manufactured products of good quality expensive and designed for the middle classes. At the end of the XIXth century, the notoriety of the town is worldwide and it is present in particular in the 1889 Universal Exhibition in Paris. The wool exchange was indeed established in Roubaix. In 1914, 60% of total production of French wool came from Roubaix.

Roubaix had a spectacular development whereas the other wool centres declined. The other centres are originally royal factories, they created products and based their sales policies on quality and "good taste" and therefore against changes imposed by fashion. It is therefore "tradition" which hinders the renewal, the mismatch between supply and demand which cause the loss of most French textile centres at the beginning of the XXth century. On the contrary, Roubaix, free from traditions, could develop a policy of multi-activities and mobility which was capable of adapting to demand.
Following the First World War which completely destroyed the town, Roubaix regained its place as textile capital despite the crises of 1929, then the strikes of the 1930s. From 1970, the difficulties were building up in the textile industry. The managers had not invested in synthetic textiles; production equipment was too old to be profitable. Competition from workshops in Third World countries became more and more intense. Textile factories were closing in Roubaix from 1975. The last great business the "Lainière de Roubaix" employing more than ten thousand people in 1970 closed in 2000.

1.3. Horn

In the XIXth century, horn working was carried out principally in the Franche-Comté (Jura et Ain), comb-making (the Hers [Ariège] valley, Oyonnax [Ain], Ezy-sur-Eure [Eure]) and the milling and knife-making factories in Thiers (Puy-de-Dôme). From the end of the XIXth century, the comb-making factories in the Oyonnax region used celluloid to replace horn. In the Hers valley, there were no fewer than 1500 workers and 35 businesses in 1930 which worked horn.

2. ARE THERE ANY GUILDS OR TRADE ASSOCIATIONS?

Guilds developed in the XIIth century and gave rise to corporations. These bodies defended the interests of their members and also were used by local authorities to check the quality of products and decide taxes. Guilds owned privileges and their own courts codified in accordance with an officially recognized status. Amongst these, were determining prices, weights and measures and the monopoly of sales. The brotherhoods and corporations were dissolved during the French Revolution. Nowadays, professional organisations defend the professionals of leather and wool crafts.

2.1. Leather

Many professionals worked on leather in the Middle Ages (tanners, dressers, parchment-makers, shoe-makers, boot-makers, trouser-makers, glove-makers and saddle-makers). As early as 1160, tanners formed a corporation (union) to try and meet demand which was constantly increasing and to ensure the continuity of techniques used in their profession. A witness of this era is the streets named "tanner street" which are still present in many towns. Up to the XIXth century, the butcher was the only supplier of skins in any town.
The leather industry has often been a "key-industry" in the overall economy, practically until the middle of the XXth century, despite the fact that this industry has for a long time retained a craftwork structure, with small firms employing from one to five workers in units with little mechanisation.
Created in 1948 the Syndicat des Ventes Publiques de Cuirs de France (Union of Public Sales of Leathers of France) and the Syndicat National des Négociants Collecteurs de Peaux (National Union of Traders Collecting Skins) merged in 1977 to become the Syndicat Général des Cuirs et Peaux Bruts (General Union of Raw Leathers and Skins) before taking its current name in 1996 of the Syndicat Général des Cuirs et Peaux (General Union of Leathers and Skins). This professional organization's purposes are: representing French traders in leathers and skins as well as slaughterhouses which were members through ministries and professional organizations; informing its members about regulations; participating in marketing activities of leather products; organizing missions of discover and of confirmation to promote French raw skins throughout the world to develop exports; participating of French traders in international exhibitions notably in Asian Countries; establishing links between the actors of the farming, slaughtering and tanning sectors; improving the quality of leathers and skins.

