

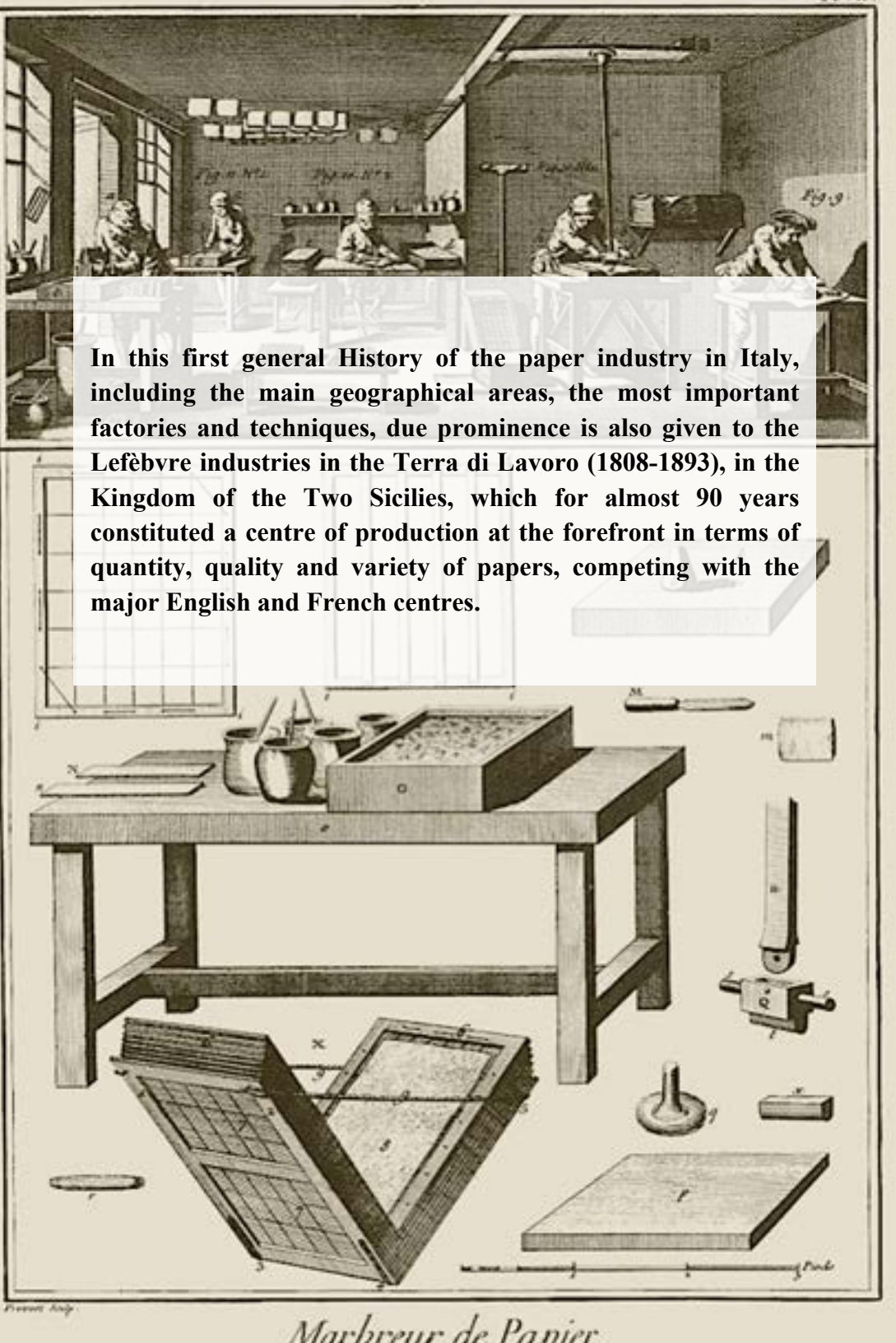
Mario A. Iannaccone

THE PAPER INDUSTRY IN ITALY

History, technology, men, markets

Book 2

Marbreur de Papier.



In this first general History of the paper industry in Italy, including the main geographical areas, the most important factories and techniques, due prominence is also given to the Lefèbvre industries in the Terra di Lavoro (1808-1893), in the Kingdom of the Two Sicilies, which for almost 90 years constituted a centre of production at the forefront in terms of quantity, quality and variety of papers, competing with the major English and French centres.

Marbreur de Papier.

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Chapter 8

North Western Italy: Piedmont

The Paper Mills of Cuneo

A number of small paper mills flourished in lower Piedmont and Liguria between the Middle Ages and the early modern age. Particularly noteworthy are the vicissitudes of the Scarella family from Savona, who financed the tenants of two small paper mills in Cuneo in the early 16th century. One of them formed a partnership to found a paper mill in Cuneo with the papermaker Francesco Brizio in 1513. Since the profile of this family is mainly mercantile, we are less interested here, except to point out that they participated in the creation of two paper mills in Cuneo and that their story is lost in the 16th century and is therefore, very old.

The Fossano Paper Mill

The **Fossano paper mill** has existed at least since the year 1447. A document from that year mentions a papermaker (French for papermaker) and a paper mill, which was still attested between 1539 and 1550 and in the following two centuries.¹⁵⁶ The Fossano paper mill was fully operational at the end of the 18th century. Probably the wartime operations of 1799, when Napoleon's armies entered Italy, did not cause

¹⁵⁶ Cornaglia Giovanni, *Storie di carta. La cartiera di Fossano*, Araba Fenice, Boves 2017.

as much damage there as elsewhere. The 14 employees of the paper mill in 1802 rose to 28 in 1816. The factory, under the leadership of Gerolamo Mandillo (a native of Beynette and therefore French and born around 1765) continued to grow.¹⁵⁷ In 1822, paper production was expanding in the Kingdom of Sardinia; the Fossano factory then had 'three batteries', i.e. three pestles. The papermaker experiments with mulberry bark and is rewarded for this in 1825.

Thereafter, the workforce was reduced to 20 people who turned out 320 reams of fine paper, 550 of semi-fine paper, 850 of ordinary paper and 280 of coarse paper. In 1841, the Mandillo paper mill in Fossano produced paper of different qualities with a net profit of 2,000 lire. An announcement that the paper mill was put up for sale appeared in the *Gazzetta Piemontese* of 20 April 1845. Twenty years later, in 1865, it was owned by the Marsengo brothers.

Francesco Marsengo 'stopped the old system and began to make endless paper, that is, machine-made paper'. Until then, manufacture had been done by hand. The paper mill managed to sell its product well in Turin, where numerous printing and publishing houses flourished from 1860 onwards. In 1865, the warehouses were devastated by a terrible fire with damage estimated at 80,000 lire. The paper supplies of almost all of the capital's newspapers burned, as well as the paper of many squares, registers, and workings for the papermakers of Turin. The paper mill nevertheless recovered and in 1876 Canon Pietro Paserio wrote that it was able to produce around 56,500 tonnes of paper of all qualities every year.

¹⁵⁷ Casalis Goffredo, *Dizionario geografico-statistico-commerciale degli stati di S.M. il re di Sardegna*, v. VII, Maspero, Torino 1840, p. 803.

The various mechanisms to produce the paper are operated by two hydraulic motors. The main motor is a turbine, 26 metres high and with a force of 150 horsepower. In order to place it, a deep shaft and an underground tunnel had to be dug for water escape and repair work. With the power of this turbine, all the mechanisms were moved, except for the endless machine, for which a tangential turbine with a force of 10 horsepower was used. When water became scarce, this turbine was replaced by a small steam engine with a power of 6 horsepower and equipped with a Braun system regulator. To repair the many mechanisms, the entrepreneur set up a workshop with a blacksmith and a woodworker.

The paper mill produces fine and half-fine paper, white and coloured, for printing, writing, registers, letters, Bristol boards, all products that are easily sold in the main markets of Upper and Middle Italy, especially in Turin, Milan, Genoa and Florence, as the Fossano paper mill with its perfected machines is in a position to compete with the oldest and most renowned paper mills.¹⁵⁸

The number of workers had risen to 160 by the mid-1860s. In September 1869, Marsengo signed an agreement with the Opera Pia Duelli of Centallo to increase the number of rag-cutters to be used in the works. The conditions were that the Opera Pia participated by providing female workers. At the beginning there were 21 female workers, later to become 50. Great progress was recorded after 1870. Large-cut printing papers were added to the fine and very fine papers. It was precisely in those years that the printing, writing and stationery

¹⁵⁸ Comba Rinaldo, *Una cartiera, quattro secoli di storia*, in *Storia di Fossano e del suo territorio*, v. VI. Fondazione CFR, Fossano 2014, p. 256. Also cited in Giovanni Cornaglia, in *Storie di Carta, op. cit.*, p. 24.

paper sector developed to become the most important. The Paper Mill of Fossano also launched itself into the production of paper for ledgers, which found excellent sales in Turin, given the presence in the square of a number of renowned printing-book printers but lacking a reference paper mill.

The management, at some point, became Marsengo-Lang. In mid-1875, the company was dissolved with Ernesto Lang still listed as a former partner in 1877. Approximately between 1878-1879 Marsengo sold the paper mill to four young entrepreneurs, three of whom owned a stationery and bookbinding business in Turin. They are three French and one Italian. Enter Joseph Bernard (1840-1887), a native of Rives, (Isère, lower Dauphiné), a region that, along with Lyon, had supplied many technicians and entrepreneurs to the European and Italian paper industry over the course of a century. The other partners were the two brothers Albert and Henry Gaillard, nephews of J. B. Lebon, and Giuseppe Gilardi from Turin.

The activities of the new company started off well. However, Henry Gaillard (1835-1880) died suddenly at the age of 45. Six years later, his brother Albert also died. Bernard then took over the Gaillard's shares and then also liquidated Gilardi, becoming director and owner of the paper mill, which at that time was dedicated to the production of registers. During the first year of the new management, values were very high compared to the last year of the previous one: the cost of labour and the cost of purchasing raw materials (such as rags) tripled, as did the profit, which rose from 46,800 lire in 1878 to 133,322 in 1879. As early as 1881 there was a return to normality. Operating profit in 1883-1884 was almost the same as seven years earlier. The cost of labour has doubled compared to 1878 but is half that of 1879. There is evidence of stagnation in the paper industry in this part of Italy in the

1880s, but more likely – although there is a lack of reliable data – it is a more general problem.

The San Giuseppe bindery opened in Fossano by Henry Gaillard shortly before his death and at the same time as he took over the paper mill with his brother. It was active until the early 20th century, maintaining close relations with the paper mill. After an initial sharp increase in the supply of rags, interest in this supply gradually waned when wood pulp was introduced, as did the increasing use of coal to power steam engines. At the beginning of the 1880s, the construction of new buildings was started in anticipation of plant expansion. Perhaps it is these new expenses that affect profitability, which declines after 1881. Debts of 50,000 lire to Marsengo still weighed heavily. From 1878 to 1883, interest also had to be paid on the capital for the late Henry Gaillard's share to his son Emile.

Among the names of the paper mill's customers are Vincenzo Bona of Turin and Unione Tipografica Editrice Torinese (UTET). The staff remained more or less the same as in Marsengo's time. Bernard bought everything and liquidated the others, but two years after becoming the dominus, he died on 5 December 1886, aged just 46. Fossano paid him a solemn funeral. In the memoirs of Albert Gaillard's son, we learn that on his deathbed Bernard had made his young wife Espérance Vial swear an oath not to cede the paper mill to anyone, let alone his cousins. In a short time, Bernard had won the affection and admiration of the people of Fossano, receiving accolades that no one else had received and even a monument. Yet, for his family, he was 'a man incapable of curbing his every whim, obsessed by a mania for grandeur and prone to squandering money'. In reality he was a capable, well-loved, caring man. He had bought with his own money, not the paper mill's, five shares of 105 lire each in the Banca Popolare Agricola di Risparmio di

Fossano as a convinced support for popular associationism in the credit field, with no ulterior motive. After all, he too had started out as a worker. Little is known about the two-year period 1885-1886. Five workers were still employed in 1905. It was a difficult time, when financial commitments weighed heavily. The whole of Europe was struggling to emerge from the great depression of the seventies and eighties and in Italy the moment was dramatic. The paper industry entered a crisis in the eighties, crushed by French and English production, although the plant's profitability seems good.

Marie Espérance Vial (1860-?), widow of Joseph Bernard at only 27 years of age with a son, looms as the new director. Espérance calls his brother Félicien to run the paper mill, who seems qualified: young, an engineering graduate, with ambitions as an inventor. Everywhere, old machines are being replaced by steam-powered paper machines and wood pulp instead of rags as raw material. New machines arrive from France and Dad Vial takes care of their installation and maintenance. In the mid-1890s, the paper mill had internal and external lighting systems that only the Polverificio and the Chicco spinning mill in Fossano had. The 1890 report on *Condizioni Industriali della Provincia di Cuneo (Industrial Conditions in the Province of Cuneo)* stated that of the five paper mills in the province, Fossano was the largest, with 203 workers (127 women, 76 men). Those numbers were reached at the end of the decade, despite the fact that business conditions and the economic situation were still difficult. The Vial tried to contain the crisis, but the outgoings to pay their wages were no small matter. Félicien took 1,000 lire per month plus benefits (a luxury good like a Fiat cost 8,000 lire). The directors who came after him would have to wait 20 years to get that much. Vial

father also charged a lot, and a whirlwind of financial effects with Parisian relatives (the Essertiers) was discovered.

Crack comes along. Espérance despairs, her father does not know what to do, while her brother advises her to get help from a rag supplier from Livorno, named Grandi. He takes on the debts, holes and shortfalls of the paper mill, which continues to call itself Bernard. However, Grandi demands exclusivity in the supply of rags and high interest rates. In the end, the situation is saved, at least temporarily, by Albert Gaillard. The last positive financial year was 1888-1889, followed by five years in the red. In 1894, Vial father died and Espérance was left alone. In 1896-1897, a profit of 18,000 lire returned, which in the following financial year, 1897-1898, rose to 36,000 to practically zero in 1898-1899 at 1,000 lire. Félicien's salary is still high, being paid for the backlog from 1895-1899, a good 6,000 lire. Félicien continued to take that salary until 1905. In 1907, Espérance left the paper mill, which in 1908-1918 would be managed by Paul Souchon, who would make it flourish again.

Pirinoli Paper Mill

The Pirinoli paper mill was founded in 1872 by the lawyer Gaspare Pirinoli, progenitor of the papermaking family of the same name from Intra on Lake Maggiore. Together with his sons, he bought a waterfall in Roccavione (ten kilometres from Cuneo) from the nearby Naviglio canal to exploit its hydraulic power. He built the paper factory and started the production of wrapping paper in 1883. One of the specialities was 'bigat' paper, used in the cultivation of silkworms, an industry that was flourishing in the area at the time.

In 1889 at the Universal Exhibition in Paris, the Pirinoli brothers bought an endless machine, Bryan Donkin's Fourdrinier. Over the years they established a second production unit in Roccavione. In 1937 ownership passed to the Eva family.

Lebon Paper Mill-Cassina di Pinerolo

In Pinerolo, the ancient paper mills are located in the Battitori da Carta area (present-day San Michele area). A paper mill stood at the fork of the Moirano canal, and still exists today as a decaying building along the right branch at the end of today's Via Gorizia. It was established by a master papermaker from Savigliano in the 14th century. Pinerolo's flourishing paper industry was always an almost exclusively private monopoly and, thanks to a skilful and far-sighted entrepreneurship, it was a well-conceived machine that employed many people (as well as replenishing the coffers of the local administration through taxation on industrial buildings and on the rent of water from the Moirano).

So skilful were Pinerolo's master papermakers that their products, in addition to meeting local needs, were also exported abroad. The factory in Via Gorizia was no exception and, passing from owner to owner, came to be in the possession of Countess Rosa Maffei di Boglio (between 1776 and 1834), remembered by the people of Pinerolo for having purchased, in a spirit of Christian piety to prevent its demolition, the building that had formerly been the convent of San Francesco, the current seat of the nuns of San Giuseppe. The factory produced its fine paper until 1869, when it was

converted for wool processing, a much more profitable activity in a period of epochal changes linked to industry.

The Cassina paper mill is the last remaining of the four that arose in Pinerolo from the 13th century onwards. These were small mills that generally employed about ten people. Certain evidence of the existence of the paper mill dates back as far as 1370. Over the centuries, there were several changes of ownership and in 1869 the paper mill passed into the hands of the Lebon-Cassina company (where Lebon was a member of the Lebon-Bernard family of Fossano, demonstrating the importance of the French in the art of papermaking in Piedmont). In 1900, Francesco Cassina's factory was taken over by his son Enrico and then by his heirs and still exists today. It produced and still produces paper and board for wrapping and packaging.

