

ANGLO-CALISIENNE TULLE MANUFACTURERS IN THE FIRST HALF OF THE NINETEENTH CENTURY

Translation of parts a paper by Benoît Noël – 2003
[] means words added by the translator

The beginning

[The Napoleonic Wars ended following Napoleon's defeat at Waterloo on 18 June 1815 and the Second Treaty of Paris]. In 1816 three Englishmen, **Bonnington, Clark and Webster** brought the first tulle making machine to Calais. [tulle = soft fine net material used for making veils and dresses; the word being spelt the same way in French and English]. In doing so they risked their lives because the export of looms from Britain was forbidden until 1840 and the penalty was [transportation] or death by hanging.

Others followed and prior to 1825 the nascent tulle industry in Calais was monopolised by British entrepreneurs. In his paper Benoît Noël characterised these Englishmen as 'outsiders', because they were not well established tulle makers in their country of origin and so had everything to gain and little to lose by moving abroad.

The more, the merrier.....

By 1825 twenty-nine British companies were established in Calais; by 1829 the number had risen to fifty-five representing about half the total, and by 1844 when the growth trajectory was flattening there were fifty-nine representing about thirty percent of the total, the rest of course being French. The British share of tulle manufacturing appears to have stabilised at around this level.

This number as impressive as it seems, conceals a low survival rate. Of the 230 companies established since 1816 there were never more than about fifty-nine up and running at any one time. The average life span of the 101 companies established before 1829 was about eight years, while the average life span of those established after 1841 was less than seven. Of the fifty-five British manufacturers existing in 1829 only nine remained by 1854. Among the main reasons for cessation of activity were the economic crises of the 1830s and 1848 [From 1848 to 1852 mainland Europe was convulsed by a series of revolutions that all ultimately failed. The revolution first started in France in 1848 where the people wanted universal suffrage. King Louis Philippe was overthrown and Louis Blanc established the second republic. In 1852 Napoleon Bonaparte's nephew Louis Napoleon took power in a coup d'état.] Of those companies that disappeared, the majority of their founders returned to England, while a minority moved to new manufacturing pastures in places such as Lille, St Quentin and even Lyon.

PMEs / SMCs

The tulle manufacturing companies were small. By 1854 the average number of employees per company was about ten, with British companies employing fewer than their French counterparts. The only British company employing fifty or more workers being Websters now managed by **Robert Webster** the son of the founder and one of the very few Brits to take French citizenship (1842).

Another means of gauging the size of these companies is by the number of looms they employed. This averaged about 2.9 for British companies and 3.5 for French. So on the whole the French companies were larger than the British, and this may have been because the French found it easier to borrow money from local banks and venture capitalists.

Yet another measure of size is capital employed. In the early days of tulle manufacturing in Calais this principally comprised the cost of hand powered looms and the cost of renting small workshops, often rooms in private houses not specifically adapted for this purpose. For example in 1823, William Austin owner of two looms, signed an annual lease of 200 Francs for the use of the ground floor and a first floor room in a private house, for the manufacture of tulle and lace between the hours of 5am to 10pm.

The price of looms was around 8,000 Francs - a little less for ones built in Calais by British mechanics. To the cost of acquiring looms would need to be added the working capital for buying cotton and paying wages. It has been estimated that during the 1820s it cost about 10,000 Francs per machine to set up in business, a sum which was apparently not prohibitive. (A skilled machine operative could earn as much as 10,000 Francs per year in good times)

The first custom built factory for the manufacture of tulle using steam was not built until 1840, though in 1854 the majority of machines were still powered by hand.

Self made men?

Until about 1824, the first wave of British entrepreneurs were mostly men who made their own mechanical looms and used them themselves (*mecanicien-tisseurs*), while a minority were simply weavers and embroiderers (*tisseurs-brodeurs*). Only Webster was vertically integrated, making his own looms, manufacturing his own tulle and embroidering it himself. During the 1820s embroidery disappeared, the loom makers stopped weaving and the manufacturers focussed on the production of tulle. By the 1840s the industry had become even more segmented with an increasing number of companies focussing on the production of machine made tulle and the emergence of specialisations like design and card punching, machine adjustment and importation of cotton. British companies tended to concentrate on the more technically challenging and innovative parts of the business, with the potential for higher profits. Specialisation and the need to keep abreast with the latest technical developments were factors limiting the size of Anglo-Calaisienne firms.