2.2. Wool

The corporation of drapers was organised from the end of the XIIth century: the members of this corporation handed down from father to son the exercise of this profession. In Paris, the drapers were in the forefront in the laborious middle classes: in 1313 the three richest traders

in the capital were three drapers. In the reign of Charles VII, Richard de Bellay, a very rich Parisian draper, became the Master of Petitions, then one of the presidents of the chamber of Accounts.
A regulation dated 1362 tells us that the "drapers had to give to the poor the God's penny from all goods they sold". This was the name of the coin which the purchaser handed over to guarantee the deal.
The drapers' activity was often a critical activity for small towns and prefigures modern industrial life: an oligarchy of business owners dominated labour taken both from the town and from the nearby countryside areas. The development of the cloth-making industry takes place in the wider context of industrialization of the country from the 1800s with the advent of mechanics or English manufacturers who emigrated to France: William Cockerill, James Hodson, James Douglas. They competed with each other and built from 1803 carding and spinning machines. This industrialisation only affected a few great capitalist families. Industrial cloth-making activity is firstly connected with some entreprising individuals: Louviers (Alexandre Defontenay, Jean-Baptiste Decrétot, Pierre Grandin), Sedan (Ternaux brothers)… The role of traders and importers of wool is decisive in Orleans (Tassin, Baguenault), Issoudun (Rouillat-Maillart), Châteauroux (Morin frères), Roubaix (Schlumberger).

2.3. Horn

Horn workers, comb makers and lantern makers set up in the Middle Ages corporations which worked horn.

3.ACTIVITIES CONNECTED WITH SHEEP PRODUCTS TODAY

3.1 Leather

Currently, one half of French leather production involves sheep and the other half cattle and young cows. It is a sector which represents approximately 50 firms and about 500 employees. France is the third exporter in the world of leather, behind the United States and Australia. Sheep and lambs are dealt with by tanners who are situated in the Midi-Pyrénées regions with two large poles which are Mazamet and Graulhet ; the Centre and the Limousin.
Today, leather is mainly used in the shoe-making industry (52), with 33% for street wear, 19% for sportswear and leisure wear, 28% for indoor use (mainly slippers), 20% safety wear (firemen's shoes).
Leather crafts involve 40% of the sector and the production areas are the Ile-de-France, highly concentrated in the luxury businesses followed by the Rhône-Alpes region which has an important know-how. French leather craftsmen essentially manufacture handbags but also watchstraps.
Glove-making represents 4.4% of the production and is situated in the Limousin and the Rhône-Alpes.

3.2 Wool

The wool industry for textiles has almost totally disappeared in France. Today, markets for wool are mainly floor coverings and thermal insulation. As floor coverings, wool makes the most beautiful carpets, through the richness of possible colours, its ability to resist smoke and fire since it is not very combustible.
Wool is also a very good thermal insulating material for carpets and also for insulation of walls

and roofs.
The professionals in the sector have joined together in the Comité Central de la Laine et des Fibres Associées (CCLFA) (Central Committee of Wool and Associated Fibres). The last three great companies of the sector are situated in the North in Tourcoing et Marcq-en-Bareuil. Wool activity represents less than 20% of textile activity in France. In the clothing industry, wool is associated with various fibres, in particular synthetic. Wool remains appreciated for manufacturing blankets.

3.3. Horn

Three great companies have nevertheless kept alive the tradition of comb and horn articles in the South West of France two of which are established in the Hers valley in the Ariège. Horn working remains in the knife-making region of Thiers or in the Franche-Comté. Today, horn craftsmen principally work for table decoration businesses, decorators, knife-makers and the general public.