Mondella Paper Mill in Biella

In the Biella area, a land of great concentration of modern textile industries even in the 19th century, the largest and best-known paper mill is the Mondella Paper Mill, a gualchiera where rags are defibrated and reduced to pulp. It is an ancient paper mill, of printers and printers known since the 16th century. The family originated from one of the areas where the art of papermaking was most solidly developed in northern Italy, namely the Brescia area of Lake Garda. Antonio Mondella set up his paper mill, to which he later added a printing press, on the left bank of the Cervo stream, as early as the first decades of the 16th century. In 1548, Charles II, Duke of Savoy, granted him a series of privileges and immunities. During the 17th-18th centuries, the Mondella family held

public offices in the area and was ennobled in 1689. Later, the descendants abandoned direct management of the factory, renting it out. In 1695, Baron Felice Spirito Mondella granted the Sanctuary of Oropa, whose leaders intended to found a silk spinning and wool mill downstream of the mill, the water needed to drive the mechanisms. In 1796 Francesco and Giovanni Battista Mondella sold the building and all its equipment. The paper mill remained in operation until 1835 when Maurizio Sella took over incorporating the silk spinning mill built at the end of the 17th century by the Sanctuary of Oropa. In 1849 Maurizio Sella bought the complex and built new buildings. One of the buildings had once been inhabited by the banker and politician Quintino Sella. The building that housed the weaving mill dates back to 1867. Little remained of the old paper mill by the mid-19th century.

Vonwiller Paper Mill in Romagnano Sesia

Much more important, compared to the Mondella Paper Mill, historic but still confined in a liminal phase between proto-industry and industry due to its antiquated manufacturing processes, is the Vonwiller Paper Mill in Romagnano Sesia. This was founded to produce paper from rice cellulose made from rice straw, which was abundant in the Novara area. It was a material that made it possible to produce a low-cost although very poor paper.

Its management was taken over by Giuseppe Antonio Nodari in 1880. From 1873 to 1879, after his studies, he gained experience at the family's paper mill in Lugo di Vicenza, which was among the most important in Italy and at the forefront of technology, and then at the Casalecchio di Reno paper mill. At

the Vonwiller Paper Mill near Romagnano Sesia (about 30 km from Novara), founded by Alberto Vonwiller (1843-1933), a Milanese from a banking family of Swiss origin,¹⁵⁹ Nodari brought his experience and mentality to it, allowing it to develop in just a few years and leading it to become one of the largest in Italy at the beginning of the 20th century, along with a few others such as the family paper mill in Veneto, the Rossi paper mill, the Vaprio d'Adda paper mill and the Isola del Liri pole mills.

In Italy, cellulose was first used in Piedmont by Giacomo Basso (former owner of the Mathi Canavese and Torre Mondovì paper mills) in the production of wrapping paper at the Parella mill near Turin. In 1883, Nodari, inspired by the Alexander Mitscherlich process, began manufacturing bisulphite pulp from poplar. Later, he devised a specific plant for the preparation of bisulphite, characterised by a vat process instead of a tower process, which was adopted by many other factories in Italy and abroad. Within a few years he was thus able to start producing vegetable parchment, thanks to which he was able to compete on the markets also at an international level. In 1898, the Vonwiller paper mill was the only factory in Italy producing pulp at a rate of 10,000 quintals per year. The attempt of the Cartiere del Fibreno, under Lefèbvre's management, since 1865, had been to produce the same type of semi-finished product by building a chemical factory, but the Neapolitan entrepreneur had encountered considerable difficulties in developing due to the crisis in the southern market after Unification, the lack of infrastructure, competition from northern producers and bureaucratic stumbling blocks that had threatened the

¹⁵⁹ Contributing to making Piedmont the leading production region nationwide for fine and very fine papers.

confiscation of the land on which the chemical factory had been built by the State.

Nodari worked hard to provide the country with nationwide pulp production. In the first decade of the 20th century, he managed to open a new paper manufacturing plant in Poggio Reale, near Mantua, which he soon entrusted to the care of his son Franco (born in Romagnano Sesia, on 27 May 1889, from his marriage to Giuseppina Montavon). He was also very present on the national scene at an institutional level, participating, as director of the Vonwiller company, in exhibitions and congresses, such as the VI Conference on Applied Chemistry held in Rome in 1906, the most important meeting occasion for chemists of the time. He was also active internationally and was well known for his knowledge of paper mills abroad. In 1894 he was one of the founding members of the Association of Industrialists of Italy for the Prevention of Accidents at Work, chaired by Ernesto De Angeli and modelled on the example of the French Association pour prévenir les accidents de machines (founded in 1867 on the initiative of the Industrial Society of Mulhouse). In addition to dealing with the dangers of work in industrial and agricultural enterprises, the Italian association carried out control activities in the area of hygiene and health regulations through an annual inspection of its member establishments.

In 1904, he set up the Vonwiller Band, a group directly paid by the company, which not only performed traditional band functions (such as providing service on holidays or funerals), but also organised an autonomous concert activity. In 1919 he retired, leaving the management of Vonwiller to his son (already a managing director), who was to become one of the leading figures in the Italian paper industry in the following decades, also presiding over the Unione Industriali di Milano (Industrial Union

of Milan). In 1930, the Vonwiller paper mills in Romagnano Sesia and Mantua became part of Luigi Burgo's group of companies (later Cartiere Burgo) that would take sixth place in Europe in the manufacture of newsprint. He retired to Quarto dei Mille, at that time an independent municipality (it was aggregated with Genoa in 1926), where he died on 7 May 1927.

The Valvassori Paper Mill of Germagnano

In 1870 the Vecco-Valvassori paper mill was built (later Valvassori Franco, then Burgo, then part of the Spinoglio Group) that also worked for the State Mint and employed hundreds of people until the early 2000s. From 1896 to 1898 it was managed by Beniamino Donzelli before his departure for Argentina.

The Maffioletti Paper Mill in Omegna (NO)

Little studied and still to be recovered in archival indexes is the case of the Ercole Maffioletti e Soci paper mill in Crusinallo near Omegna. Statistics after 1875 show that it employed 600 workers and was fully equipped with machines for the production of various types of paper. The paper mill was purchased in 1998 by a family with a long papermaking tradition, the Favini della Cartiera di Rossano Veneto (founded in 1736 and refounded in 1906). In the Annals of Statistics of 1887, it is described as a paper mill of primary importance together with that of Romagnano Sesia, but no further details are given (Annali di Statistica, Tipografia Eredi Motta, Rome 1887 p. 137).

Chapter 9

Territory of the Papal States (Marche, Umbria)

Geographically, we are talking about the territory of Rome, the Marche, the area north of the Sibillini Mountains (Pioraco), Foligno and Foligno's area, as well as Nocera Umbra and also Fabriano and its surroundings. In this area, 64 manufactures were registered in 1817 and increased throughout the 19th century. In the past, they were more numerous although on average smaller. Considering Fabriano's historical importance in the paper industry, its case should be treated separately.

Fabriano

The pre-unification state that covered the current regions of Marche and Umbria, namely the Papal State, saw the emergence of the figure of the merchant-entrepreneur during the 15th century. The second half of the 16th century saw the employment of capital belonging to the nobility and patricians of various cities in the area in question, but especially the city of Fabriano, in paper manufacturing. This, as we have said, had been established in the area since the 13th century and had by then reached a degree of maturity, in its craftsmanship phase, difficult to find elsewhere. At that time, economic power was concentrated in the hands of wealthy families who controlled the Camerlengato, an institutionalised oligarchy. At the time, the term 'gualchiera' or 'valchiera' was common in the

area, i.e. the hydraulically powered instrument that enabled rags to be beaten, which began to be called a 'paper mill'. The old, small buildings located on Mount Giano north of the town of Fabriano and the 'cambora' were replaced by a larger mill in which all the plants and processing phases were concentrated. This change occurred in the 18th century and paved the way for the industrialisation process, as in other parts of Italy. At the beginning of the century, papermaking was weakened and concentrated mainly in the hands of two families, the Fornari and Vallemani. During the course of the century, other paper mills were built, mostly small ones, run by the Braccini, Campioni, Mariotti and Serafini families, belonging to the newly emerging bourgeoisie. The general decline of the paper industry was due to the difficulty of finding raw materials and competition from industries in Holland, France and England. The adoption of the Dutch cylinder was delayed and the size remained too small to allow development in the industrial phase. The 20 small 17th century paper mills in the Fabriano area thus became 3 at the beginning of the 18th century and then increased in the 19th century.

One must also consider the fact that, given the fame of Fabriano's master papermakers, they were much sought after; there was therefore a diaspora or rather a continuous haemorrhaging of good professionals called elsewhere with good hires. Concerned about the decline of the art of papermaking in Fabriano, or at least of its production, the popes who succeeded one another at that time sent expert visitors to try to raise the sector from a decline that had become visible in the 18th century. The apostolic visitors of that time noted the decadence and even backwardness of various craft and agricultural sectors also due to heavy taxes, especially local taxes. After a regulation in 1587, which had helped to

give oxygen to the art of papermaking thanks to the orderly collection of rags and flesh, others were issued in the following centuries: in 1706 by Clemente XI, in 1732 by Clemente XIII and in 1749 by Benedetto XIV. Pio VI dealt with the problems of the art of papermaking, always considered a very important production in the Papal States, listening to and accepting the numerous requests from manufacturers. In 1791 and 1792 he set up a special superintendence, which he entrusted to the expert Luigi Lazzarini with the task of collecting rags: the lack of raw material seemed to be the most serious problem in the paper industry of the State.

This document for the protection of the paper art, dated 10 December 1791, is the most important of those issued by the papal government and is an example that was also followed in other pre-unification states. Not all problems had been solved and the renewal of the facilities was missing. Luigi Mostarda (1723-18701) denounced in one of his reports that the 20 old paper mills had to increase their production and try to produce more paper than the 6 more modern ones. The situation, in short, shows light and shade.

Unfortunately, as also happened in other areas, much of the history of the Fabriano paper mills of the 18th-19th centuries has been lost due to the destruction or dispersal of the archives. It often happens, as already mentioned, that when a mill closes, the archives are not given any value, let alone historical value, and are therefore destroyed or abandoned. In the area around Fabriano, the paper mill whose historical archives have been best and most extensively preserved is the Miliani paper mill, while the papers of the Fornari, Campioni and Vallemanni paper mills, which died out in 1782, 1854 and 1903 respectively, have, at least apparently, been lost. In all cases, these were esteemed, well-known, economically significant paper mills.

The old **Fornari Paper Mill**, inaugurated in the 15th century, passed through several generations until it was sold to Miliani in 1903. At that time it had 13,500 square metres of covered space and 300 employees, turbines, a canal that derived water from the Giano river, and three engines. It was then the only plant in Fabriano lit by electric light. The company manufactured handmade paper, single-machine paper and playing cards. The reason why Carlo and Gustavo Fornari sold the company to Giambattista Miliani in 1903 for 350,000 lire is unclear. They probably did not have the capital to modernise and cope with the expansion of neighbouring Miliani, who in 1902 had transformed his company from a sole proprietorship with family assets to a limited partnership with capital of 2,600,000 lire. Between 1890 and 1910, many paper mills changed hands precisely because of a lack of liquidity and the need to reconvert the entire machinery in order to keep up with the times (the most notable example of the period being the Manifatture del Fibreno of the Lefèbvre). The final handover took place in 1906 and with this deed Miliani acquired the main competitor together with skilled workers.

The **Campioni Paper Mill** was founded in 1772 by Carlo Campioni, the son of a manufacturer with a mill in Contrada Ponte del Gualdo in Fabriano. The paper mill at the end of the 18th century must have had considerable capacity. Its main competitor was Miliani. In 1816, Carlo Campioni stopped working in the family firm to take over, at the invitation of Pio VII, the Cartiera Camerale di Pio VI (which produced stamp paper, free paper and customs bills). Marianna Campioni, the wife of an exponent of the art of papermaking, a Braccini, took over running the mill (which employed 29 people in 1824). Unable to stem the losses, she leased the company first in 1844 and then in 1854 to Rinaldo Miliani, who became the owner

by winning an auction held in 1854. An appraisal from 1853-1855 showed that the factory was degraded and aged. Meanwhile in Rome, Campioni re-modelled the papal paper mill and experimented with new raw materials, such as wheat straw, maize and cane leaf, marsh seaweed, siliqui and bean pods and mulberry bark. His activities interested many political (such as Metternich) and scientific personalities.

As for the **Miliani paper mill**, which was to absorb the others in the area, it came into being following a call from Count Vallemani, who in 1782 asked Pietro Miliani (1744-1817) to manage his mill. Miliani was talented and fit well into the market that had not yet become industry in the modern sense and that favoured small manufactures and quality handmade paper. The venture soon became Cartiera Miliani with the money of the count, who was evidently satisfied with the financial performance of the enterprise. With the exception of Dutch cylinders (introduced in 1783), endless machines were introduced here much later than in other areas.¹⁶⁰ Miliani therefore realised that the paper industry had to evolve and began with a plan to expand and incorporate smaller companies. He became a famous figure. Despite the various regime changes that also swept through Fabriano, Miliani managed to maintain an important position. From 1795 to 1815 he formed a partnership with Giovambattista Bodoni (1740-1813), who was based in Parma but belonged to a dynasty of typographers from Saluzzo. He was called the 'prince of printers' and was certainly a prestigious printer. In

¹⁶⁰ The first endless machine, still a basic model, was introduced in 1807 by Andrea Molina in the Borgomanero paper mill. The first real endless machine, with modifications that made it more productive by increasing the size of the sheet, was by Charles Lefèvre in Carnello, purchased in 1826 and put into full operation in 1828.

1802, in order to avoid the suspension of activity due to drought, he resorted to Alessandro Agostini's Nocera Umbra paper mill, and Giuseppe Matalano's Esanatoglia paper mill, but he was dissatisfied and therefore partnered with Andrea Sante Mattioli in renting the Pioraco paper mill owned by the brothers Sante and Felice Bezzi. In 1803, he set up a printing works with a certain Crocetti, probably the origin of Giovanni Crocetti's only printing works in Fabriano. In 1796 he made changes in the manufacture of hand-made tissue paper that would be maintained for many decades. On the death of the founder (1817), the three brothers, Niccolò Miliani (1771-1838), Tommaso (1772-1842) and Rinaldo (1779-1849) took over, followed by the descendants Giuseppe (1816-1890) and Giambattista (1856-1937), who further expanded the business.

Niccolò Miliani was a bachelor while Rinaldo had 12 children, one of whom was Giovanni. Niccolò travelled in Italy and elsewhere to discover new techniques. In the Kingdom of the Two Sicilies he found a perfectly organised market with technicians arriving from France but also from Pioraco and the Foligno area. It is he who, in a letter sent to his brothers Tommaso and Rinaldo from Naples, describes the amazement he felt when observing a sheet of paper 'as big as a sheet': it came from the paper machine implanted by Charles Lefèbvre in 1828 in Carnello, the first one installed in Italy. Miliani is impressed by the size of the sheet and also by its quality, and regrets not being able to visit it.¹⁶¹ It is not clear,

¹⁶¹ By 1824 the paper mills in Fabriano (Miliani, Campioni, Braccini, Fornari) were producing 1,774 quintals of paper a year, consuming 70,000 pounds of rags (11.2% of those used in the Papal States). At this time Fabriano was no longer the most important paper-making centre: Ciuffetti, *Carta e stracci. Protoindustria e mercati nello Stato Pontificio tra Sette e Ottocento*, Il Mulino, Bologna 2013, cit., p. 31.

in truth, why he could not visit it: Lefèbvre was happy to show his factory and Miliani was not a direct competitor as his factory was outside the Kingdom of the Two Sicilies. There were probably practical impossibilities.

When Niccolò died in 1838, the management passed to Tommaso Miliani who increased production and turnover. He died in 1842 and everything passed to Rinaldo, who managed the company with prudence. Under his leadership, the complex grew to 7 vats and 20 multiple-hammer stacks as well as 54 employees. As can be seen, however, the dimensions were quite different from those of the Fibreno paper mill and the one in Vaprio d'Adda, which exceeded 100 workers at this date. Rinaldo had a valuable collaborator in his son Giovanni, whom he sent to Rome to establish business relations; and in Rome, the company was rewarded by Pope Gregorio XVI for the quality of the paper they supplied to the papal court.

In 1843, Rinaldo took over the **Sociale Paper Mill** by paying 9,000 scudi to the heirs and rented the Campioni Paper Mill (later purchased in 1854). When, in 1847, the government did not grant permission to install the endless machine (flat endless machine), he wrote a *Memoria* on the subject, protesting the decision. At that time, a endless machine was installed within the Church State in the Anitrella paper mill of Count Lucernari, which had a 10-year licence. This paper mill was not far from the Lefèbvre mill, but was subject to another State.

On Rinaldo's death in 1849, the paper mill was led by Giuseppe, who slowly trained his son Giovambattista (13 years old at the time of his father's passing) to manage it. Under father and son, the Miliani paper mills made a quantum leap in quality in the decades between 1860 and 1890 by modernising the plant. To the interesting figure of Giuseppe

Milani, almost a second founder of the business, is dedicated the volume by Emo Sparisci, *Pietro Milani. Un cartaio antico e moderno (An Ancient and Modern Papermaker)*, to which we refer because it is impossible to deal with his story in detail.¹⁶²

The personnel employed in the family paper mill grows at this rate:

1824: 33 workers

1836: 80 workers

1883: more than 100, probably 160.¹⁶³

The impressive leap in quality and quantity was made in the last fifteen years of the century when the number of workers increased by almost a thousand: around 1900 there were over 1200.