It is interesting to consider the origins of the 270 or so Brits who went to Calais during the first half of the 19th century with the intention of establishing businesses of their own. A few like Webster were already manufacturing tulle in England and transferred their operations to Calais, for the reasons discussed later. They were a minority of no more than four or five before 1824. Others worked as operatives on the looms of established companies to acquire experience before setting up on their own accounts, such as **Cliff, West, Maxton** and **Austin et al**, who all worked in the **Webster** factory. A British parliamentary enquiry of 1824 confirmed that these people moved to France in small groups and earned as much as 10,000 to 15,000 Francs per year, or about twice as much as they would have done for the same work in England. It has been said that the mechanical industries represented special opportunities at this time, with low barriers to entry and good chances of succeeding for men with little capital but great skill and a talent for innovation.

The story that a large number of skilled workers emigrated from Nottingham – the centre of tulle and lace manufacturing in England – to set up in business on their own accounts, has been overstated. Of a sample of 56 for whom we know the genealogies 38 were born in the Midlands around Nottingham, but 18 or a third, came from the south east of England and especially from the coastal towns of Deal, Dover, Folkestone and Sandwich in Kent. As to their prior occupations it is well known that these towns were the homeports of a thriving smuggling business.

The average age of British migrants establishing small firms in Calais prior to 1829 was about 35, which suggests they were people who had already had time to acquire skills and capital. They were people who largely came on their own initiative in search of business opportunities, rather than being tempted by offers from French financiers like some of their compatriots who were enticed to move to Rouen and Douai. They were not so much inventors or innovators, as second wave imitators, generally working without a license from the patent holder. People like **John Leaver** [1] who invented the Leavers machine in 1813 went to Rouen, and **John Fergusson** [2] who adapted the **Jaquard** [3] punch card system for use with lace looms, went to Cambrai.

During the first few years almost all business partnerships were between British. English machine operatives wishing to set up on their own accounts found sleeping partners back home among people of independent means, hotel keepers or merchants in places such as Deal. It was not until William Austin associated with two French locksmiths, one in 1822 and the other in 1824, that this pattern began to change. By 1840 however, French financiers were looking for English loom makers with a view to launching new partnerships, the most celebrated example being that between **Frederic Pearson** and **Jean Pierre Champallier** to produce the tulle known as *point d'esprit* in 1837.

Luddites

The forces that drove people like Webster to leave Nottingham were over production of machine made tulle between 1813 and 1817 and the economic crisis that swept the country after the Napoleonic wars. In addition the English midlands suffered at the hands of the luddites beginning in 1811. Out of work labourers organised in

gangs destroyed the machines they judged responsible for their misery. Similar disturbances occurred in 1825, when tulle workers demanded an eight-hour day. Starting a new business, or expanding an existing one was not easy under such conditions and this led some established manufacturers like **John Heathcote** [4] whose factory was sacked by luddites in 1816, to re-locate to less troubled places in England. In moving to Calais in 1816, **Webster** was simply following **Heathcoat's** example.

The battle over intellectual property

In addition to this unfavourable socio-economic climate there was also an important legal constraint. Between 1808 and 1813 **Heathcote** (1783 – 1861) and his associates registered a series of patents protecting inventions that mechanised the production of tulle – work previously done by hand. These inventions were more a series of innovations in the manufacture of stockings – a Nottingham speciality – than inventions, *per se*. Playing on the lack of technical competence of the judiciary, **Heathcote** took anyone to court that developed a loom capable of mechanising the production of tulle, or refused to pay him a license fee. And it was certainly the case that Heathcot's *Old Loughborough* loom could be improved upon and a number of skilled mechanics set about doing so. In order to escape litigation and exploit their innovations before the expiration of Heathcote's patent in 1823, a number of manufactures moved to the Continent where patent law was less strict. This is why **John Leavers** [2] moved to Rouen in 1820. It is highly probable that a number of the Brits that moved to Calais before 1824 did so for this purpose, like **John Derbysheare** who was attacked by **John Heathcote** in the Maidstone court at the beginning of 1822 and was building looms in Calais by the end of the same year.

Notwithstanding the laws prohibiting the exportation of machinery and the death penalty for anyone caught, new state-of-the-art machines continued to find their way to France thanks to well-established smuggling runs and corrupt customs officials on both sides. Though four men were tried and condemned to death, no one was ever executed, and the law gradually fell into disuse.