4. TECHNOLOGICAL PRINCIPLES

4.1. Leather

In order to reconstitute the operating chains of tanning and finishing, the volumes of Jérôme de Lalande published between 1762 and 1764 constitute the most complete technical work and remain an undisputed reference. This work is the result of detailed and knowledgeable studies ordered by the Science Academy so that the "art of physics[…] practical, full of wit and invention, but unknown, be extracted from the shadows". These memoirs offer a "summary" of technical knowhow which goes back to the second half of the XVIIIth century.
One must wait until 1840 for the first patent on the methods of tanning to be registered. In 1885, the patent concerning chromium tanning came into practice in the industry and developed enormously. The industrialisation of this craft rapidly led to the almost radical suppression of family tanning shops. Depending on the speed of development of the industry and its specialization, tanners only continued to be interested in certain categories of local products.
Up to beginning of the XXth century, the knowhow of the leather professionals was essentially empirical, rarely written down and generally kept secret. This technical knowledge was of low social status, to the extent that the work of tanners (transformers of animal remains) touched the "taboos of medieval society" (for example blood, impurity…) and gave rise to disdain, even to accusations against these river polluters, especially during the great plagues. The motto of tanners of former times underlines this "to have good leathers, you need tan and time". Indeed, the tan and other agents are responsible for the long process of transforming fragile skins into a base material which is resistant and hard-wearing, leather. On the other hand, time (the duration and space-time) i.e. the particularly long duration of tanning, constituted one of the factors responsible for the technical inertia for many centuries. The challenge of leather craftsmanship involved finding innovations which would allow the acceleration of the transformation process of skin into leather.
By tanning the skin, it is transformed into a substance which is resistant to putrefaction and to a greater or lesser extent, to water: it will not revert to its initial state of raw skin. The expression "leather" means the product of this transformation. The irreversible nature of the process is the distinctive and fundamental sign of all techniques which are called real tanning.

There are three main types of tanning: vegetable tanning, mineral tanning and tanning with fat which enables a vast range of resistant and hard-wearing products to be obtained.

Vegetable tanning
In forest areas where there are many rivers, where the climate is damp and relatively cold, real vegetable tanning developed, practised in ditches, by applying the tan (i.e. the bark of oak) as the main tanning agent.
With regard to sheep and goat skin, one practised until the XVIIIth century, "tanning into a bag" or "into a "ram's skin" an archaic, simple and quick technique. It consisted of dealing with the animal by removing its skin whole (without cutting it) and filling it with preparations of vegetable tannin. This process, which in its early form was used to make ram's skin bags, floats and even bellows.

Mineral tanning with alum
Alum has incomparable strengths. Firstly, it turns goat and sheep skins sparkling white and enables the fixing of dyes (seeing white and bright colours were qualities greatly appreciated). Furthermore, tanning with alum is a quicker and less complicated technique than vegetable tanning. Tanning with alum was mainly carried out by tanners (also called blanchers) and skin craftsmen-dyers-skinners who were very much in vogue in former times in the clothing sector.

Tanning with fat
It was more frequent in northern areas. It consists in making different types of fatty substances such as fish or preferably sea mammal oil, but also brain, marrow, butter, egg yolks etc. penetrate into the skin, to transform it into water resistant leather which is hard-wearing and soft. It is a technique which requires a great mechanical effort (pounding, stretching) and ensures, inter alia, the stretching of the fibres (sometimes obtained by mastication) and which also guarantees a certain increase in temperature essential to initiate and accelerate the chemical process of oxidation which is responsible for the conversion of the skin into leather. In France, tanning with fat is known as "chamoisage ». This process, often linked to the activity of tanners, produces a warm and velvety skin adapted to wearing on bodies.

Leather making of whatever type, employs a mainly empirical knowhow (fig. 2) based upon the very close relationship between the tanners and their particularly unstable organic material. Calling on the five senses and making the whole body work, it drew on a considerable bodily and perceptive knowhow. This physically exacting activity required great physical strength and a capacity to carry out precise and often delicate gestures, but also the capability of carrying out subtle observation to decipher in the changing aspect of materials, certain barely noticeable clues in necessary stages in the transformation of the material.