The company grew, beat off foreign competition and became the official supplier of the most important institutions of the new Kingdom of Italy. Despite the damage caused by a disastrous fire in 1871, Miliani managed to maintain production. Religious and a lover of order, Giuseppe was overwhelmed by the socialist and trade union movements. His soul was wounded by the gesture of a papermaker, Vittorio Valentini: during a meeting in which a delegation of workers was talking to the factory managers, in a moment of anger, Valentini threw an object at Giovambattista, wounding him in the face. In the 1880s, he left the management of the factory to his son, who organised it, including the work, according to

¹⁶² Sparisci Emo, *Giuseppe Miliani. Un cartaro antico e moderno*, Pia Università dei Cartai, Fabriano 1998.

¹⁶³ Pedemonte Enrico, ed., *La Carta*, cit., p. 72.

more modern and rational criteria. At the end of the 19th century, smaller factories disappeared and others regressed. In 1893, Giovambattista set up a scientific laboratory to study paper from the point of view of mixtures, mechanical qualities, dyes and many other aspects. Giovambattista, in particular, is credited with exceptional entrepreneurial skills. He led the factory for almost fifty years, until 1937. In the early years of the 20th century, as we have seen, Miliani enjoyed prodigious expansion. Flat endless machines were introduced in 1911 and then in 1922. In 1937, however, the line died out: Giovambattista had no sons.

However, the definitive modernisation took place from 1890, when Giovambattista took full control of the company and led to the renovation of the entire administrative structure and the construction of offices.

Growth led to financing problems. Until 1902, the Miliani were self-financing and local banks, such as the Cassa di Risparmio di Foligno, facilitated them by allowing them to rationally manage their working capital with advances, discounts and overdrafts. In 1886, they participated in the foundation of a popular bank, which, however, did not grant financing. Financing was eventually found by banking investors in Turin and Rome: the Schmitt banking company in Rome and Giovanni Donn & Cie in Turin (which paid 60,000 lire in 1901).

In 1902, Miliani came into contact with Ruggero Dollfus (1876-1948), manager of Vonwiller & C., a Milanese bank founded in 1819 by Swiss financiers who had participated in the foundation of Credito Italiano (1894), a nominally Italian bank but with many international managers. Vonwiller became the owner of the paper company in Romagnano Sesia, a very large company that was equipped with modern plants at that

time. Dollfus and Miliani launched a limited partnership project on 22 December 1902: the Pietro Miliani Paper Mills. The Sas is decided upon with a duration of 10 years and a capital of 2.6 million lire in 104 quotas of 25,000 lire each. The remaining quotas are subscribed by other financiers. The early years of the 20th century appeared difficult for the company structure, although Miliani acquired the competitor Fornari as we have seen. In February 1905, Vonwiller considered its exposure, which had reached a total of 800,000 lire, to be excessive and began looking for other banking partners.

At the end of 1904 some shares in the limited partnership changed hands with the exit of some of the old partners, in particular the Milanese industrialists Richard and Lepetit, and the entry of new ones through the intercession of Dollfus. Miliani came into contact with Giuseppe Toeplitz (Józef Leopold Toeplitz, 1866-1938), co-director of the head office of the Banca Commerciale Italiana (founded in 1896) and one of the protagonists of Italian banking history, although Polish by birth. To these, Miliani presented the general plan to concentrate production in two paper mills, Centrale Miliani and Fornari; it also provided for the renovation of Nocera Umbra and the installation of a endless machine with a total investment of 800,000 lire. Lastly, it was decided to decommission four minor paper mills (2 Miliani and 2 Fornari). Also included in the project is the construction of the electrical plant at San Vittore, at an estimated cost of ITL 475,000. After Toeplitz's yes, the final decision fell to the banker Otto Joel (1856-1916), director of Comit.¹⁶⁴ On 11 and 12 March 1906, after a meeting in Milan, it was decided to set

¹⁶⁴ Toeplitz requires a thorough expertise, known as the *Perizia Soldini-Augier-Jona* (1902).

up a company worth 5 million lire. Comit retained 48 per cent, Miliani 30.5 per cent and Vonwiller 17.5 per cent. Joel becomes chairman of the board of directors and Miliani is managing director and general manager. He is now a minority shareholder even though no one has 51%.

The San Vittore plant went into operation in 1910, enabling the company to overcome the energy constraints that compromised its development. The Nocera plant was decommissioned, while the Pioraco plant was purchased. In 1928 the British company Portal acquired the Comit share. The Fabriano entrepreneur, who became a senator in 1931, bought back the majority share with a consortium led by the Ministry of the Treasury, also in the interest of Mussolini.

Pioraco, Camerino, San Severino, Fermignano

Another area where many paper mills flourished from the 15th-16th centuries is that of Pioraco and Camerino, in the Umbria-Marches Apennines. In the 50 years following 1450, there are at least 21 names or activities of paper mills that were transmitted directly.¹⁶⁵ The merchants of Camerino sold throughout Europe, in the Kingdom of Naples, but also in Venice and Catalonia, in the Levant and in Northern Europe via the Tyrol. The activity of paper production and skilful exploitation of the land continued up to the turn of the 20th

¹⁶⁵ Castagnari Gianfranco, *L'arte della carta in area fabrianese tra basso medioevo ed età moderna. Sviluppo e declino*, in *Natura ed economia. Paesaggi appenninici e mestieri dell'Italia centrale in Età moderna*, edited by A. Ciuffetti in "Proposte e ricerche", no. 56, 2006, pp. 174-193.

century, although greatly reduced as few of these mills managed to survive the industrialisation phase.

At the beginning of the 17th century, papermaking activity in these areas declined and only recovered at the transition between the 18th and 19th centuries, but on different bases.¹⁶⁶ The Pioraco paper mills did not close but became more marginal. A Napoleonic survey of 1806-1807 lists no more than 10 paper mills in the area: 5 owners are from Pioraco, 1 from Matelica and 1 from Sarnano.¹⁶⁷ The 10 Pioraco paper mills in the early Restoration period with 60 stacks and 4 cylinders (none Dutch) produced 2,262 q. of paper per year and consumed 1 million rags, which is 14.5% of the total consumed in the State. The Esanatoglia paper mill is reported active at the end of the century with 13 workers.¹⁶⁸

In the Fabriano district, the 7 paper mills active in the second half of the 18th century had 120 workers producing an average of 533,000 reams with at least 87/90 workers active in Pioraco alone. The process of decentralisation and ruralisation was accentuated when the leading exponents of the entrepreneurial bourgeoisie, by now part of the patriciate, became *rentiers* in accordance with the canons of the process

¹⁶⁶ Ciuffetti Augusto, *Carta e stracci. Protoindustria e mercati nello Stato Pontificio tra Sette e Ottocento*, Il Mulino, Bologna 2013, pp. 11-27. The clarifications introduced by Ciuffetti in these pages are particularly important.

¹⁶⁷ The same report mentions an inactive paper mill in Esanatoglia where six workers worked in two separate mills. The owner Buscalferri rented the two premises to a person who lacked sufficient business to continue the work.

¹⁶⁸ MAIC, Dir. Stat, *Annali di Statistica. Statistica industriale*, fasc. XLII, Notizie sulle condizioni industriali della Provincia di Macerata, Tip. Bertero, Roma 1892, p. 50.

of aristocratisation also taking place in the papal marquis. The current documentation does not allow us to date the moment of detachment of the local aristocracy from the paper mills. Napoleonic protectionism seems to have had a negative impact on the area from 1795 onwards.¹⁶⁹ The new tax on manufactures from the Kingdom of Italy in transit to the Papal States was destabilising. At the time of the Restoration, the seriousness of the situation of Pioraco's paper mills became clear, with 26 'inoperative devices' (i.e. inoperative stacks) out of the 60 available to the town's mills at that date.¹⁷⁰ This is a serious crisis, with a clear cause: a shortage of raw material. There is an interesting statistic on the state of the paper industry in the Papal States, carried out in 1816, which shows the number of paper mills and their concentration before the introduction of modern machinery, which would profoundly change the landscape. I reproduce it as it is found in a contribution by Emanuela di Stefano in Castagnari's book.¹⁷¹ The numbers are given grouped by delegation, without distinguishing between localities, because this is not the interest of this general study.

¹⁶⁹ Emanuela di Stefano, *Da Camerino a Fabriano. Imprenditori, produzione e mercato della carta priorachese fra XVII e XIX secolo: il declino e la svolta*, in Castagnari Gianfranco, *L'industria della carta nelle Marche e nell'Umbria. Imprenditori lavoro e produzione mercati. Secolo XVIII-XX*, Pia Università dei Cartai, Fabriano 2010, pp. 105-124. Ibid, p. 114.

¹⁷⁰ Di Stefano Emanuela, *Da Camerino a Fabriano*, in Giancarlo Castagnari, *op. cit.*, tab. 3, p. 115.

¹⁷¹ Di Stefano Emanuela, *ibidem* p. 116.

Legation of Bologna, 10 paper mills (104 stacks, 5 cylinders).

Macerata Delegation (Fabriano, San Severino, Morico), 9 paper mills, (70 stacks, 5 cylinders).

Delegation of Camerino (Pioraco), 10 paper mills (60 stacks, 4 cylinders).

Subiaco Delegation, 1 paper mill (14 stacks, 1 cylinder).

Delegation of Ascoli, 1 paper mill (9 stacks, or cylinders).

Perugia Delegation (Gualdo, Foligno, Nocera), paper mills 9 (77 stacks, 7 cylinders).

Forlì Delegation, 1 paper mill (10 stacks, 5 cylinders).

Viterbo Delegation, 5 paper mills (10 stacks, 0 cylinders).

Ravenna Delegation, 1 paper mill (20 stacks, 2 cylinders).

Ancona Delegation (Chiaravalle, Jesi), 2 paper mills (14 stacks, 2 cylinders).

Delegation of Urbino and Pesaro (Fermignano, Acquasanta, Territory of Fossombrone), 2 paper mills (stacks 12, cylinders 4).

Rome and district, 3 paper mills (pile 16, cylinder 2).

As can be seen, the number of Dutch cylinders was still small compared to the number of paper mills in the Papal States (64). Fabriano and Pioraco had the largest concentration of paper mills, followed by Foligno (Foligno città in particular had 15 mills) and then Bologna. However, the same document shows that of the 60 mills in Pioraco, 26 are inactive: in fact those mills were not working.

Indeed, in those years, Pioraco went through a difficult transitional phase in which the absence of the merchants of Camerino, among other things, had an impact. Another survey of 1824, the *Statistica industriale e manifatturiera*, indicates

that the shortage of rags was over.¹⁷² The rags that used to be purchased mainly from the Kingdom of Naples are missing. This is compounded by serious problems with the road network.¹⁷³ The situation shows some changes about eight years later, for example in the Pioraco area:

Oradei paper mill, workers (30), 280 bales of paper
Vittori paper mill, (31), 320 bales of paper
Mataloni Paper Mill, (31), 340 bales of paper
Mariani M. paper mill ,(15), 200 bales of paper
Casini Paper Mill A., (15), 140 bales of paper
Giusti V., (11), 80 bales of paper
Rosati A. M., (11), 80 bales of paper
Cananei A., (14), 160 bales of paper
Mannucci F. M., (15), 160 bales of paper
Valentini G., (14), 240 bales of paper.¹⁷⁴

We do not have the productions of 1816 but they must not have been very different from those of 1824. We note that there are 10 active producers, twice as many as eight years earlier when there were five producers in the Camerino delegation at Pioraco. So, the situation had simply become clearer: the 10 paper mills officially present in 1816 were, in fact, inactive in that year. The production and presence of mills

¹⁷² ASR, *Miscellanea statistica*, envelope 214, file 524.

¹⁷³ Castagnari Giancarlo, *L'industria della carta nella Marche e nell'Umbria*, cit., p. 118.

¹⁷⁴ Archivio di Stato di Roma, *Miscellanea statistica*, busta 24, 'Statistica industriale e manifatturiera', III Quadro parziale del regno vegetale. Delegation of Camerino, Municipality of Pioraco, file 524. The picture, here reported in a simplified way and without taking into account the quantities of the different papers (papal, royal, mezzanine, to be written), has been reported in a more complete form in Castagnari, *op. cit.*, p. 119.

is much lower than in the previous century and only slightly higher than in 1806 and double the 5 in 1806. There are 121 workers with 66 minors compared to 87 in 1806. A small recovery, then. A total of 2000 bales of all types of paper were produced (1,000 bales of 24 reams each of writing paper; large or royal paper with 530 bales of 8 reams; 120 bales of papal paper of 3 reams each destined for the papal court). The reams produced annually exceeded one million. In 1824, 1 million pounds of rags, 49,000 pounds of flesh and 4,030 of alum were used.

The 1824 enquiry also reports the presence of a paper mill in the Camerino Delegation, the **Morico Paper Mill**, established in 1784, already reported in the 1816 *Statistica*. It employed 3 workers and 3 minors producing writing paper.¹⁷⁵ It must therefore be noted that the ancient and prosperous district of Pioraco had entered a crisis, like the Toscolano and Amalfi districts. This will make room for new initiatives and new production districts such as those in the Liri Valley where, in fact, the full activity of other districts would have left no room. The Fermignano and Sanseverino Marche area will remain lively for a few years at least.

Sanseverino Marche and Fermignano

With good approximation it can now be said that the paper mills of Sanseverino Marche are the oldest in Italy after those of Fabriano, and that they were founded before those in the Lucca area. There is a fairly robust historiographic production

¹⁷⁵ Di Stefano, in Castagnari, *op. cit.*, v. 121.

on this area.¹⁷⁶ The paper industry flourished and declined several times. In Borgo Conce (a village where the abundance of water had allowed the development of numerous activities) there was the **Servanzi-Tognacci** Paper Mill, a mill owned by the nobleman Gaspare Servanzi, who in 1781 granted it in perpetual lease (*enfiteusi*) to Severino Tognacci di Sanseverino and his male heirs. This paper mill, like the other one in Sanseverino, was located in a suburban district of the town. When Servanzi died, his heirs, in agreement with Tognacci's sons, drew up an inventory of assets and tools that also contained a brief description of the paper mill.¹⁷⁷ In 1836 we learn that the Tognacci brothers, Don Gaspare (63) and Francesco (60), Severino's sons, were both childless, one a priest and the other unmarried, and therefore donated their share to their nephew Lucio who was about to marry a Teresa Mercurelli of Fabriano. There were 10 to 15 employees, according to statistics from 1805-1808, 1817.¹⁷⁸ The paper mill was sold in 1871 and continued for some time until the end of the century.

¹⁷⁶ For the writing of this section I use mainly Raoul Paciaroni, *L'ultimo secolo di attività delle cartiere di Sanseverino Marche*, in Giancarlo Castagnari, cur., *L'industria della carta nelle Marche e nell'Umbria*, cit., Pia Università dei Cartai Fabriano 2010. Ibid pp. 125-150. And Ciuffetti's more recent work. However, I have not failed to consult earlier works written by Paciaroni himself, such as *Le cartiere di Sanseverino Marche, sec. XV-XX*, "Proposte e Ricerche", no. 23 (1989), pp. 209-216; Id., *La fabbricazione della carta a Sanseverino Marche dal Medioevo al Novecento*, in Giancarlo Castagnari, cr. *Carte e cartiere*.

¹⁷⁷ Paciaroni, *L'ultimo secolo di attività delle cartiere di Sanseverino Marche*, in Castagnari, *op. cit.*, p. 128.

¹⁷⁸ Ciuffetti Augusto, *Carta e stracci. Protoindustria e mercati nello Stato Pontificio tra Sette e Ottocento*, Il Mulino, Bologna 2014, p. 37.

Another paper mill in the same town was the **Caccialupi-Tognacci-Sordini paper mill**, rented to the Sordini brothers, members of a family of papermakers from Foligno who had moved to Fabriano in 1797. Ten years later, the Tognacci and Sordini joined forces to create the Tognacci-Sordini paper company, which however only lasted from 1807 to 1810. The termination of the company marked the end of the Caccialupi paper mill. The Sordinis had staked everything on their nephew Raffaele who, however, died while still young in 1819, putting an end to any hope of continuation. The Caccialupi paper mill was therefore sold in 1809 to Domenico Natalini who failed to start it up. We know later – but the relevant documentation has been lost – that others managed to take it over and run it for almost fifty years. The history of this mill finally came to an end in 1856. Another paper mill existing in the area at this time was the small **Cassalpalombo paper mill**, in the apostolic delegation of Camerino, which was recorded in the statistics of 1824 with 8 workers.¹⁷⁹

As for the Tognacci family, as mentioned, they left history after the unification of Italy: they resisted for a few years, then closed in 1871 to rent it out. In 1898 it was still operating with 12 workers and the Tofani tenants, who were the ones who finally bought it, then rented it to Luigi Mataloni in 1899. However, the paper mill closed in 1902, when the Mataloni family went bankrupt.

Leaving aside the fate of the Sanseverino paper mills, it can be said that the paper industry, which had been among the most renowned and important activities of the Papal States for centuries, fell into decline immediately after the Unification,

¹⁷⁹ ASR, *Miscellanea Statistica*, b. 24. Schedules for the Camerino Delegation, 1824.

when paper was purchased mainly by the large paper mills of Northern Italy.