Market penetration

The main objective of the British firms that set up in Calais was to get inside the most important European market for lace – namely France. By 1834, notwithstanding the embargo on the importation of tulle from Britain that continued until 1860, about half the cotton tulle consumed in France came from Britain. Demand was driven by the French passion for all things British, not to say 'Anglomania', that existed in France at the beginning of the 19th century. Competition from French companies was ineffective and similar French products were either too expensive or of inferior quality. British manufacturers wishing to penetrate the French market had to choose between smuggling with the risk of confiscation, or local manufacturing.

Why Calais?

There were a number of reasons why the British entrepreneurs chose Calais in preference to say Dunkerque or Boulogne, which had better developed ports, better communications with the rest of France and more welcoming money lenders. Some British companies did in fact go to the traditional centres of spinning and embroidery, like Douai, Lille, Rouen and St Quentin, where **Heathcoat** went into partnership with **Francois Crouzet** in 1826. But Calais was the preferred destination. Absence of traditional manufacturing and organised labour were positive factors, as was the absence of competitors – at least at the beginning. Proximity to the south east of England was also very important because the British needed to import high quality cotton yarn and prior to 1834 they were dependent on smugglers who charged less in Calais than elsewhere. Last but not least, Calais was thoroughly Anglicised. [People in Calais still eat plum pudding at Christmas and Welsh rarebit, customs the English lace-makers brought to the town.] The local population had watched the redcoats re-embarking for England after the short occupation of France and many spoke English. A lot of the hotels and bars were run by Brits and there was even an English newspaper *The Pas de Calais* and an English theatre. Frequent boat crossings kept the British community up to date with the latest news, including news of technical innovations. Last but not least, close proximity to England was reassuring in case a new conflict broke out with the ‘irascible’ French. But, the advantage of proximity only lasted until 1834, when the prohibition on the importation of cotton yarn was lifted and replaced by a levy of 8.80 Francs per kilos. From then on, other tulle manufacturing centres were able to compete on a more equal basis, but the lead gained by Calais before 1834 was very considerable.

Most of the British companies that set up shop outside Calais, did so on a much larger scale, the most important example being that of John Heathcoat at St Quentin who had installed 150 steam-powered looms and employed more than 1,000 workers by 1826. It has been suggested that these large vertically integrated companies were the result of difficulties in the supply of raw materials and distribution of finished goods, but the extra management overhead involved was apparently so large, that these disadvantages outweighed the advantages. Most of these larger integrated companies fell by the wayside during the crises of the 1830s, and again at the end of the 1840s. The same thing happened to the British companies in the Calais area that attempted vertical integration. In fact none of the companies that did so survived over the longer term. The most successful ones either specialised in the production of mechanical looms or the manufacture of tulle and lace, but not both. None attempted to integrate bleaching and spinning yarn. The industry in Calais was organised on a horizontal basis, with small specialised firms occupying narrow technical niches. This structure was further entrenched when Britain allowed the export of looms in 1840. In a sense the wheel had turned full circle and gone back to the structure that existed in the 1820s.

Barriers to further expansion

There were a number of factors that worked against expansion of British firms in Calais during the first half of the nineteenth century. The first was the rapid rate of change of lace manufacturing the technology. This was a fast moving field and firms needed to remain small and agile in order to continuously upgrade their looms and implement the latest innovations from Nottingham. Another factor was the rapid

decline in the selling price of tulle, which fell from 45 Francs a meter in 1815 to 50 cents a meter by 1850! Although output increased and real labour costs decreased, profits were inexorably squeezed and new plant became unaffordable. It has been estimated that the gross profit on 100 racks of tulle (35 m corresponding to one day's production) was about 4.65 francs, or about 4.36%, before depreciation, repair and maintenance of looms, rent of factory space, insurance and royalties. Other factors were competition from lower priced goods smuggled in from Britain which was not resolved until cotton was replaced by silk in the 1850s, and the remarkable resilience of the artisans that continued to knit high quality products in their homes by hand, for a pittance. It was not until 1870 that the quality of machine made lace was regarded as equal or superior to that of hand made lace.

Distribution

After a few attempts to sell directly to outlets in Paris, the majority of firms started selling to wholesalers in St Quentin. During the 1840s about fifteen re-sellers were listed in St Quentin. Calais became a centre specialising in the production of raw (unbleached) lace in a nationwide network with Paris being the main consumer and St Quentin the main decision maker. St Quentin accounted for most of the value added through the preparation, bleaching and embroidery of final products. The strength of Calais lay more in its host of small specialised companies, able to subdivide and subcontract work as far as practicable in order to reduce costs. However, Calais remained dominant in the manufacture, adjustment and repair of machines and the supply of cotton.