4.2. Wool

Prior to the industrialisation of the textile sector, the types of wool were as numerous as breeds of sheep.
Once a year, from March to June depending on the region, the shearers took off the sheep's fleece. Tools for shearing can be divided into two types: blade shears and scissors. The former is the forerunner of the latter. The blade shears have not essentially changed shape since their appearance in the Iron Age. Blade shears and scissors have since been superseded by hand clippers then by mechanical clippers.
The former museum of popular Arts and Traditions in Paris presented in its showcase called

"from fleece to clothing" (fig. 3) the complete operational chain which went from shearing the sheep to making the shepherd's coat (fig. 4). In the Hautes-Pyrénées, in Campan (1 600 inhabitants), one could still observe in 1961, a domestic spinning and weaving workshop. At that time, two family looms were still weaving, including the one on display, of Alexandrine Bayon. This loom is of a kind which goes back to the Middle Ages. The wool was first washed, combed and possibly carded. Only then was it spun. To spin, women used the distaff and spindle. The distaff was used to maintain the wool being spun and the spindle to make the thread (by plying the threads of wool) and to roll it. Once spun, the wool was put into skeins to make whitening and dyeing easier: the operation was carried out on a reel. Finally, by means of another type of reel, one rolled the yarn onto cops and bobbins.
Mounting the warp of a weaving loom was a very long operation. It was necessary firstly to warp i.e. gather together the same length threads which made up the warp of the fabric: the work was done on a turnstile from bobbins placed on a bench. The warps were then divided on a comb and rolled onto a wooden cylinder, the beam, placed behind the loom. After that, they were separated into odd and even yarns passing into the eyeholes of the two heddles. Then they went through a mobile comb the "ros" (which was used to compact the weft) before being fixed on a second beam at the front of the loom around which the fabric was wound. Once the warp was mounted, one introduced the bobbin into the shuttle. This created the weft by passing back and forth through the warp threads crossing over by means of pedals actioning the heddles. The temples enabled the material to be kept to a constant width.