The **paper mill of Fermignano**, in the Pesaro Apennines – first belonging to the Duchy of Urbino and then to the Papal State – was the most important industry in that town for many centuries. This activity, vital for the small town, which used the Metauro river's water power, is known as far back as 1411, when the Dukes of Montefeltro gave the management of the mill to three papermakers from Fabriano. In 1507, Duke Guidobaldo di Montefeltro, son of Federico, donated the paper mill to the Cappella Musicale del SS. Sacramento of Urbino; the donation was to guarantee a secure and conspicuous income for the sustenance of this institution, whose aim was the study and development of sacred music. The paper mill was granted the *cenceria*, i.e. the contract to collect rags throughout the Duchy, and also the exclusive right to sell the finished product within the same borders. These privileges would be preserved even after 1632, when this State became part of the Papal States.¹⁸⁰

Owned first by the Dukes, then by the Musical Chapel, the paper mill was never managed directly, but always rented out. If at first the master papermakers were not local, later the papermaking tradition was consolidated with masters and workers almost all from Fermignano. The tenant of the paper mill was obliged to pay an annual rent and had to guarantee continuous and constant paper production in terms of quality

¹⁸⁰ Locchi Oreste Tarquinio, *La provincia di Pesaro e Urbino*, Edizioni Latina Gens, Pesaro 1934, p. 618; Mariani 1994, pp. 213-230, Gianni Volpe, *Le cartiere della via Flaminia da Fano a Sigillo*, s.l. s.d. (but 1994), pp. 167-168; Loreno Sguanci, *Memoria e Progetto*, Cassa di Risparmio di Pesaro, Fermignano 1993, pp. 41-45.

and quantity, except during periods of war or water shortage. Equipped with the normal machines with "stacks" and "hammers", it saw the installation of its first "Dutch" machine (the only real innovation in papermaking technology after the 14th century) in 1791, among the first in the Papal State. At that time the property was owned by the Confraternity of the Holy Sacrament. The tenant Giambattista Corradi had managed to convince the owners to install the machine.

Later, poor maintenance due to indirect management and the failure to renew the machinery led the mill into an inexorable crisis that became definitive in 1870, when the mill was sold. In 1915, the factory passed into the hands of the Carotti family, who transformed it into a silk spinning and wool mill. The Confraternity itself owned the Fossombrone Paper Mill, which produced 68 quintals of paper per year, and worked with 4 stacks.¹⁸¹

Pale, Belfiore, Capodacqua (Foligno)

An area of ancient paper mills that died out during the 19th century is north of Foligno, in the narrow and fertile Roggiano valley, adjacent to the Topino valley. Here lies the hamlet of Capodacqua, which had paper mills in the 15th and 16th centuries. The only one that remains active in modern times is the **Capitani Paper Mill** of the brothers Crispoldo and Giovanni Antonio Capitani. The mill appears to be active in 1647 and continued its activity throughout the century with various company structures and leases. For example, in 1672 it was leased to a tenant and then again in 1701 and 1725 to

¹⁸¹ Ciuffetti, *op. cit.*, p. 34.

other tenants. In 1789 it was sold to a certain Lorenzo Argenti. At this date its technical endowment consisted of four stacks, two of which were valchiera stacks. Argenti transferred his ownership to brothers Carlo and Luigi Bartocci at the end of the century, and Bartocci later to a certain Francesco Cesari in 1802. In the early 19th century, the Bartocci family carried out various works, probably in agreement with Cesari. The last lease was signed in 1822 by the Bartocci heirs in favour of Giovan Battista Martana Anteli and Angelo Raccogli of Belfiore. The plants were probably put back into operation, but in the *Statistica industriale e manifatturiera* of 1824, the Bartocci paper mill in Capodacqua was in use, we do not know under what title, by a new subject. This person was called Raffaele Coccetti and was the namesake of a famous painter. The mill continued to appear as a Bartocci property until 1859, perhaps remaining inactive after 1824.

In this case, there was a lack of a person with substantial finances, or a lack of business development that would be sufficient for the renovation of the old building to at least install Dutch cylinders. In these backward conditions, deprived of the tools and machinery that were earning other paper mills considerable productivity, the mill was destined to close. On the whole, the Capodacqua district produced 2,007 quintals of paper with a consumption of rags that was about 13% of that of the State, but after the Unification, quantities decreased drastically. Between 1817 and 1824, in fact, three mills were closed, thus reducing the total from 13 to 10.¹⁸² The decrease in the activity of all these papermaking poles, from Sanseverino Marche to Capodacqua, Fermignano and Pioraco,

¹⁸² Ciuffetti Augusto, *op. cit.*, p. 34. In the hamlet of Capodacqua, paper production had been started by the monks of Sassovivo Abbey.

with the sole exception of Fabriano, denounces a general phenomenon of decline in the paper industry in the Papal State even before the Unification of Italy and then, more seriously, afterwards.

The small paper industry cluster of Belfiore and Pale, where the majority of people work in the art of papermaking, seems to resist. In Belfiore, 134 workers are employed in the 13 mills surveyed in 1824.¹⁸³ The area between Pale and Capodacqua is full of factories with various activities (copper foundries, presses, etc.) thanks to the presence of water from the Menotre stream. In Pale, Dutch-style cylinders were installed in 1810 in the factories of Pietro Innamorati and Giovanni Maria Messini.¹⁸⁴

The case of the Raccogli family is interesting. They were *faberlignarii*, builders of wooden mechanisms ranging from simple artefacts such as tables, chairs and benches to artistic church objects, furnishings for noble palaces and even wooden structures for hydraulic mills. The known progenitor was Bernardino di Pietro, who had seven children, a girl and six boys: three carpenters and three papermakers. They possessed very valuable craftsmanship skills that were lost, probably completely, during the first half of the 20th century and can be reconstructed today with some effort, but not entirely.

¹⁸³ ASR, *Miscellanea statistica*, b. 25. Brochures to the delegation of Perugia 1824.

¹⁸⁴ Bettoni Fabio, *Le cartiere folignati dalla manifattura all'industria*, in *Carta, cartiere, cartai tra Umbria e Marche*, op. cit., pp. 51-53; idem, *Le cartiere di Foligno tra decadenza e recupero*, in *Le cartiere della Valle del Menotre. Un itinerario di archeologia industriale a Pale (Foligno)*, cur. G. Covino, Electa, Foligno 2008, pp. 13-33.

As far as the area's paper mills are concerned, it can be seen that the late acquisition of technologies now necessary to maintain competitiveness caused an irreversible technological gap that ended up wiping out the recovery between the 18th and 19th centuries. This was also the case in Liguria, particularly in the Voltri district, and happened in Salò, in northern Garda and, partially, in Trento.

As far as the Papal States are concerned, the failure to adapt, due to the paper mills' lack of capital, is evident. The acquisition of the Dutch cylinder, a moderately expensive investment but one that would have been worthwhile at least by the mid-18th century, was belated. The operators of these paper mills were content with their modest turnover and were reluctant to invest their earnings in a new machine. Unfortunately, these delays, this settling into the past would later wipe out these industries. The pattern of delay, which is often also a cultural delay, a lack of updating that could be drawn from travel, magazines, consultancy, follows the Genoese situation. The lack of vitality of the domestic market and the lack of research into alternative materials to rags also contributed. Moreover, the real alternative at the end of the 19th century, wood pulp, required considerable machinery and investment. This is why most of these paper mills were closed in the latter part of the 19th century.

The economic officer of the Apostolic Chamber, Angelo Galli, notes that 8 million pounds of rags were collected in the entire Papal States per year around 1835-1840. Of these, 5 million were used in the 70 paper mills of the State and the rest exported, mainly to the Liri Valley. The finest papers were imported because there were no longer enough of them produced in the State, however, as white rags, the most

suitable for a particularly white paper, were exported.¹⁸⁵ Other paper mills can be found in Nocera Umbra in the 19th century (4 paper mills, 1 inactive), the largest one belongs to Count Angelo Oliviere and has a Dutch-style cylinder. There is also a small **paper mill in Gualdo Tadino** (recorded in the 1817 *Statistica*) owned by a local aristocrat, which produces 181 quintals of paper a year.

In Romagna, two paper mills use hemp rags, which are very suitable for producing quality paper: they are the **Giuseppe Bertoni Paper Mill** (792 quintals of paper per year) in Faenza,¹⁸⁶ and the **Bagni Paper Mill of Cusercoli** (Forlì) west of Cesena, owned by Marquis Ferdinando Guido Bagni, which produced 140 quintals of paper at the time.¹⁸⁷ The property had always been in the hands of the Bagni counts, the foundation dates back to 1637 and was closed in 1904, by then reduced to a ruin.

Latium and Marche Apennines

In the Apennines of Latium, the aforementioned *Statistica* of 1817 mentions the paper mill that belonged to the monastery of Subiaco, the **Paper Mill of Subiaco**, which was equipped with 14 stacks and 1 cylinder and produced 361 quintals of paper a year. The first paper mill went into operation in 1587. In the 18th century, the building that housed the paper mill was

¹⁸⁵ Galli Angelo, *Cenni economico-statistici sullo Stato Pontificio con appendice*, Tipografia Camerale, Rome 1840, pp. 272-273.

¹⁸⁶ ASR, *Camerlengato*, Part I (1816-1854) b. 5 f. 4, *Lettera inviata al cardinale camerlengo dal delegato apostolico di Ravenna*, 26 April 1817. Quoted in Ciuffetti, *op. cit.*, p. 36.

¹⁸⁷ ASR, *Camerale III, Comuni* b. 996, *Fabriano, f. 3 Piano arrivato da Fabriano, s.d.*, cited in Ciuffetti, *op. cit.*, p. 36.

three storeys high, had 7 water wheels and 10 stacks. Other activities sprung up around the paper mill, such as tanneries, wool mills, ironworks, textile factories and others, thanks to the abundance of the Aniene and a derivation canal that multiplied its exploitation.¹⁸⁸ The paper mill fed the presses of the Subiaco printing works, which was of considerable historical importance. Conrad Sweynheym (who died in Rome after 1477) and Arnold Pannartz (who died around 1476) were called to Subiaco from Mainz, probably at the invitation of Nicolò Cusano in 1464, and were received by the Benedictines between 1465 and 1467.¹⁸⁹ Expert typographers, the two set up the first printing house in Italy right in the monastery; they printed the first movable type books in Italian history in Subiaco: the pamphlet *Donatus pro puerulis* by Elio Donato, up to the first real, full-bodied and bound book, Cicero's *De oratore* (1465).

The paper mills of Chiaravalle and Jesi, fed by the Esino river and a natural canal called Canale Pallavicino, are worth mentioning in the Marche Apennines. The Chiaravalle mill is owned by the Apostolic Chamber, was founded in 1808 and

¹⁸⁸ Orlandi Giorgio, *La cartiera di Subiaco, 1587-1987*, Subiaco, Ier 1987.

¹⁸⁹ Ciuffetti Augusto, *L'inizio di una lunga storia: la carta, due tipografi tedeschi e i monaci benedettini di Subiaco*, in "Proposte e ricerche", anno XXXVIII, n. 75 (2015), pp. 151-166. Subiaco was an important centre of book production, A. Modigliani, *Commercio e mercato di libri a stampa tra Subiaco e Roma nel Quattrocento*, in *Subiaco, la culla della stampa*, cit., pp. 155-163; Id., *Prezzo e commercio dei libri a stampa nella Roma del secolo XV*, in *Produzione e commercio della carta e del libro, secc. XIII-XVIII*, S. Cavaciocchi cur., Le Monnier, Firenze 1992, pp. 921-927.

had eight stacks. In 1824 it employed 44 people (10 women).¹⁹⁰

As for the **Jesi paper mill** (6 stacks and 1 cylinder), set up in 1806 by Count Emilio Ripanti, it produced around 450 quintals of paper in the decades up to the first half of the 19th century and was counted by Angelo Galli as one of the best paper mills in the Papal States along with those in Rome, Foligno and Fabriano.¹⁹¹

The 1817 *Statistica* also mentions the **Ascoli Piceno Paper Mill**, founded in 1512, owned by the Camera Apostolica and given in permanent lease (enfiteusi) to the Merli family after 1798. It produced 452 quintals of paper and employed 22 people in 1824.¹⁹² The **Bracciano Paper Mill**, on the other hand, was built about two centuries later, in 1724, by the noble Roman Odescalchi family and was maintained by them for over 170 years when it was taken over by Prince Torlonia in the early 19th century. It had a good output: it produced 1226 quintals of paper per year. It had the right to take up to 12/5 of the exported rags and produced paper that was described as very good. When it ceased to be a paper mill in the year 1845, it was converted into a mill.¹⁹³

Small paper mills in Viterbo and its territory. In Viterbo, 2 mills with a total production of 339 quintals of paper. In

¹⁹⁰ ASR, *Miscellanea Statistica*, b. 26. *Prospetti relativi alla delegazione di Ancona*, 1924.

¹⁹¹ Agostinelli Lancioni Quattrini, *L'acqua e le prime forme industriali di Jesi e della Vallesina*, in *Il patrimonio industriale della Marche*, curr. Agostinelli M. - Quattrini R. - Lancioni N., Creace-Aipai, Narni 201 p. 35; A. Galli, *Cenni economico-statistici dello Stato Pontificio*, p. 272.

¹⁹² ASR. *Miscellanea Statistica* b. 25. *Prospetti relativi alla delegazione di Ascoli*, 1824.

¹⁹³ Felisini Daniela, *Quel capitalista per ricchezza principalissimo. Alessandro Torlonia banchiere*, Rubbettino, Soveria Mannelli 2004, p. 73.

Marta, on Lake Bolsena, the mill with 2 piles produces 102 quintals of wrapping paper. In Lubriano, the mill with 1 pile produces only 57 quintals per year.¹⁹⁴ The Ronciglione paper mill had 6 stacks and 181 quintals of paper production per year according to statistics from 1824. Founded in 1624, owned by the Apostolic Chamber, it was granted in emphyteusis to the family of Bernardino Armarino and then to the Vespignani family (1725). In 1787 it was ceded to Gioacchino Bramini.¹⁹⁵ The second paper mill in Ronciglione was founded in 1661, when Alessandro VI granted Francesco Terzi to set up his own mill. This concession was renewed to his sons in 1676.¹⁹⁶ Subsequently, two other paper mills were founded but were closed due to a lack of rags in the second half of the 18th century.¹⁹⁷ The first two were also closed in 1783 for the same reason.¹⁹⁸ Within forty years, all the town's paper mills were closed, confirming the state of crisis of the paper industry in almost the entire central and central-northern area, in lands that had previously been very active in paper production: the centre of gravity of the activity had moved North (Piedmont, Lombardy and Veneto in the pre-alpine and high plain areas) and central-south (Liri Valley). Other attempts followed, but

¹⁹⁴ ASR. Camerlengato, Part I (1816-1854), b. 5 f. 6. *Notizie sulle cartiere esistenti nella delegazione apostolica di Viterbo*, 3 June 1818.

¹⁹⁵ D'Orazi Francesco Maria, cur., *Stamperie, carte e cartiere nella Ronciglione del XVII e XVIII secolo*, Centro Ricerche e studi, Ronciglione 1996.

¹⁹⁶ ASR, Camerale III, Municipalities, Ronciglione, f. 1, Concession in favour of Giovanni Battista and Stefano Terzi, 24 June 1676.

¹⁹⁷ *Ibid.*, f. 2, *Memoria di Pier Luigi Mariani e Clemente Mordachini*, s.d.

¹⁹⁸ *Ibid.*, f. 7, *Declaration of some citizens of Ronciglione*, 20 September 1783.

to no avail: a certain Luigi Chiappi had rented one of the paper mills but closed it in 1824, turning it into an ironworks.¹⁹⁹

Other mills are active in southern Lazio, in Tivoli, Grottaferrata, Guarcino and the Anitrella mill, founded by Count Francesco Lucernari in Monte San Giovanni campano. The **Guarcino Paper Mill** was built in the 18th century.²⁰⁰ The abundance of water from the Cosa river made the development of other activities that needed running water possible, such as tanneries and wool mills. There were 10 paper mills at the end of the 19th century, but there were also workshops specialising in straw paper with a production of less than 100 quintals per year.²⁰¹ In Tivoli in the mid-18th century, there were 4 paper mills, two of which were still in activity and a fifth in San Vittorino.²⁰² After 1815, three of these paper mills were back in operation, one being that of Count Lucernari.

There are two **paper mills in Grottaferrata** housed in a single building, founded in the mid-18th century or shortly before. These mills were given the privilege of hoarding rags throughout the province of Latium, but this measure does not seem to have been successful as the paper mills were closed.²⁰³

¹⁹⁹ *Ibid.*, f. 13, *Copia semplice dell'istrumento di cessione*, s.d. (1836).

²⁰⁰ ASR, Camerale II, Comuni b. 639. Ronciglione, g. 9. *Prospetto delle Cartiere laziali e dei porti d'imbarco dello straccio*, sd.

²⁰¹ Buonora Paolo, *Le acque, in Viabilità e territorio nel Lazio meridionale. Persistenze e mutamenti*, Don Guanella, Frosinone 1992, pp. 115-211.

²⁰² ASR, Camerale II, Comuni b. 639. Ronciglione, g. 9. *Prospetto delle Cartiere laziali e dei porti d'imbarco dello straccio*. sd.

²⁰³ Balzani Alberto, *Alcuni aspetti dell'industria della carta nello Stato pontificio tra la fine del '700 e la prima metà dell'800*, [s.l. : s.n., 1973?], pp. 168-177; ASR, Camerale II, Cartiere (1775-1886), b. 1, *Supplica presentata dall'ospizio apostolico di San Michele*, s.d.