[Biographical notes]

[1] John Leavers (? -1848) The most important and far-reaching improvements to Heathcote's design were devised by John Leavers, working with his two brothers and his nephew. Leavers did not attempt to patent his machine for fear of infringing on Heathcote's patents. He was engaged by a lace firm and he built the machines for them. The leavers machine made the production of fancy lace possible, an achievement that would never have been possible with carriages traversing the whole width of the machine as conceived by Heathcote. Leavers moved to Rouen in 1820 almost certainly to escape litigation in England, and died there in 1848.

[2] John Fergusson The invention by **Joseph Marie Jacquard** [3] of the punch-card-controlled loom mechanism was applied to lace machines as early as 1824, but it was not until 1837 that Fergusson applied it to the bobbins of the bobbinet machine, making possible an endless variety of patterns. His complete machine was produced at Cambrai in France, because he could not obtain the protection of patent laws in Nottingham 1835.

[3] Joseph Marie Jacquard (1752-1834) Jacquard was a French silk-weaver who invented the punch-card-controlled loom mechanism that bears his name. During the 1790s there was an explosion of woven goods in Europe and America using ever-larger mechanized looms. These goods were inexpensive because they were mass-produced but they contained nothing more interesting than the simplest patterns,

such as checks or stripes. Jacquards invention in 1801 allowed an ordinary workman to produce the most beautiful patterns, previously accomplished only with patience, skill, and hard work. The French government claimed the loom as public property, giving Jacquard a small royalty and pension. It took some time before the system was adapted by Fergusson for use with lace looms. (see above)

[4] John Heathcote (1783-1861) was the father of the lace industry in Loughborough and was indirectly responsible for the towns rapid increase in population in the early 19th century. He was born at Duffield in 1783 and at an early age moved to Hathern where he was educated at the village school. His father became blind and his early days were marked by poverty. He was apprenticed to a stocking maker and became thoroughly conversant with the mechanics of the stocking frame. He watched women making lace by hand on pillows and determined to replicate their movements with machinery. In 1809 he produced the bobbin lace machine and shortly afterwards set up in business as a lace manufacturer at Loughborough, in partnership with a Mr Bowden.

Many other manufacturers copied or tried to improve on Heathcote's designs, not only infringing his patents but also generating severe competition forcing the partners to cut wages to save money. In 1816 a group of labourers fearing Heathcotes invention would take away their livelihoods ransacked his factory and wrecked his lace machines. Exasperated, Heathcote decided to move his business to Tiverton in Devon, to get as far away as possible from his enemies.

Heathcote established a manufacturing subsidiary in Paris in 1818, which he transferred to St Quentin in 1826

The whole business of lace making went into turmoil upon the expiration of Heathcote's patent and from 1823 to 1825 there raged what was known as the 'twist-net fever.'

Translated by Philip Emerson ©

Cuckfield

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Books about Calais and lace making I'm searching for:

Histoire du tulle et des dentelles mécanique en Angleterre et en France.
Auteur: Samuel Fergusson. Editeur: Lacroix 1862

Memoire historique sur le tulle et les dentelles mécanique de Calais (St
Pierre). Auteur M. Reboul 1884

L'Industrie de la dentelle dans le Calaisis. Auteur: Succursale Banque de
France. Editeur: Banque de France 1983

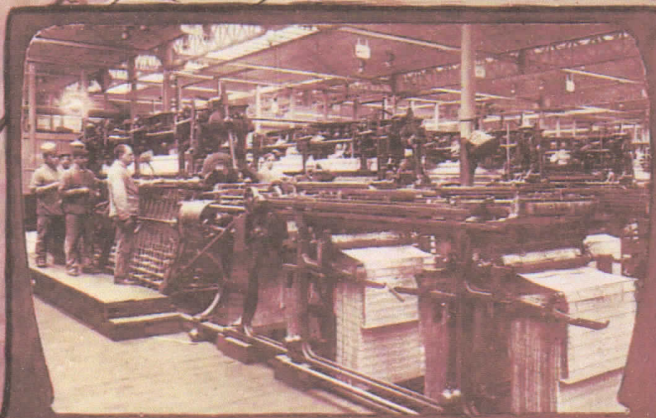
De sic tulle à la dentelle : Calais, 1815-1860 (Collection Terres
septentrionales de France). Auteur: Michel Caron. Editeur: Le Téméraire
1997. ISBN: 2908703637