4.3. Horn

The artisan who is an expert in working horn is called a « cornier » and the peignier » is specialised in the making of combs (cattle horns).
Rams' horn is only seldom used; the point is kept as it is or milled to make buttons or pipes (shaft of a pipe, table cutlery umbrellas, razors, shaving brushes).
The "cornier" "sorts" the horns according to their size, colour (blond, black or striped) and their quality (transparency, opacity, roughness or softness…) then carries out the "sawing" of different parts with a band saw. The "biscayage" entails unrolling the "biscage" (hollow) to obtain a rectangular flattened shape called the "shoe". The craftsman sits on a bench facing the oven, heats the biscage to soften the horn then cuts it in a spiral with a blade, leaning on a pole fixed to his bench. This specific technique requires a lot of skill since it is by the sound that the horn being knocked by the blade that the biscayeur knows if he can cut the biscage or not. The biscayeur then separates the two sides with tongs to flatten them: this is the "flattening" stage. The biscage is heated, and then put into a hydraulic "flattening» press to obtain a "shoe" of uniform thickness. After that, it is left to rest for about one month to allow the fibre to stabilize, and then the "smoothing" operation is carried out to get rid of irregularities and bumps. The craftsman then carries out the "marking" or "tracing" operation. This consists of marking the places where future parts will be put with a template and pencil called the "régadou". The "scraping" can then be done with a saw (circular or hand held) to cut parts (salad cutlery or cake server for example) or "sticks" of horn.
The horn craftsman who works on flat parts can shape them by heating them then shaping them with moulds.
The round and full part of the horn, the point is used by the horn craftsman or sent to other artisans : knife makers (manufacture of handles for table cutlery), small objects craftsman (pipe shafts, various sleeves…). They are firstly boiled by the "façonneur" then cooled before being shaped in a mould in a press. The final shape is then obtained by "milling" then the parts are polished and shone.
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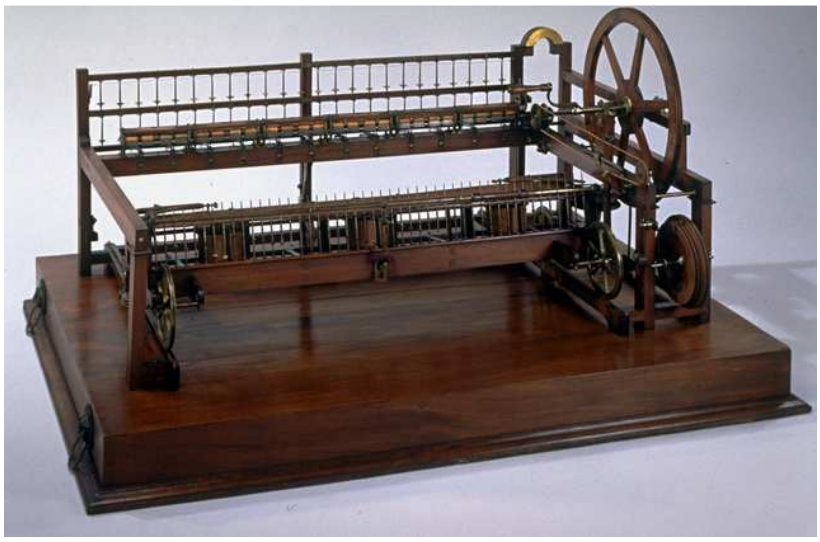
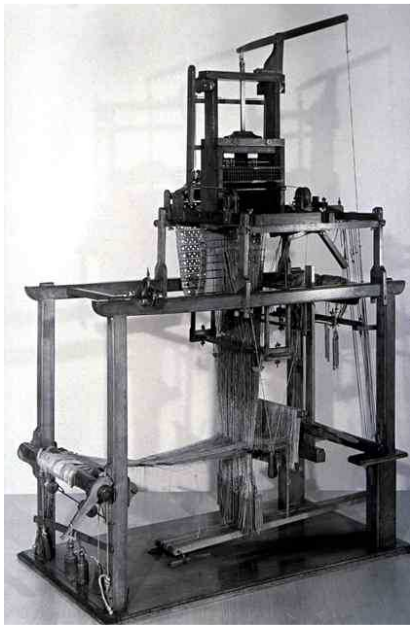
Photographs :

Fig. 1

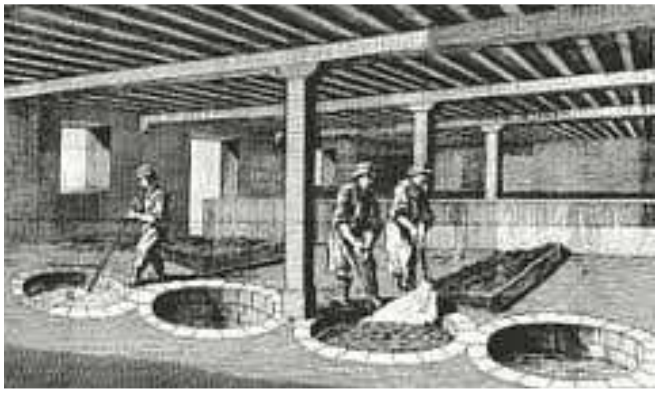


spinning jenny for wool
end of the 18th century
model by Charles Albert
Musée des Arts et Métiers
Paris
Inv. 184



Jacquard mechanic loom
circa1810
Model offered by
Jacquard.
Musée national des Arts
et Métiers
Paris
Inv. 7641.

Fig. 2



Draw
Diderot and
d'Alembert Encyclopedia:
Tanner work
1762

Fig. 3

showcase called "from fleece to clothing"
Weaver in Campan (Hautes-Pyrénées) – Pyrénées moutains
Musée national des Arts et Traditions populaires
Paris
1976

Fig. 4

showcase called "from fleece to clothing"
detail of the loom and shepherd cloath
Campan (Hautes-Pyrénées) – Pyrénées moutains
Musée national des Arts et Traditions populaires
Paris
1976