The paper mills located in Rome and Bologna enjoyed many advantages, not least because of the abundant availability of rags and the proximity of the paper sales centres. In the Emilian city, according to statistics from 1817, there are 10 paper mills working with traditional methods (i.e. without Dutch cylinders) for 104 stacks. Overall, there is an annual production of 3592 quintals and a rag consumption of 23% of the state.²⁰⁴ A statistic from 8 years later, from 1824, shows 8 paper mills in the city and 7 in the countryside.²⁰⁵

A paper mill installed at a mill, **Della Lama Paper Mill**, probably founded in the 17th century, continued its activity in the 18th century until it was purchased by the family of Giuseppe Maria Lamma who ran it until around 1885 and then closed it.²⁰⁶ In short, Bologna is a small paper district compared to other districts and production is small compared to other places, yet it is the largest in the Papal States with 176 employees. However, this number is small compared to the thousands of people working in the textile industry in the city (around 8,000).²⁰⁷ Bologna is rich in water and after the Unification 15 vats work inside the walls, while 11 are outside.²⁰⁸

In Modena stood the **San Cesario paper mill**. It had been founded in 1789 by Myallonier-Mascherini and managed by their heirs for many decades. It was a medium-sized paper

²⁰⁴ Statistica dello Stato Pontificio, 1817.

²⁰⁵ ASR, *Miscellanea statistica*, b. 24. *Prospetti relativi alla legazione di Bologna*, 1824.

²⁰⁶ Ciuffetti, *op. cit.*, p. 46. Who cites MAIC, DirStat, *Annals of Statistics. Statistica industriale*, f. V. *Notizie sulle condizioni industriali della provincia di Bologna*, 1824.

²⁰⁷ Ciuffetti, *op. cit.*, p. 46 with bibliography.

²⁰⁸ Dal Pane Luigi, *Economia e società a Bologna nell'età del Risorgimento*, Zanichelli, Bologna 1969, p. 233.

mill, located on the Panaro river, with a few dozen workers. Its heyday came at the beginning of the 20th century when it was purchased by the Monza entrepreneur Giuseppe Vismara who renovated it, bringing it up to 300 workers in 1933. Its history then unfolded in the 20th century, a period that is outside the limits of this book, and it still exists.

There are several factories in Rome, at least 14. The city is well supplied with water and after the Middle Ages factories of all kinds worked within its walls. In 1750, the **San Pietro Paper Mill in Montorio** was started, built by Giovanni Battista Sampieri in the Monte Aureo area, which was in serious decline in 1824 and closed in the following years.²⁰⁹

Then the **Stabilimento di San Sisto Vecchio** in Rome was opened, the largest factory in the state, which lasted from 1817 to 1840. It was very different from the small mills of San Pietro in Montorio and San Giorgio in Velabro, which produced paper of poor quality, for wrapping, with few means and ancient procedures. The activity became residual during the 19th century, overcome by competition from the peninsula and the territory. The ancient Papal State also included the Anitrella Paper Mill, geographically, however, closer to the Terra del Lavoro and the Liri Valley district.

Maglio paper mill in Pontecchio

Count Antonio Marescalchi (1829-1920) bought the **Cartiera del Maglio paper mill** in Pontecchio (in Polesine) around 1870, which had previously belonged to Giuseppe Marconi, father of Guglielmo Marconi. Since 1873 the mill

²⁰⁹ Ciuffetti, *op. cit.*, p. 48, who quotes ASR, *Commercio e industria*, b. 7, f. 11. *Copia del Chirografo di Benedetto XV del 5 aprile 1752.*

has been producing paper from hemp waste and rags. Marescalchi, based on a project by engineer Alfredo Eldmann, rebuilt the factory from the foundations, equipped it with modern machinery and considerably increased production, also in terms of quality. At the end of the century, a new owner, Cesare Ruggeri, destined the plant to manufacture tissue paper for cigarettes.

In 1919 the Pontecchio paper mill was merged with the Vignola paper mill (west of Bologna) to form the Cartiere del Maglio e di Brodano company. The main architect of the company's great development will be Ettore Modiano. *Saul D. Modiano* cigarette papers will be among the most sought-after in Europe between the 1920s and the 1950s. The historic Maglio factory will close in 2008, after 135 years of activity.

Chapter 10

Southern Italy: South of Rome

Terra di Lavoro

In a pioneering study in 2002, Michela Cigola catalogued the 19 factories whose buildings still existed in the 20th century in the district of Terra di Lavoro, including the Anitrella paper mill, which politically until 1861 was part of the Papal State, while geographically and by district it belonged to Terra di Lavoro, a province, until 1861, of the Kingdom of the Two Sicilies.

The S. Elia di Fiumerapido Paper Mill

Carnello paper mill (originally two)

St. Elias Paper Mill

Bartolomucci Paper Mill (Picinisco)

Anitrella Paper Mill (Monte S. Giovanni Campano)

Sora Paper Mill (Isola del Liri)

Fibreno Paper Mill (Isola)

Courrier Paper Mill (Island)

Pelagalli Paper Mill (Aquino)

Visocchi Paper Mill (Atina)

Boimond Paper Mill (Island)

Sorvillo Paper Mill (Isola)

Viscogliosi Paper Mill (Isola)

Costantini Paper Mill (Sora)

Eugenio Courrier paper mill (Sora)

Cartiere Meridionali (Island)

Cartiere Tersigni (Fontana Liri)²¹⁰

In the ancient administrative district called Terra di Lavoro (Terra Laboris, as the Normans designated the territory between Naples and Sora),²¹¹ which today falls partly under the Region of Lazio and partly under the Region of Campania, a wool industrial district was formed from the 15th century but with more certain traces from the 16th century. The oldest and most certain settlement of a paper mill is the **Carnello paper mill**, built in the early 15th century on the site of an ancient gualchiera.²¹² In a document dated 14 July 1519, Evangelista da Carrara and Gaspare de' Marescalchi granted Ottaviano Petrucci da Fossombrone to erect a paper mill in that locality

²¹⁰ Cigola Michela, *Le cartiere storiche del basso Lazio*, Francesco Ciolfi, Cassino 2002.

²¹¹ But an older etymology would trace Terra Laboris back to terra Libuaria, indicating a vast territory near the Principality of Capua. This name, first relegated to the Giustizierato di Capua, would later spread to include lands far from the initial territory. The circumscription Terra di Lavoro, created by Ruggero II, indicated almost the whole of Campania. This circumscription remained stable until the Napoleonic reforms. Isola di Sora was an important industrial centre, especially with its wool mills and gualchiere. The capital of the territory was S. Maria di Capua and was part of the III District of the Province and District of Sora from 8 December 1806. In January 1897, the Sora District included: Sora, Brocco, Pescosolido, Isola and Castelluccio. By decree of 4 May 1818, Joachim Murat moved the capital of the province to Capua and added the municipality of Campoli to the district of Sora. At the end of the French Decade, the first Bourbon reforms (law of 1 May 1816) placed Isola in the Terra di Lavoro with Capua as its capital.

²¹² I refer in particular to Franco Mariani with the collaboration of Paolo Mazzantini, *Le vicende della cartiera di Carnello a Sora nel XVI secolo*, Centro studi sorani Vincenzo Patriarca, Sora 1996. Carlo Della Valle, *L'industria della carta nel Lazio meridionale*, 'Bollettino della Società Geografica Italiana', nn. 9-10, Roma 1955, p. 8 and Achille Lauri, *Sora, Isola del Liri e dintorni*, Sora 1914, p. 125.

on the banks of the Fibreno river. The land is ceded with all the appurtenances and the use of water with the only obligation to build a paper mill there. Other adjoining land was ceded by relatives of the two notaries with the same clauses.²¹³ The paper mill was actually built, as attested by a document from 1540, where it appears to belong to a Reverend Matteo Celli.²¹⁴

In a subsequent deed dated 28 July 1519, William de Croy, lord of Chièvres, granted the use of the waters in a public ceremony.²¹⁵ In 1535, Petrucci sold the paper mill to Bonaventura di Urbino, equipped with 4 stacks, 2 vats, a wheel (for raising water and driving the pestles) press and press. The paper mill would change hands several more times, and was still in existence, albeit in a state of semi-abandonment, when the area underwent major investment in the first decades of the 19th century. There, in 1824, Lorenzo Zino bought the so-called Isola di Carnello and in 1826 a property across the river in the Isola del Liri territory. Where there used to be 12 gualchiere (wool mills) driven by 9 canals derived from the Fibreno, an imposing wool mill was built and in the 1840s a paper mill.

The Liri Valley had plenty of labour and excellent orographical and hydrographical characteristics, represented above all by the abundance and purity of the water of the Liri and Fibreno rivers, as well as a series of optimal economic, industrial and political conditions. Over the course of two centuries and for much of the 20th century, large paper mills were concentrated here, which, especially in the 19th century, became models of the national paper industry before the paper

²¹³ *Ibid*, pp. 8-9.

²¹⁴ *Ibid*, p. 9.

²¹⁵ The document is reproduced in Franco Mariani's publication in Appendix II, pp. 9-30.

mills of the North emerged in the second half of the century. Amongst these realities, the Manifatture del Fibreno, the Roessinger-Boimond mill, which arose a short distance away, and the Carnello paper mills, between Isola Liri and Sora, stand out for their size and importance, as well as smaller realities such as Viscogliosi, Mancini, Piccardo and others. Together with the Lombardy, Piedmont, Trentino, Veneto and Marche paper mills, the Sora paper mills stand out for their size, history, innovativeness and economic importance. The Liri Valley had been covered by a network of small craft activities and mills that employed an average of five or six people since the Renaissance.²¹⁶ One of the conditions that laid the foundations for development was the possibility of using water removed from feudal control, when, at the proposal of Canon Giacinto Pistilli, King Ferdinand I was asked to exchange the Duchy of Sora with the Boncompagni princes to allow industrialists to use the water. Later, during the French Decade, many French entrepreneurs arrived, taking advantage of the concessions granted: families or individuals, such as the Lefèvre, Courier, Béranger, Boimond, Bourdiat, Montgolfier, Firmin and Didot. Others would come later. All of these were the first to establish factories, often new ones, in the valley.

The largest paper mill was founded in 1808 by Antoine Béranger and later by Charles Lefèvre, who in 1827 began to install a endless machine manufactured by Bryan Donkin that went into operation in 1828, the first in Italy. This machine and, in general, the organisation of the Manifatture del Fibreno, would make the large factory famous throughout Italy

²¹⁶ *Ibid.*

for the production of the largest sheets of paper. It was with the machine installed by Lefèbvre in 1828 that the history of modern paper production in Italy began.²¹⁷ Following the example of Lefèbvre's paper mill, several others sprang up in a limited area. In the 19th century, the Liri Valley became the most industrialised in the Bourbon Kingdom, an enclave within areas with an agricultural vocation. The economic conditions of the workers became more akin to those of modern labourers, industrialists prospered and the population benefited from the induced employment of artisans, master papermakers, technicians, machine shops and rag pickers. All this contributed to the region's economy. In the same area there were also wool mills (and often the owners were the same), especially in nearby Arpino.

It should be remembered that before unification, two thirds of the paper used in the entire Kingdom of the Two Sicilies came from the Liri Valley. The first **Petrucci paper mill**, set up by Osvaldo Petrucci in Sora in 1519 along the Fibreno in the locality of Carnello, was followed by others, smaller ones, distributed along the banks of the Fibreno, the Melfa and the Rapido. In chronological order, after that of Béranger-Lefèbvre, the oldest paper mills in Isola del Liri were: the **Paper Mill of Pietro Coste di Lione**, already a partner of Béranger in the S. Maria Forme paper mill. Maria delle Forme, built in 1821 in the locality of Nibbio (later the **Viscogliosi paper mill**); the **Courrier-Mancini paper mill**, owned by Giuseppe Courier, built in 1832; the **Liri Paper Mill** of Natale Sorvillo and associates (with very wealthy partners such as the Swiss Meuricoffre and the wool industrialists

²¹⁷ A much smaller endless machine of a less refined model had been installed in 1807 in Borgomanero.

Ciccodicola, among others), set up in 1844 in the locality later known as Borgonuovo, and finally that of Giuseppe Sarra, set up in 1850 in Vicolo della Mola, near the ducal castle, following the transformation of a pre-existing mechanical workshop that produced paper mill machinery.

Later on, the **Roessinger paper mill** in Vadurso (later the Boimond paper mill) was established; the **Coccoli paper mill** in Valcatoio (later the Cartonificio Bottaro), both of which were created by converting existing wool mills; and the Giovanbattista and Angelo Mancini paper mill in Trito (now the P. Mancini paper mill).²¹⁸

In the first forty years of the century, Isola di Sora had fully acquired the characteristics of a factory town: from being a working-class suburb, it was on its way to becoming the most important industrial centre in the area. Around 1845, the area had nine paper mills: the largest was the Manifattura del Fibreno, also the first in Italy, followed in size by the Cartiera del Liri paper mill of Sorvillo & Meuricoffre. A total of around 2,000 people were employed in the village (1/4, by mid-century, in Lefèbvre).

The Lefèbvre Paper Mills (Manifatture del Fibreno)

The large complex of the Manifatture del Fibreno in Isola di Sora (later Isola del Liri) is of considerable historical importance both because it is the first modern plant of the 19th century and because of the developments that the industrialist Charles Lefèbvre gave it. Antoine Béranger (c. 1748-1823), a

²¹⁸ This was followed, in the 20th century, by the Costantini paper mill (1927) between Chiastra and Cortina, along the road to Castelliri, and the Società Cartoni Liri factory (1958) in the Manera district.

Frenchman who moved with his wife to Italy,²¹⁹ founded a printing works in Naples and a paper factory on the Island of Sora in 1808, bringing with him partners, one of whom was Joseph-Isidore Lefèbvre.²²⁰ On 9 January 1811, a new company structure was formed with several French partners, including the aforementioned Charles Lefèbvre, Joseph-Isidore's cousin. The facilities that would allow manufacturing to begin in Isola were granted on 6 July 1812.²²¹ Other facilities obtained at that time by Béranger included the free use of the building and the adjoining walled land for 10 years. In addition, he was given the opportunity, at the end of the concession, to buy the premises as well as a loan of 3,000 ducats for the work of adapting the monastery and for the purchase from abroad of the machines needed to start the business.²²² He ordered machinery from England and Holland and brought in skilled workers. By 1813, the factory was in operation and producing excellent tissue paper, a novelty in

²¹⁹ A paper and textile district existed in Elbeuf. Alain Becchia, *La draperie d'Elbeuf, des origines à 1870*, Publications de l'Université de Rouen 2000, p. 150. The Béranger family had several members active in manufacturing activities, such as a Charles Béranger and an Amable Béranger.

²²⁰ AB XIX 4480, vol. I, pp. 23-24.

²²¹ Decree of 6 July 1812, No. 1398, in *Collezioni dei decreti reali del Regno delle Due Sicilie*, sem. II, pp. 12-13. Also State Archives of Caserta, Bourbon Intendancy: Municipal Administrative Courts, bundle 1346, Municipality of Sora 1813, *Carte relative alla costituenda fabbrica di carta del signor Béranger a Isola*.

²²² Dell'Orefice Anna, *L'industria della carta nel Mezzogiorno d'Italia. 1800-1870. Economia e tecnologia*, in "Cahiers Internationaux d'Histoire Economique et Social", Librairie Droz, Geneva 1979, pp. 251-473. Ibid, p. 330.

the Kingdom, as well as high quality drawing paper.²²³ The factory was equipped with modern cylinder machines for macerating and shredding rags, capable of a much higher output than the old hammers. There were four cylinders, they could do the work of 48 hammers and were driven by a large water wheel that also had the function of raising the water that, filtered and purified, was used to make paper. The canal that carried this water was about 2 kilometres long and was built in 1818.²²⁴ The paper mill also had 8 vats, 8 storage boxes, a wash house and a rotting room. In the former convent, the paper mill found convenient space and a rational arrangement of machinery. The factory was equipped with French presses and a winch that increased its power. Smoothing was carried out with a water-powered rolling mill. The factory was also equipped with a well-stocked carpentry workshop to remedy frequent machine breakdowns. There was accommodation for employees and workers housed in the former convent.

In 1817-1818, the factory employed around 150 workers of both sexes to produce 14 types of paper.²²⁵ Even at this time, therefore, it boasted facilities and dimensions that were quite unusual in Italy: the growing bureaucratisation of the Kingdom of Naples created a robust demand for good archival paper that could be produced locally without importing it from France and Central or Northern Italy. Upon Béranger's death, it was his wife who set up a company with Pietro Coste (Pierre Coste)

²²³ ASIN, *Domande e rapporti*, 1809-1818, Naples 7 July 1817, *Antoine Béranger al re*. Jules Millenet, *Coup d'oeil sur l'industrie agricole et manufacturière du royaume de Naples*, Naples 1822, p. 43.

²²⁴ The text was in the Isola del Liri Municipal Library, after which it was apparently lost and is mentioned in various studies in the 1980s.