Les Calaisiens et la dentelle. 1906-1950 (Collection Terres septentrionales
de France). Auteur: Michel Caron. Editeur: Le Téméraire 1995. ISBN:
2551163056 / 2-551-16305-6. EAN: 9782551163052

Calais et Saint-Pierre au XIXe siècle. Auteur: Albert Vion. Editeur: Collection
Histoire. ISBN: 2903077711. LCCN: 83147811. Dewey: 944/.27. LC: DC801.C14
V56 1982

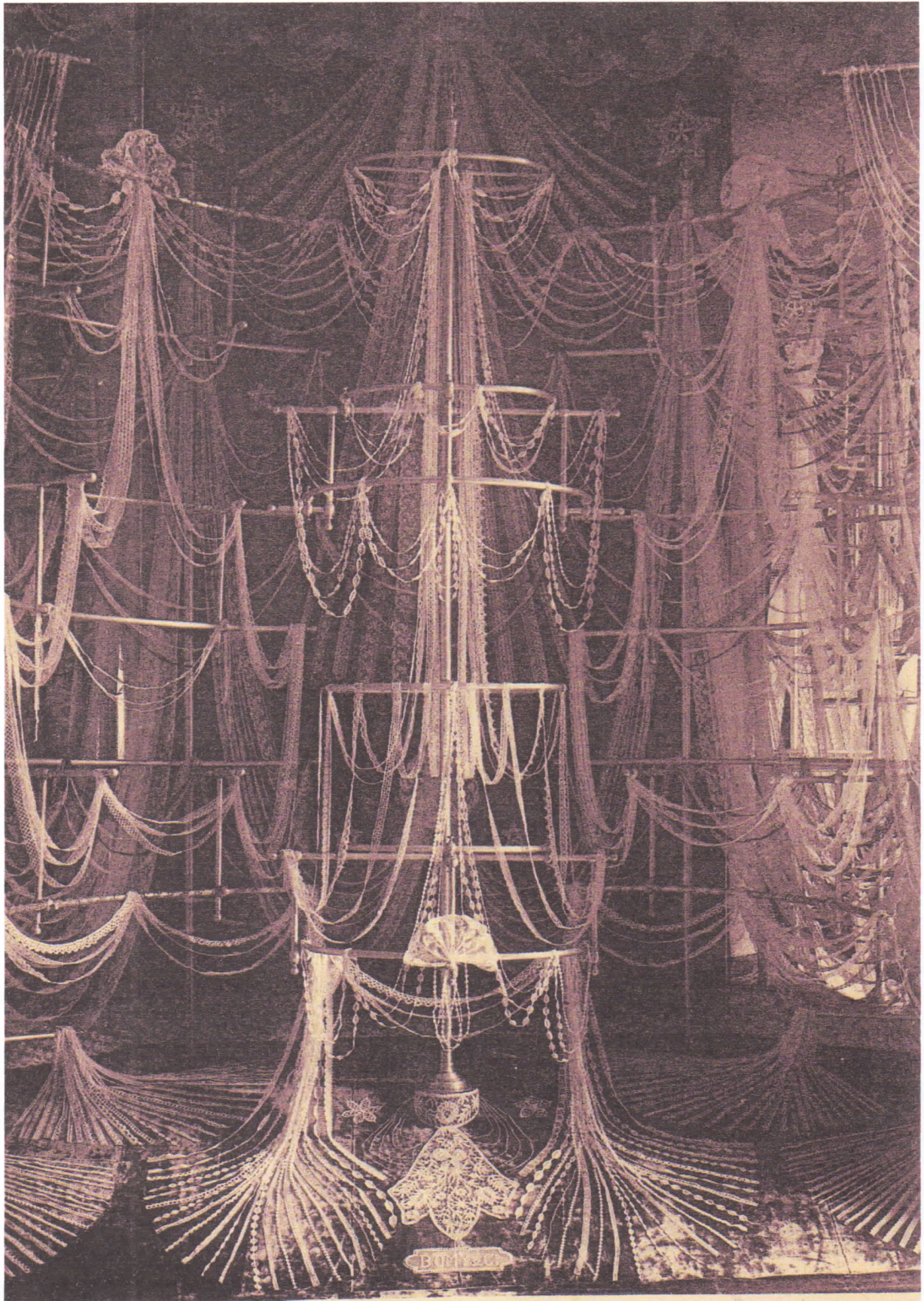
La vie Calaisienne sous le Consulat et L'Empire 1799-1815. Auteur Albert Vion. Les
Cahiers du Vieux Calais 1972. LC: DC195C23 V56

Philip Emerson
March 2009



CALAIS

Souvenir de l'Inauguration du
Monument Jacquard



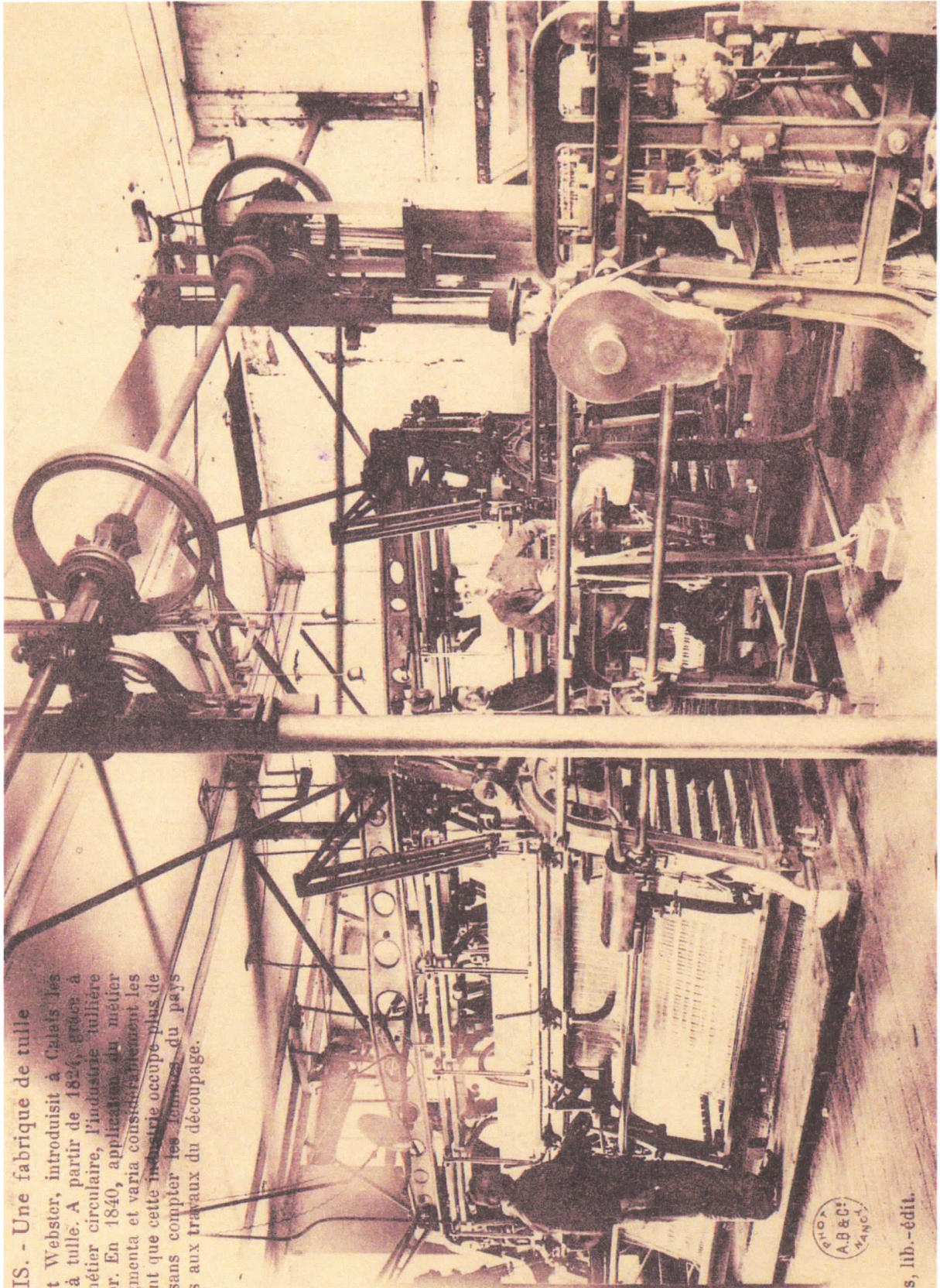
BOMY & C^{ie} ... CALAIS

EXPOSITION DE BRUXELLES 1910

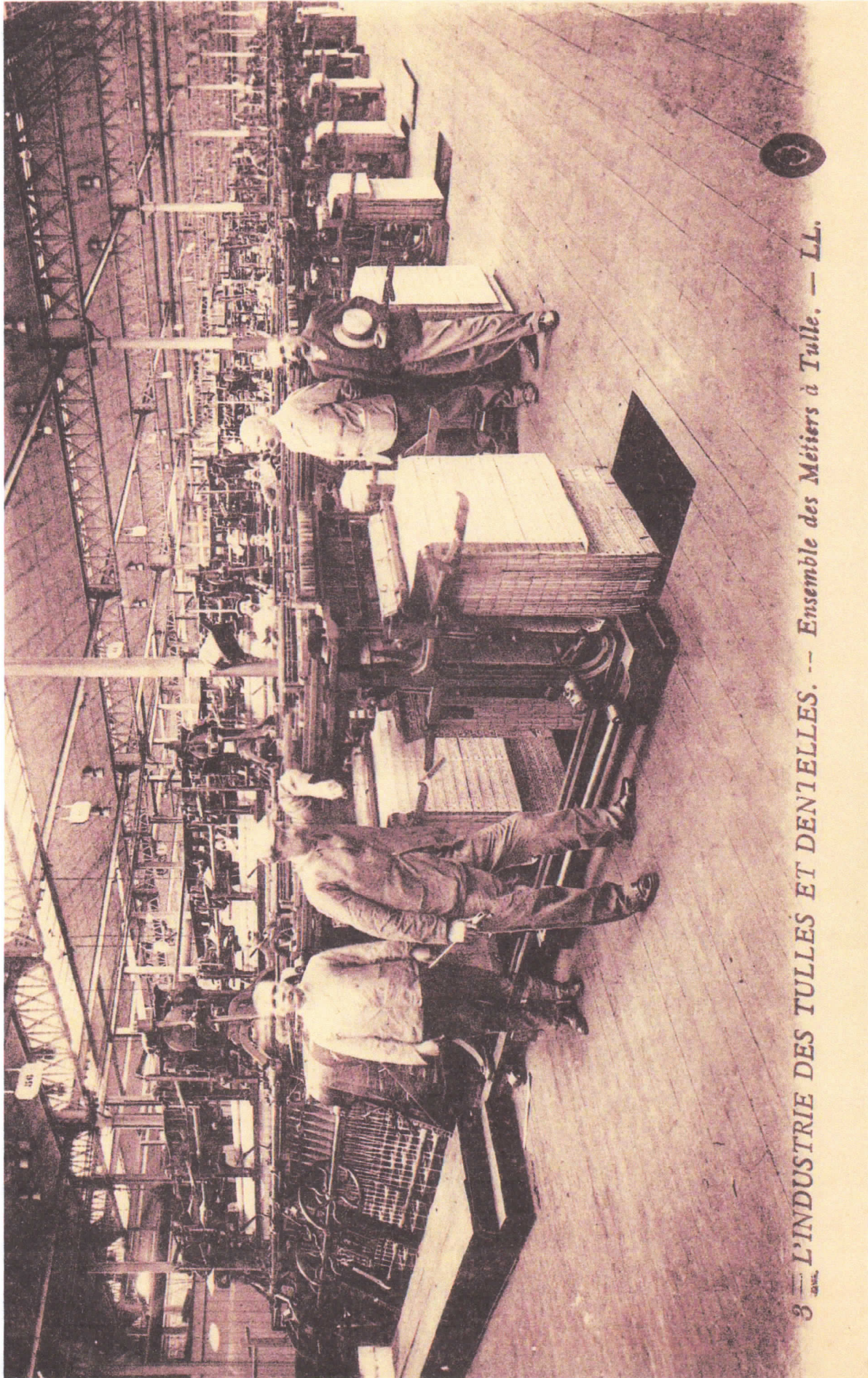
CLASSE 84

29. - CALAIS. - Une fabrique de tulle

En 1817, Robert Webster, introduisit à Calais les premiers métiers à tulle. A partir de 1824, grâce à l'introduction du métier circulaire, l'industrie tulleière prit un grand essor. En 1840, application du métier Jacquard qui augmenta et varia considérablement les produits, à tel point que cette industrie occupa plus de 15.000 ouvriers, sans compter les femmes du pays occupées chez elles aux travaux du découpage.