²²⁵ ASC/IBAIC, b. 2, fasc. 26, Sora, June 1817, Il sottintendente all'intendente.

of Lyon, Auguste Vollier, a Neapolitan citizen, and Charles Lefèbvre as heir to the shares, while Isidore Lefèbvre left. It was called Peter Coste and Companions and had a capital of 25,000 ducats divided into three equal parts.²²⁶ At that point, in 1822, Charles Lefèbvre came into the picture: his and his son's activities would transform the Manifatture del Fibreno into the largest paper industry in Italy for half a century.

The rooms used for the various processes were arranged in a very rational manner, so as to reduce production times; in addition, the factory had a carpentry and turning workshop to support the frequent repairs and maintenance of the machines. The canal, known as 'delle Forme', about 2 km long and built in 1808, used the upper part of its course the bed of an already existing irrigation canal; in the middle part, and for a short stretch, that of the Lake Tremoletto emissary, while the remaining part was the result of excavations and elevations on the steeply sloping ground level. Housing for the director, employees and workers was also built within the complex.²²⁷

The commitment became such that, at one point, he began to stay several times a year on Isola while maintaining his main residence in Naples, so Lefèbvre obtained an elegant flat

²²⁶ Mention is made of this company in two documents in BCIL, Boimond Archive, cont. 1b A 3 (1927-1928), *Fibreno: canale delle Forme*, and in archive container 13 b, 22 AA (2/1876 to 1/1877) *Decisione del consiglio di stato sul conflitto di attribuzione nella causa Belmonte-Lefèbvre*; there are two other copies of the document in CCIL. Boimond Archive, container 13 b. 4 AA and container 14, b. 3 DD. The document is dated 7 August 1822, *Copia autentica contemporanea del rogito per atti Notar Emanuele Capito di Napoli con cui Carlo Lefèbvre acquista dallo Stato il convento di S. Maria delle Forme di Sora già ridotto a cartiera da C. A. Béranger*.

²²⁷ Vincitore Vincenzo, *La riconversione dei siti industriali della zona del Liri*, Theses ad Lauream, Università degli Studi di Cassino, A.A. 2001-2002, pp. 104-195.

sufficient to accommodate the family during the summer.²²⁸

Lefèbvre sensed a great future for the paper industry even if the investment had to be inspired by something more than a vague vision of the future. The paper industry was being stimulated at that time by the Bourbon State. Looking further afield, we know that throughout Italy the publishing industry was flourishing and the Bourbon Kingdom had adopted a bureaucratic system of registering deeds and documents that required an unprecedented amount of paper. All of these reasons must have convinced him to commit himself to following that factory which was not close to Naples, which required frequent travel and also entailed no small financial risk. Lefèbvre began to move his family for long periods during the summer to the premises that had been inhabited by Béranger.²²⁹ The Isola factory, located in a beautiful natural setting, rich in historical memories, played a central role. Very soon, a vast and comfortable palace would rise next to the factory, an occasion for the further social rise of the Lefèbvre family. In fact, wealthy people were invited into the large and elegant mansion with an unprecedented image management that made the factory a famous place, attracting visitors on business or leisure trips. In the first half of the 19th century, dozens of French guests made the Forme factory and the Carnello factory a stop on the Grand Tour, and it was only after the Unification that this place of delights and work frequented by the international jet-set declined, although it did not

²²⁸ Dell'Orefice Anna, *op. cit.*, p. 331.

²²⁹ AB XIX 4481, vol. VI, p. 1; see also Michela Cigola, *Le cartiere storiche del basso Lazio*, Ciolfi, Cassino 2002, p. 63. Courrier, in turn, founded an important paper mill in Isola del Liri years later.

decline, on the contrary, it developed further.²³⁰

The birth of the new mills was favoured by Ferdinand I of the Kingdom of the Two Sicilies and, after the Napoleonic conquest, by Murat, who spurred some wealthy people in the area to invest in this activity by encouraging them with various forms of incentive. These included the Gemmiti, Gigli and Bartolomucci families, historically involved in paper production since at least the mid-16th century, who were later joined by the Boimond family. This policy of expansion in the paper industry continued under Ferdinand II (1810-1859). Lefèbvre never lost the habit of travelling and calling in the best technicians from abroad. He was familiar with the most modern plants in France and England and offered lucrative contracts to the best technicians and chemists he brought to work in his factory. Thus he imported cutting-edge technologies.

Despite the multiplication of competitors, Lefèbvre excelled in variety and quality until the end of the 19th century. The technical innovations that Lefèbvre introduced would soon be imitated. The new factory, under Charles' impetus, took the name **Cartiera del Fibreno**. The management was entrusted to experienced factory managers and master papermakers: Mr. Testa, Mr. Martin (1825-1833), Mr. Grévenich (1833-1844).²³¹ The first director, Giacomo Filippo Testa (1803-1894), a chemist by profession, originally from

²³⁰ AB XIX 4481, vol. IV, p. 163. Translation mine; as to the purchase of Carnello as well: BCIL Archivio Boimond, box 13, b. 6 AA (22 June 1826), *Contratto di enfiteusi perpetua dalla cassa di Ammortizzazione dello Stato a Carlo Lefèbvre della cartiera del Carnello*.

²³¹ AB XIX 4481, vol. VI, p. 1. Martin continued to collaborate for another eight years, probably saw the replacement as a personal failure, so much so that he committed suicide in 1841.

Genoa, married a French cousin, Gabrielle Jeanne Castanie (1812-1849) in 1846. Although Italian, Testa was French educated. His maternal grandfather, Jean Jacques Castanie (1776-1828), had been a soldier in the Revolutionary and then Napoleonic *armée* until becoming a general and field marshal. Lefèbvre trusted mostly Frenchmen and did not hire Italians only because he could not find any technicians in the Neapolitan area, even though central and southern Italy had been producing paper for over 600 years. Lefèbvre also sought the collaboration of an expert, Amédée Montgolfier (1816-1885), former director of the Bartolomucci paper mill. With him, he introduced innovations that took the Cartiera del Fibreno to new heights, the most important of which was the selection of the raw material, rags. Until then, rags were divided into four categories, depending on their consistency and the fabric they were made of; the new procedure counted up to 16 qualities, taking into account colour, type of fabric, strength, degree of shredding and whiteness.²³² The female workers, the 'frullone', reduced the rags into small pieces using an iron sheet and then introduced them into a centrifuge, the 'frullone', to free them from slag. Reduced to a homogenous mass, the rags were washed and macerated in water tanks (marcatoi) located in the lower part of the factory. Lefèbvre and Montgolfier reduced the duration of this phase, which until then had been too prolonged, resulting in the need to use glue to make the paper impermeable to the ink. The coarser rags were destined for the rotting mill so that their fibre would become more malleable, while the others were introduced to

²³² Dell'Orefice Anna, *L'industria della carta nel Mezzogiorno d'Italia*. cit., Istituto Italiano per la storia dei movimenti sociali e delle strutture sociali, Ginevra, 336n.

the next stage, the Dutch mills. The innovative introduction of lime chloride instead of a bleaching gas mixture proved to be effective for quality and less harmful to the workers' health.²³³ Moreover, Charles Lefèvre was among the first to use, after numerous experiments, 'bleached' poplar pulp for writing and printing paper, and unbleached poplar pulp for lower quality papers. This type of raw material was to become the most widely used in the course of the century. The production process of Cartiere del Fibreno would become a model for paper mills throughout Italy and would also be adopted abroad.²³⁴

The real revolution came with the installation of the endless machine, a true revolution in the paper industry: a machine that allowed pulp to be transformed into paper following a succession of connected and uninterrupted mechanical operations.²³⁵ From that moment on, Lefèvre mechanised his plants, also using the motive power provided by the Fibreno. In order to improve the paper, he also called in Frédéric Firmin Didot (1798-1836) from France, the grandson of the founder of the printer-publisher dynasty, who was married to Caroline Martin (1796-1837). The latter owned a share in a paper mill in the Terra di Lavoro with whom Charles had entered into partnership.²³⁶ In 1832, the King paid a visit to the Lefèvre

²³³ ASC, Intendenza fasc. 4, Sora 11 September 1892.

²³⁴ Lefèvre paper mills also used substitutes that gave the paper a special texture and quality. These included reeds, rushes, marine and aquatic plants, old ropes and nets. Anna dell'Orefice, *op. cit.*, p. 370 (ref. A.S.I.N., Naples, 28 February 1856), *Ibid.*

²³⁵ Dell'Orefice Anna, *op. cit.*, pp. 47-54.

²³⁶ He was the son of Pierre Didot (1760-1853), who at that time was in charge of the publishing house-printing house and had interests in the paper industry. Frédéric is not among the founder's direct descendants. In that year, there were at least 6 members of the Didot family alive and

factories and stayed for lunch as a guest in the palace built on the side of the Forme Factory.

The progress and records of the Manifatture del Fibreno were described by Raffaele Liberatore in 1834.²³⁷ Liberatore recognised the superiority of Fibreno paper in the Kingdom, although he admitted that other manufacturers could compete in quality such as the Abruzzi and Amalfi, but not in quantity and variety.²³⁸

Between 1828 and 1830, a canal was built that drew water from an outlet at Torre d'Alboino, in the territory of Sora, and brought it to the Forme factory. The water taken at that location was even purer than the water already used by Béranger and this purity would make the paper of the Lefèbvre manufactures even more valuable. The canal, built in masonry along almost its entire length, is elevated by about 1.5 to 2 metres. Precisely because of the additional quality it offered to its paper, this channel was referred to as a 'golden rod' or 'golden thread' by the mill owner. That water turned the rags that flowed into the mill by the quintal daily into gold.

In 1832, in partnership with another industrialist, the Neapolitan Lorenzo Zino, he contributed to the construction of a modern road that facilitated connections between Carnello and Sora. The workmanship of this road was praised 30 years

associated with the famous publishing house, but none of them is named Frédéric.

²³⁷ Liberatore Raffaele, *De' saggi delle manifatture napoletane esposti nella solenne mostra del 1834*, in "Il progresso delle scienze, delle lettere e delle arti", V. XI, a. III 1834, pp. 165-222. Ibid, pp. 186-188.

²³⁸ Marra Alessandro, *La Società economica di Terra di Lavoro: le condizioni economiche e sociali nell'Ottocento borbonico. La conversione unitaria*, Franco Angeli, Milan 2006. Marra quotes Filippo Cirelli, *Il Regno delle Due Sicilie descritto ed illustrato*, v. III, f. 1, Terra di Lavoro 1856 - Manifatture di Isola, Naples, pp. 35-26.

later by his cousin André-Isidore for the quality of the materials used. It was the first of a long series of public works built by the Lefèbvre family in the area that would include – as we shall see – sewers, school buildings, hospitals, roads and a railway with the Isoletta station. Indeed, local historians point out that the landscape of Isola del Liri and Sora was also strongly affected by the Lefèbvre family's activities in terms of infrastructure.

In Italy, Carnello's endless machine became famous. Rosanne Lefèbvre called it the 'wonder machine', reflecting the enthusiasm of Charles and Montgolfier. The version fitted by Lefèbvre was the one modified by Englishman Bryan Donkin (1768-1855). Montgolfier made further modifications to this version in terms of dimensions and materials.²³⁹ Moreover, the technicians who assembled the machine, as we learn from Rosanne, were all English. As we know, the expensive machine remained exclusive to Lefèbvre's factories for many years and produced a competitive advantage even against similarly sized factories. As the market would soon learn, more paper was manufactured at Carnello, in larger sheets and

²³⁹ "Robert's machine - rudimentary and imperfect - consisted of an endless wire cloth A that passed between two rollers B and C. While the position of B was fixed, that of C was adjustable so that the cloth could be stretched. The dough contained in the large vat D was thrown by the paddle wheel E, which drew into it, onto the moving cloth, which also had an oscillating motion. The dough was distributed as best as possible in a 50 cm wide layer, which, advancing slowly, dripped through the pair of cylinders C-H and left the canvas in the form of a damp ribbon of theoretically unlimited length, which was finally cut into sheets and air-dried, like handmade paper". Anna dell'Orefice, *L'industria della carta nel Mezzogiorno d'Italia. 1800-1870*, cit. pp. 299-300.

of higher quality.²⁴⁰

Charles' son Ernest (1817-1891) spent a long period in England studying English and learning about papermaking from 1836 to 1838.²⁴¹ In 1839 the Lefèbvre family received a particularly prestigious visit to Isola del Liri: Maria Carolina of Bourbon, Duchess of Berry (1798-1870), who lived part of the year in Naples.²⁴² She came with a retinue of no less than 18 people and her enthusiasm for the place was great. In the years that followed, the technical progress of the paper mills was continuous. If in 1828 there were 150 workers, a dozen years later, in 1841, there were 340 (100 men and 240 women). The production cycle required 10,000 cankers per year of rags from which 6,000 cankers per year of good paper were produced and exported to Greece, Malta and Brazil.²⁴³ During the 1840s, Charles and his collaborators improved the paper machine by modifying it to provide smooth paper on both sides. Other processes introduced (drying, sanding, pressing) had improved the strength, whiteness and lustre of the finished product by abolishing the marking stage. The rags were shredded from cylinders, then treated with calcium chloride and potato starch. Fibreno papers were increasingly in demand for fine editions.²⁴⁴

²⁴⁰ Dell'Orefice Anna, *L'industria della carta nel Mezzogiorno d'Italia. cit.*, Geneva, 339n.

²⁴¹ AB XIX 4480, vol. III, p. 70; AB XIX 4481, vol. VI, pp. 14-17; AB XIX 4480-4483, vol. II, *Ernest Lefèbvre complete son éducation en Angleterre*.

²⁴² She was the daughter of Francis I, King of the Two Sicilies (1777-1830) and Archduchess Maria Clementina of Habsburg-Lorraine (1777-1801). She married Charles Ferdinand of Artois, Duke of Berry.

²⁴³ The *cantaio* was a unit of measurement used in the Kingdom of Naples and was equivalent to about 100 kg. Michela Cigola, *Le cartiere storiche del Basso Lazio*, Ciolfi, Cassino 2002, p. 63.

²⁴⁴ Dell'Orefice Anna, *op. cit.*, p. 335.

By 1844, the number of workers had risen to 400 and 150,000 reams of paper were being produced annually. A year later another 50 workers had been hired, bringing the number to 450 with the production of 180,000 reams at Forme, while there were about 300 workers at Carnello. By 1846, another 20 workers had been added to the Forme, bringing the number to 470: production reached the then remarkable figure of 197,000 reams of paper, around 800,000 sheets.²⁴⁵ In the years that followed, the technical progress of the paper mills was continuous. Women employed in the milling business (the *frullone*) were more numerous because they were required for the delicate and time-consuming task of sorting the rags. The local economy now depended on a few families, including the Bartolomucci, the Lefèbvre and another French family, the Boimond. A visible effect on the territory that affected all the larger paper mills was the building of integrated housing complexes (the first examples of social housing similar, albeit on a smaller scale to other Italian cases, at Crespi d'Adda), services and guarantees not so much related to pay or working hours but to childcare (nurseries, medical clinics).

Many scholars observe how the Lefèbvre, together with the Boimonds, brought to Sora and the Terra di Lavoro a new industrial culture that would later be absorbed by other local dynasties. The Gigli family, in 1823, set up a paper mill at the mouth of the Fibreno river, followed by Raffaele di Manzio and Courier in the Trito district of Isola (1827), and the Sorvillo family from Naples, who, in Borgonuovo, a hamlet of Isola del Liri Superiore, would set up a paper mill in 1836 that was described as 'incredible'. In fact, it was a sort of small town, complete with a Gothic-style chapel for saying Mass,

²⁴⁵ Cigola Michela, *Le cartiere storiche del Basso Lazio*, cit., p. 64.

refectory, playground, toy shop, haberdashery, pharmacy, conference room and buildings for housing directors and executives. Although degraded, it is still visible today as an exceptional testimony of industrial archaeology under the name Cartiere Meridionali. The Anitrella paper mill in Monte San Giovanni Campano (a municipality bordering Sora) had also been considered the most modern factory in the Roman province up to that time. Charles therefore had many competitors and for this reason, in the fifteen years that followed, he would continue to introduce improvements until the Cartiere Manifatture del Fibreno – only in the middle of the century defined preferably as an 'industry' rather than a 'manufacture' – excelled in terms of size, machine equipment, process innovations and product variety. The only formidable competitors in the area remained the Sorvillo. In the paper mills prior to those implanted by the French or set up before 1808, the relationship between the owners' houses and the mills was very close, even in terms of construction types.²⁴⁶ In the Mancini paper mill in Isola del Liri, located on the head of the islet at the confluence of the two branches of the river, the basement structure housed the production equipment, while the upper part housed the owners' residences. This organisation had a strong analogy with the layout of the manor houses typical of the agricultural economy.²⁴⁷ At Anitrella – a few kilometres south of Sora – the paper mill 'stands close to the drop in altitude that characterises the course of the river at

²⁴⁶ Paris Tonino, *I segni del lavoro nella valle del Liri: preesistenze storiche, cultura materiale, innovazioni tecnologiche*, in Pier Paolo Balbo - Susanna Castellet y Ballarà - Tonino Paris, curr., *La valle del Liri. Gli insediamenti storici della Valle del Liri e del Sacco*, Officina Edizioni, Rome 1983, p. 157.