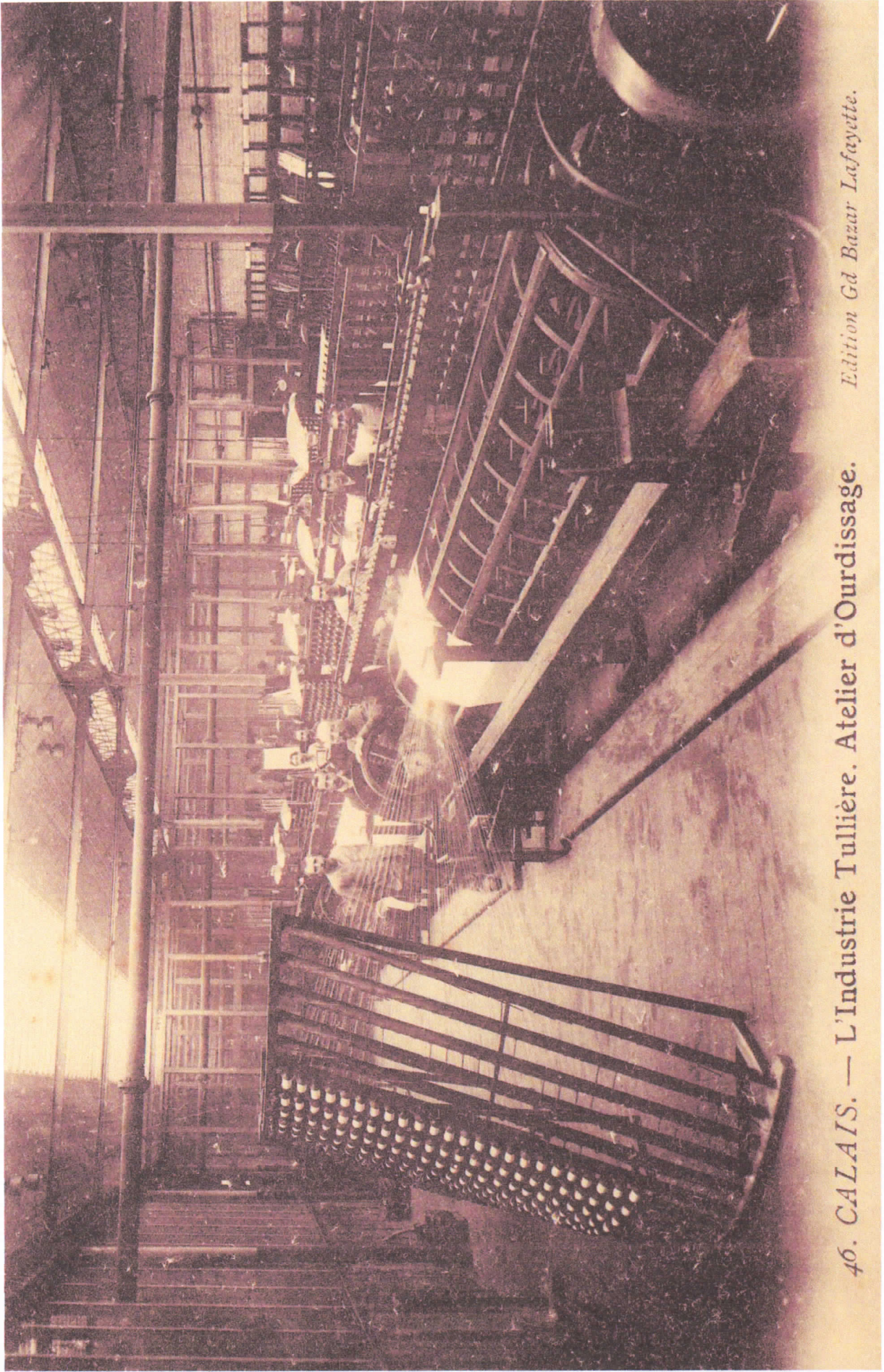


Thiriat-Deguines, lib.-édit.



3 ^{av.} L'INDUSTRIE DES TULLES ET DENTELLES. -- Ensemble des Mériers à Tulle. -- LL.





46. CALAIS. — L'Industrie Tullière. Atelier d'Ourdissage.

Edition Gd Bazar Lafayette.