²⁴⁷ *Ibid.*

that point'. Taking advantage of the orographic trend, the paper mill overlooks the gorge for five floors, four dedicated to production activities and one to housing.²⁴⁸ These were strongly linked to the production spaces as in the artisan-type organisations or the potters' workshops. The Mancini and Lucernari factories, and many others, were integrated into the built-up area in terms of the size and type of buildings and the materials used: it was difficult to distinguish the dwellings from the factories from the outside. The paper mill founded by Béranger and then profoundly transformed by Charles Lefèbvre, on the other hand – like Boimond's – radically changed the size and relationship between the factory and the landscape. The two plants "are located at a distance from the historical centre of Isola Liri, moreover they assume a layout that is typical of an industrial complex, albeit from the 19th century".²⁴⁹ In other words, there is no way to confuse the owner's house from the factory even when the buildings are close to each other.

The Boimond contained a shop, kindergarten and a small church, as did the Lefèbvre, except that the kindergarten was built inside and the small church on the street in front of the entrance. A type of workplace was thus proposed that included a canteen, as in the great English and French factories of the mid-19th and 20th centuries. Such factories also impressed travellers of the time with their singular modernity, and the Lefèbvre's San Carlo Wallpaper factory, completed in 1865, had an even more modern and unprecedented appearance. They displayed that care for hygiene and healthiness that was called 'Enlightenment', which could only be seen in certain

²⁴⁸ *Ibid.*

²⁴⁹ *Ibid*, p. 158.

advanced industries in England, France and Northern Italy.

Charles Lefèbvre never showed a craftsman's mentality, like Antoine Béranger, he wanted his home to be separated from the smells of maceration and the metallic noise of the factories, even though he himself, as we know, took care of the productions and this revealed, once again, an ambitious class consciousness. They distinguished themselves in material symbols, in living culture, in leisure, in taking special care of their children's education. Travellers on the Grand Tour, who passed through those lands in search of historical or classical traces, in the land of Cicero and Virgil, came across a modern factory, which astonished them all the more because Italy was associated with the past, certainly not with the most modern industry. So wrote two witnesses of the time, Domenico Cuciniello and Lorenzo Bianchi:

[...] the rags to be made into paper, already selected and in 18 distinct ways, are cleaned, ground, rinsed, shredded and, in the refined ones, reduced to a very liquid pulp; which, mixed with vegetable glue, a prodigious machine receives from one end, and makes from the other, in a single minute, to the eyes of the seer, beautiful and glued and dry paper of every quality, of interminable length.²⁵⁰

The description mentions the 'prodigious machine' and goes on to discuss the unprecedented size of the factory. The building of the Fibreno factory consisted of long, narrow spaces suited to the length of the machinery and lit by large windows on the longest sides. The processing spaces were

²⁵⁰ Cuciniello Domenico - Bianchi Lorenzo, *Viaggio pittorico nel Regno delle Due Sicilie, dedicato a Sua Maestà il Re Francesco pubblicato dai SS.ri Cuciniello e Bianchi*, presso gli Editori vicolo S. Spirito, I, Napoli 1830-1833, p. 333.

large and allowed for rapid control of the entire work cycle. The relationship with the energy sources to be exploited was at the basis of the organisation of these architectures, which were developed in height, one floor above the other, in order to be able to use a single vertical drive shaft connected to the various machines with a horizontal transmission system.²⁵¹ During this period, Charles also formed a partnership agreement with a certain Palma, setting up the Palma Foundry as a joint venture to be able to count on a professional who could maintain and produce mechanical parts without having to import them from abroad. There are few traces left of this reality. What we do know is that the Palma Foundry was located just outside the Forme on the road to Sora.

Lefèvre also developed, among others, a printer-publisher business with the Stamperia del Fibreno, founded by Bérenger in 1808 and then sold to Lefèvre when the latter acquired the business. The Stamperia del Fibreno played a notable role in Neapolitan publishing in the 19th century and was located first in San Domenico Maggiore in Naples and later in Calata Ss. Trinità.²⁵²

Not a few archives were burnt during the change of regime and when the new unitary administration took over. The Stamperia, however, for more than forty years edited works of great value, not to mention an infinity of commercial works, novels, essays, manuals for the use of courts and lawyers,

²⁵¹ *I segni del lavoro nella valle del Liri: preesistenze storiche, cultura materiale, innovazioni tecnologiche*, op. cit., p. 159.

²⁵² Iannaccone Mario A., *La Stamperia del Fibreno. Uomini, industria, cultura nella Napoli dell'Ottocento*, e. p. 2020. Also Luigi de Matteo, *Holdings and Industrial Development in the Mezzogiorno. Il caso della Società Industriale Partenopea (1833-1879)*, Istituto Italiano per gli Studi Filosofici, Naples 1984, p. 40.

collections of laws and more.²⁵³ In 185 had its registered office in Naples and was, with its 14 presses, the largest in the Kingdom, together with that of Raffaele Marotta.²⁵⁴ Less than four years later, the size had increased further and the number of presses had risen to 17. By then it was unrivalled in the Kingdom. Although Charles had not retired and his health appeared sound, Ernesto gradually took over much of the family business. In 1856 it was decided to entrust the management of the main Fibreno factory, the Forme paper mill, to Gustavo Montgolfier. In 1865, the San Carlo Factory was added to the Manifatture del Fibreno: a very modern factory, producing 24-colour wallpaper. It was located about 400 metres north-east of the Cartiere del Fibreno complex. The demand for multi-coloured wallpaper had increased as a result of the housing of bourgeois houses from the middle of the century. Furnishing fabrics, widespread until the first decades of the 19th century and replaced, at various times, by very expensive painted papers, had finally been supplanted by wallpapers in increasingly elaborate colours and designs. The factory functioned producing profits for about 25 years, perhaps not enough to amortise its value: the event that produced the decrease in its profitability was the Unification of Italy and the abolition of duties in the peninsula. The extension of the factory was 7,740 square metres on a total service area of about 15,400. The building is described as 'grandiose': 156.80 metres long and 25 metres wide. The lower part consisted of three large rooms, with the central one being

²⁵³ *Real Teatro di San Carlo dimostrato con tavole incise in rame*, Stamperia e Cartiera del Fibreno, Napoli 1835.

²⁵⁴ De Matteo Luigi, *Holdings*, cit., p. 51. See *Guida storico-monumentale della città di Napoli e contorni* di Luigi Galanti, Chiurazzi editore, Napoli 1881, p. 144.

the largest. In length, the building was lit by 28 windows on one side and 30 on the other. The walkway that bordered the Canale delle Forme was anchored to the ground by 30 large iron chains that were intended to absorb the tremors caused by the huge machines. On the ground floor, the internal layout consisted of a caretaker's room, a large waiting room where customers were made to wait, and a sort of commissary for small quantities, complete with a till and counter for wrapping small quantities. Also on the ground floor, there were two rooms, each 69 metres long and 19.20 metres wide, equal in width and length, communicating with each other. The first housed the embossing machines and a storage room. To the right of the previous two divisions was a third longitudinal division with other large rooms, and machines that were decidedly enormous for the time: the 'Wallpaper Cutting Machine Room' (in a room about 20 metres long), the 'Paper Drying Room', where the paper was hung out to dry, and the 'Printing Room' (113.50 metres long). This was followed by a 14.50 metre room: the 'Paper Winding and Cutting Room'. Next to these rooms was a large storage room where the finished paper was stored awaiting shipment.

The press room led to the felt washing area, where the felts used in daily work were washed. In this room, clean water was fed through large pipes taken from the nearby Canale delle Forme and then discharged through a system of manholes into the Magnene. Also very important was the structure housing the turbine connected to a dynamo for the production of electricity (installed in the 1890s), which was transmitted through a complex system of axes and gears to the factory machines.

Completing the building, on the ground floor, was a large hall, called the 'Carpenters' and Shipping Hall', where the rolls

of wallpaper were placed in packages (19.50 x 5.50 metres) and carts were taken to the railway wagons. The factory also had a complete mechanical workshop that made it completely self-sufficient in terms of breakdowns and changes of parts for normal maintenance and more. There was also a 'Forge' complete with every piece of equipment that allowed for the creation of moulds, the casting of iron, steel and cast iron, and the moulding of the necessary parts. The workshop was equipped with the most modern equipment of the time, such as extraction hoods that prevented the harmful stagnation of fumes and acids, and then fans, bellows and probably refractory materials such as special ceramics. This policy of self-sufficiency had been a characteristic of Charles that was also followed by Ernesto.

Also on the ground floor, there was a very large 'mixed wallpaper printing room', a good 79 by 5.50 metres in length (it occupied half of the south side of the building), which housed a special machine that handled several colours and several passes of colour to achieve special effects that were neither monochromatic nor bichromatic. There were also various storage rooms for new paper and moulds. The upper floor was occupied entirely by offices where draughtsmen, technicians, salesmen, managers worked, where payments were made, customers were invited, telegrams were sent, letters and invoices were written. There was also a large mezzanine used to store objects and material of lesser use. The San Carlo factory was thoroughly modern and built according to the most advanced architectural solutions for industry. Its elongated shape made it efficient from an industrial point of view. Although the Liri Valley included dozens of paper mills, nothing like this had yet been seen and it was only later that the large paper mills that survived the Lefèbvre would arrive.

It was only the crisis that began to bite the area after 1870 and that would become more acute throughout the decade, and other events linked to the Lefèbvre family and the failed handover to the third generation, that would sanction the crisis of a company that had managed to count, in its various production sites, all very close together, almost 1,000 workers. In 1888, the factory was bought by the Società delle Cartiere Meridionali, a consortium of entrepreneurs from Turin. After a lease that lasted from 1893 to 1907, it was finally sold that year and became the property of the Cartiere Meridionali, which continued to operate it until the 1970s-1980s. The San Carlo factory, damaged in the earthquake of 1915, was demolished while the one at Carnello changed hands, becoming the Cartiera de Caria, until it closed. The activity of the Stamperia del Fibreno went into crisis around 1886, when the printing works effectively ceased operations under the name of Lefèbvre, at the same time as the San Carlo Factory and the Chimica Lefèbvre at Bagnoli, which was supposed to supply chemical products to industries that did not actually develop.

However, Lefèbvre set an example for all entrepreneurs in the paper industry. As Anna Dell'Orefice recalls, he had 'established a large enterprise by introducing the mechanical method of papermaking that had been followed by other southern entrepreneurs. Pasquale Visocchi (Atina, 1844-1845), Francesco Lanni, Gaetano Pelagalli, Natale Sorvillo (Isola del Liri, 1843) and Carlo Carafa di Noia, owners of large factories, bear witness to the fact that the southern environment and mentality, long before Unification, underwent a profound transformation in a capitalist sense. However, its originality also lies in having, in a certain sense, introduced its factory as a stopover on the Grand Tour, taking

advantage of its proximity to Arpino, the birthplace of Cicero, and of having hosted illustrious travellers from all countries for decades, who stayed as guests at the Lefèbvre Palace in Isola, sometimes for one night and sometimes for weeks, and enjoyed exquisite and elegant hospitality. In this sense, the case of the Lefèbvre is unique.

The vicissitudes of the Isola mills (Forme, Cartiera del Liri, Cartiera Boimond and other related ones) are all of the twentieth century and therefore, strictly speaking, fall outside the interest of this book. In any case, in the 1910s and 1920s, reconstituted with a share capital of 2,500,000 lire and a renewal of the machinery and renovation of the buildings, the company experienced great development. During the interlude of the war, the owners, who were Jews, were defrauded of their possessions, but they took them back after the war.²⁵⁵ From 1967 onwards, they became part of the Donzelli Group.

Liri Paper Factory - Cartiera del Liri

The Liri Paper Factory was founded in 1836 by Antoine Napoléon Perquier and a number of entrepreneurs, including many of French origin who had witnessed the success of Lefèbvre. After various questions regarding the location, it was decided to build a large plant at Isola di Sora. The project had been entrusted in 1842 to the architect Antonio Bucci, who later joined the company, with the task of building a large factory and examining the machines to be planted, which were of French manufacture. Finally, a piece of land owned by

²⁵⁵ For a comprehensive account see Amleto Iafrate-Edmondo Iafrate, *La Società delle Cartiere Meridionali. Gli stabilimenti do Isola del Liri*, s.e., Isola del Liri 2019, p. 41 ff.

Francesco Roessinger's wife, Sebastiana Lepreux, called Lago Ammocito, was chosen. Thus, having obtained authorisation to use the water from the Fibreno, the company was founded in Naples on 12 June 1844, with Carlo Carafa, Natale Sorvillo, Raffaele Barbato de Simone, Pasquale Ciccodicola, Francesco Rossi and Raffaele Mezzanotte joining the venture. Francesco Roessinger and his wife also joined. The representative was Natale Sorvillo (1795-1875), co-owner of Meuricoffre & C. and Falconnet & C., two important banks in the Kingdom of the Two Sicilies. The share capital amounted to 100,000 ducats. A large house was built for director Perquier inside the factory with four bedrooms, a lounge, an office, kitchen and garden. As his predecessors had done, Perquier brought in skilled workers from France. In 1855, Roessinger and Lepreux sold their share to Sorvillo to pay off a debt to Lefèbvre. In 1856 the Liri Paper Mill (as it was known) was dissolved and bought back by Sorvillo who, having bought more land, enlarged it in 1862.

At this date, the Liri Paper Mill had about 500 workers. In 1872-1873, following a flood, the waters of the Fibreno were regimented. However, in the post-unification period, the abolition of protectionism and the opening of the market created problems: the factory needed fresh capital to renew the machinery. In 1873, a deed by the notary Mazzitelli, quoted by the Iafrate family, described the factory as springing from two plots of land. On one there was 'a large body of buildings where the large paper mills for the manufacture of paper are located'; there was also a warehouse, various dwellings, another storage room, a steam boiler room, and a chapel. On another piece of land were the hydraulic works: a dam, canal and minor works such as a farmhouse. The property also

included a 31,000 square metre fund that was bought back by the Società delle Cartiere Meridionali.²⁵⁶

This was set up in 1873 by a large number of subjects (about 40), including Oscar Meuricoffre, Domenico Gallotto (Neapolitan General Credit and Building Society), Giuseppe Castalcicala Corio (president of the Neapolitan Bank), Antonio Allievi (General Bank of Rome), Angelo Alhaique (banker), Giovanni Auverny (banker) and many others including Roessinger himself.²⁵⁷ On 4 May 1869, Prince Umberto di Savoia was hosted in the Sorvillo house in Isola del Liri (the name had changed in 1863).

The head office was established in Naples and in 1883 the capital was reduced to 1,500,000 lire, more partners joined including many wealthy Neapolitans such as Antonio Cilento, Leopoldo Persico and Giulio Persico who became board members. In 1884, the factory had four endless machines (like the one purchased from Lefèbvre). There were 650 workers in all, counting those working in the Anitrella paper mill rented by Count Lucernari from 1873 (with rents renewed in 1894 and 1908).²⁵⁸

In 1886, a loan was requested from the National Bank of the Kingdom of Italy and in the appraisal it was estimated that the mill was worth 1,222,535 lire. In 1890 the paper mill purchased several plots of land to expand. In 1894 the headquarters were moved to Turin, effectively impoverishing the area.²⁵⁹ In 1906 and 1907, the company bought more land, a large cotton mill in Intra and Francesco Lefèbvre's Manifatture del Fibreno for 500,000 lire, plus the payment of

²⁵⁶ Amleto Iafrate-Edmond Iafrate, *op. cit.*, p. 19.

²⁵⁷ For the list of founding members, *ibid*, pp. 24-25.

²⁵⁸ *Ibid*, pp. 25-27.

²⁵⁹ *Ibid*, p. 29.

203,000 that Lefèbvre owed to Ippolito Dumoret, thus 703,000 lire in all.²⁶⁰

The Sant'Elia di Fiumerapido Paper Mill

An interesting case of a paper mill settlement in Lazio, located not far from the Liri district in southern Lazio, south-east of Isola del Liri and Arpino, is the Sant'Elia Fiumerapido paper mill. Run by papermakers from the Marche region since at least 1516, it was joined by a second paper mill from 1591, when the local master papermakers had gained full experience. The paper mill complex of Sant'Elia is part of the mills, mills or gualchiere, belonging to the Montecassino estate in the fief of Sant'Elia. Although not recorded in the sources, it is probable that the foundation of the paper mill was the initiative of the Abbey. At least until 1724, there would therefore be two paper mills. From that year, after a complete restructuring, at a time when the abbots and administrators had taken over direct management, there are documents relating to only one paper mill, the one currently visible.

The foundation and maintenance of the paper mills are linked to the 'popularisation of literature and science'. The settlement took its name from a *castrum* in an elevated position on the Rapido river and a church dedicated to the prophet Elijah, destroyed in the 15th century. For the centuries in which it belonged to the Abbey of Montecassino, thanks to the compilation of abbey registers and account books, we know the names of the tenants of the factory and various economic data (increases, crises, notarial deeds). The Cassinese phase,

²⁶⁰ *Ibid*, p. 48.

which is older, is of less interest to us, but we can give a concise account of it. The paper mills were rented out individually or together for long periods. In 1590, with the work on the new paper mill, the 75-year-old mill was also rebuilt. A century and a half later, from 1724, the paper mill became one and in 1745 the Abbey undertook maintenance and renovation work. The mid-century description by Faustino Avagliano dates back to the mid-century, who gives us information on the mill's size and production:

The paper mill of St Elias contains twelve stacks of stone and two of wood; and if it were to beat the twelve alone, it is capable of processing two Tinelli. If, however, it is counted, as if only one Tinello were used, it yields the following fruit in paper. Counting each month for 23 days, after deducting public holidays, it is undoubtedly the case that in each day there are twenty stakes, each of which contains fourteen reams; and if one wanted a few more stakes per day, it would be better to entice the workers with something more. [...] The paper made at Sant'Elia was Mezzafina, ordinary, and della Mano. [...] The fineness of the rags makes the paper fine; but the lack of glue makes it bad. The rags of the State of S. Germano are bought at 25 carlins a cantaro, but they are not very fine. The glue is bought at fifteen grains a dozen".²⁶¹

The stone or wooden piles are tanks equipped, according to the invention of the masters of Fabriano, with pestles fitted with nails and driven by a hydraulic mill that grind rags into the so-called 'pesto', a semi-finished compound used to prepare

²⁶¹ Currà Edoardo, *La Cartiera di Sant'Elia Fiumerapido, dai maestri fabrianesi all'industrializzazione del XIX secolo*, AA.VV, *Vie d'acqua e lavoro dell'uomo nella provincia di Frosinone. L'industria della carta*, Palombi, Rome 2010, pp. 131-181. Ibid, p. 34. Quoted in F. Avagliano, *La cartiera di Sant'Elia a metà del '700*, in "Lazio Sud", p. 49.

pulp for paper in vats. The work of preparing, sorting and fermenting the rags, if well organised, made it possible to keep the production chain continuously efficient. The fermentation time of the rags was inversely proportional to the quality of the rags themselves: by carefully separating the best quality rags ('fine') from the less good ('middling') and the worst ('thirds'), it was possible to differentiate the fermentation times and send the fermented rags at intervals to the piles for the manufacture of pesto.

The reported 12 stacks is remarkable. Over the course of a century and a half, the paper mill had produced generations of skilled workers. In the decade 1758-1769, 12,836 ducats were allocated for various repairs. Benedetto Lanni leased the paper mill still owned by the Benedictines in 1797. Before the ten-year contract came to an end, the abbey was suppressed and its possessions transferred to the State.²⁶² Of the 700 ducats of rent, 180 were retained by Lanni for ordinary maintenance. At the end of the century, the paper mill had 37 'forme', 3 'tinelli', 5 'valchiere' with wheels (gualchiere) and 12 hammers made of copper or iron, and a lye room. In 1805, due to a flood, the aqueduct crossing the river near the building collapsed, cutting off the supply of pure water for the papermaking process. Activity came to a standstill for months. In 1808, the Intendenza di Terra di Lavoro (in whose jurisdiction the paper mill fell), made a survey to see whether it would be more profitable to sell or rent the complex.

In 1808, Joachim Murat activated a commission to encourage industrial initiatives that did not conflict with French interests. Benedetto Lanni, who rented three mills,

²⁶² The main historiographic source is a rich series of documents kept in the State Archives in Naples, Frosinone and Caserta.

attempted to relaunch the paper mill by taking advantage of the Kingdom's economic measures. In 1809, his son Pietro submitted a project to the Intendancy of Terra di Lavoro to reopen the existing paper mill in that municipality with an expert opinion by architect Pietro Palombo. Delivered on 26 December, the report contains a plan and a text. Palombo proposes a number of measures (elimination of the aqueduct crossing over the river, a plan for a new route, and a project to capture water from other sources), analyses and describes the mill and proposes modernisation by adopting the methods in use in France and Holland, in order to increase the income and thus the rent receivable by the State. Palombo then writes about the building:

I observed the Paper Mill Building and found it to be well equipped with the necessary conveniences; although the wooden machines are in need of restoration for having been idle for about 5 years, and there are many missing irons at the spindle heads, so that the restoration of the wooden machines is also found in the note on the necessary expenditure. The building, although old and grand in itself, contains 18 piles of living stone, with thirty-six pestles and the machines that animate it; there is the Chopping Board, the Spreader on the top floor of the building, the Maglietto, and everything else that is necessary [...But if the factory is to be improved, and it is to be made to introduce the factional paper of France and Holland, the Government would retract, since in the past only common paper was used. It is preferable, therefore, with so little expenditure required for the aforementioned restoration, not to exceed a profit that could be obtained by renting the Paper Mill of about 800 ducats either by giving it to the administration or by leasing it. I would estimate that in order to cover the necessary expenditure of 1,960 ducats, it should be given in administration and the lease of about two years should be paid, but I would establish an Intendant, who could assist in the manufacture of paper to be

improved by introducing the method of making it in the manner used in France and Holland.²⁶³

During the years of Lanni's management, the paper mill grew in the number of piles and pestles and in fact the rent (520 ducats) was high. A month after the expert's report was presented, the mayor of Sant'Elia asked the Questore of Sora to reopen it. Palombo points out that the 'largest paper mill in the Kingdom is idle while we are forced to import printing paper from abroad'. However, on 4 September 1809, a royal decree was issued ordering the sale of State property. Giovanni Evangelista took part in the auction on behalf of the Lanni family, with power of attorney and subscription of the bid by the priest Filippo Lanni fu Francesco. The Council of Arts opposed the alienation, but on 3 February 1810 the Minister of Finance announced that 'The Paper Mill in the Municipality of Sant'Elia was sold at first session on the 31st of last month – January 1810 – to Signor Giovanni Evangelista for the sum of 8,425 ducats in Cash'. The Lanni family, through Evangelista's power of attorney, became the owners of the paper mill. Another appraisal dated 27 February 1808, describes the property:

[...] a large corsea of the pile, where pesto is made, with twelve piles carved out of stone; a basin for preserving the pesto, and a handrail of dressed stone in the said basin, a room with the first basin of dressed stone, a pile of workmanship attached to the said Pesto, and a door of dressed stone, the room of the second basin similar to the first; another small corsea where pesto is made with num. three

²⁶³ Palombo S., 'Al signor Sott. Intendente del Distretto di Sora', Atina, 26 December 1809. A.S.N./M.I. 1st Inv., Fasc. 2251. Quoted in Edoardo Currà, *La Cartiera di Sant'Elia Fiumerapido*, op. cit., p. 38.

stacks carved out of living stone, and two factory tubs, room of the third dining room with a factory tub, another factory pile attached to it, a door of chiselled stone, and another factory tub in an external corner of the building. From a flight of steps, leading to the second floor, there is the first middle room with a factory-made fireplace, and a basin for gluing paper; three other rooms to the right of the first; a back room to the same, room to the left of the entrance. Spanditojo, or top floor with planking, covertina de' canali, stanza del Maglietto with two stacks carved out of stone, and door of chiselled stone. Internal, and external portals, and hatches. House for the use of the Carpenter. Clear water store, and hatches. Marble stone for smoothing paper num. 10. [...] No. 47 forms with which paper is made, with different impressions existing in the said Paper Mill.²⁶⁴

The value estimate is an impressive 8,313.44 ducats, close to the agreed sales price. The Lanni will have an industrial behaviour similar to that of the Lefèbvre or the Boimond but also to that of the Bernard of Piedmont. In fact, the Sant'Elia paper mill would develop by updating its equipment and production. In 1828, various modifications were made and Francesco Lanni had the first cylinder machine built. The 4 molten iron presses and 4 moulds for the manufacture of tissue paper are purchased in France. The number of workers in Don Francesco Lanni's factory decreases by about 50, from 300 to 246, but this is probably due to the introduction of machinery.

Number of workers

300 (1844)

260 (1845)

246 (1846)

²⁶⁴ Naples, 24 January 1810 (A.S.N./M.I. 1° Inv., Fasc. 2251). Quoted in Edoardo Currà, *La Cartiera di Sant'Elia Fiumerapido*, *op. cit.*, p. 39.

Paper Cantaja

3178 (1844)

2840 (1845)

2192 (1846)

It is believed that the paper improved in quality during that three-year period. In 1831, the cylinders became two, but it was impossible to install the endless machine for a few years because Charles Lefebvre's five-year patent, from 1829 to 1835, prevented Lanni from seeing his application granted. Lanni would have had the financial capacity to deal with that considerable expense, the adaptation of the mill and the commissioning of English technicians to assemble the machine and instruct the premises, but Lefèbvre had been quicker and thus had a competitive advantage that would have lasted between 20 and 25 years compared to other paper mills, even those that were geographically close. For this reason, his Isola di Sora paper mills would be the only ones to reach almost 900 workers.

A few years later, a royal census took a snapshot of the condition of the 'establishments of arts and manufactures of any kind existing in the province in comparison with the state they were in in 1844, in 1846 and the state they are in now'.²⁶⁵ It describes the Lanni paper mill in the years when it faced increased competition due to the decrease in customs duties. It comes off badly because it is unable to reduce labour costs; Lefebvre, by cutting the wages of those employed by 1/5 and increasing working hours at certain times, resists and even increases production and employees to 400 workers and 5,000

²⁶⁵ Currà Edoardo, *La Cartiera di Sant'Elia Fiumerapido*, op. cit., p. 46.

reams of paper for the Carnello mill and 470 workers (from 400) and production from 150,000 to 197,000 reams for the Forme mill.

Between liberalism and protectionism, paper mills faced crises and moments of expansion. Note the anonymous *Memoria per l'industria della carta nelle provincie meridionali* (Stamperia del Fibreno, 1861), which gave reasons to justify the importance of the export duty on rags. Only the availability of cheap, unimportant rags made it possible to resist European competition.²⁶⁶ The government, however, with the intention of implementing the economic union of the country, proceeded with the decree of 30 August 1861, creating not a few problems for the southern paper industry.

However, the mill would still be in operation for a century and more (the most significant crisis would occur in the years 1982-83) and from 1860 to 1870 it would see its activity grow considerably, before a decade of overt crisis. In that decade, the Lanni brothers' paper mill in Sant'Elia was considered the fourth most important after the Manifatture del Fibreno, Natale Sorvillo's Liri mill in Isola and Visocchi in Atina. In 1873, Marco Lanni, in his *Storia di Sant'Elia Fiumerapido* (*History of Sant'Elia Fiumerapido*), although laudatory, testifies to the positive state of the industry. In fact, the paper mill, owned at the time by Filippo Lanni, had reached in those years the production of no less than '4,000 quintals of paper of different qualities'.

²⁶⁶ Not only within Italy, but also in markets beyond the Alps, if it is true that in 1861 they had even gone so far as to supply 159 reams of oversized paper to 'The Daily Telegraph' newspaper in London.

In 1900, the paper mill was purchased by Don Nicolò Scotto of Naples, who wanted to make it more competitive at a time of general reorganisation and concentration of the paper industrialists' properties and an injection of money by financiers from the North, especially from Lombardy and Piedmont. Scotto had a penstock built to drive the mill's turbines with more power, which he later reused for a 1,000 KW hydroelectric power plant. In the paper mill there are typical 19th century industrial buildings. It housed the Leistschneider endless machines and two machines that 'gave perpetual paper with twelve cylinders to reduce rags to pulp by shredding, which was first carried out with the pressure of hammers agitated by water and then draining the wet with a plaiting machine'.²⁶⁷ An old building was used to house some Dutch basins, still visible today, which, after centuries, replaced the use of pestles to prepare pulp for paper: an oval stone or masonry basin divided into two parts by a median septum. One of the two channels, which is wider, is called the working channel. A cylinder (first made of wood, then metal), equipped with blades, was placed there. The bottom of the channel, sloping, was also equipped with blades, separated by wooden rods ('platina'). The bottom of the trough was shaped so that the dough could pass between a cylinder and the platina and thus fray the rag. The cylinder lifts it and the frayed rags settle.²⁶⁸

²⁶⁷ Currà Edoardo, *La Cartiera di Sant'Elia Fiumerapido*, op. cit., p. 43.

²⁶⁸ After the transfer to the Scottos, the last phase of the paper mill (1930) was linked to the Boimond property. During this phase it was used for the preparation of pulp to be processed at the Boimond paper mills in Isola Liri.

Hydraulic forces of the Liri, Nibbio (Coste, Viscogliosi, Courier)

Another important paper mill was the **Cartiera Nibbio** (later called Forze idrauliche del Liri) of the Viscogliosi, started in 1821 by a person we have already met, Pietro Coste, and sold to Vittorio Courier before passing to the brothers Luigi and Beniamino Viscogliosi in 1857 under the new name Cartiera Beniamino Viscogliosi & Fratello. It had a daily production of 200 quintals. The Viscogliosi family had a long tradition in the textile industry in Arpino. Run by the brothers for many years, it then passed to Angelo Viscogliosi (1873-1958) son of Beniamino (1918)

After completing his classical studies at the Liceo Tulliano in Arpino, Angelo began studying technical subjects. At the age of 18, he moved to Zurich in 1891 to attend the prestigious Polytechnic from which he graduated as a Mechanical and Hydraulic Engineer. After graduation, he was employed at the Escher Wiss Workshops in Zurich, where he designed hydraulic turbines and paper machines. He then learned the latest developments in paper production at the Perlen Paper Mills in the Canton of Lucerne. After specialising in applied chemistry at the Technikum in Winterthur, he moved to Rijeka to work at the Smith & Meyner paper mill, specialising in the manufacture of fine papers and value papers for the Hungarian government. His training was completed in Berlin where, from 1899, he attended the Imperial Institute for Materials Analysis – Paper Section. Returning to Italy in his thirties, he devoted himself to the family paper mill in Isola del Liri, which he took over in 1918, on the death of his father Beniamino.

He transformed the paper mill's corporate structure into the Società Anonima per le Forze Idrauliche del Liri. He was

responsible for the construction of the daring hydroelectric power station at Villa Correa, on the Cascata Grande di Isola, the first cavernous power station in Europe, designed to protect the landscape; he was also responsible for the Lanificio sul Liri – formerly Mazzetti – for the manufacture of felts.²⁶⁹

In 1944, when Isola del Liri represented the German rear of the Cassino front, many of its works suffered severe damage. The paper mill was machine-gunned by British planes and undermined by German bombers who blew up the power station at Villa Correa. Helped by his three sons Beniamino, Luigi and Carlo, he restarted the activity of the Wool Mill renamed Felt Factory on the Liri River (1946), the Villa Correa Power Plant (1947) and the Paper Mill with a second hydroelectric power plant called Nibbio (1948).

Courrier paper mill, then Mancini of Isola del Liri

The Courrier-Mancini paper mill was founded in 1832 by the Frenchman Joseph Courrier (circa 1875?-1860), on the edge of the old town of Isola di Sora on a flat, elongated islet formed by the left branch of the Liri river.²⁷⁰ Joseph Courrier was born in Voiron in the Dauphiné, a land from which many expert papermakers from beyond the Alps came, such as the

²⁶⁹ He was also responsible for the restoration of the Boncompagni Castle that had frightened the King of Naples 100 years earlier, and for the management of a farm with 21 colonists stretching from Arpino to Castelliri.

²⁷⁰ The date of foundation is taken from a text by Osvaldo Emery, *Isola del Liri*, Isola del Liri 1935, pp. 40 ff. which, according to Stefano Manlio Mancini (ID, *La Cartiera Mancini - già Courrier - ad Isola del Liri: l'unità tipologica della fabbrica villa*, in AA.VVV, *Vie d'acque e lavoro nella provincia di Frosinone. The paper industry*, pp. 65-75. Ibid, p. 75), may have been derived from family memories.

Bernard family active in Piedmont. He had come to Isola with other Frenchmen during the development plans of the French Decade. Between 1820 and 1825, he had been director of the Forme Factory under Antoine Béranger and then Charles Lefèbvre. In 1825, together with another Frenchman, Charles Lambert, producers of woollen cloth, he had set up a cardboard factory in some premises of the former ducal palace (today Palazzo Boncompagni-Viscogliosi).²⁷¹

Access to the facility was made possible by a bridge originally made of wood and later reconstructed in iron. The building occupied a large part of the islet. A front body facing north-east is used for living quarters and offices, and then there are side wings, one containing the machine rooms, the other the warehouses, offices and later built dwellings. The entire building, as it appears today, horseshoe-shaped and arranged around an open courtyard on the south and west side, was completed, apart from a few additions, by the end of the 19th century. The complex also includes other single-storey buildings that housed the carpentry workshop, repair shop and forge. As has been noted, the organisation had similarities with the structure of agricultural manor life. We know that in 1844-1846 the factory produced 15,000 reams of paper annually and employed 70 workers. In 1856 it had a large flat machine and produced many types of paper and came close to the Lefèbvre mills without being able to overtake or undermine it.²⁷²

²⁷¹ ASN, *Ministero dell'Interno*, II, Inventario, fascio 588/1, Isola di Sora, 12 juillet 1832, *Joseph Courrier a S. M. Le Roi du Royaume des Deux Siciles*; also AS. Caserta, Intendenza Agricoltura, industria e commercio, *Arti e Manifattura*, b. 4 foglio 72, Sora, 13 November 1831, *Elenco degli stabilimenti esistenti nel distretto di Sora*, il sottintendente all'intendente.

²⁷² Pinelli Vincenzina, *I Lefèbvre*, Isola del Liri 1980, p. 5.

Giuseppe Courier died in 1860 and was succeeded by his son Dionisio, who reached a daily production of 2,000 kg in 1861. In 1863 the factory employed 141 workers, which became 126 in 1866-1868 (42 men, 72 women, 11 boys). In 1873 the building was valued at 170,000 lire, with a endless machine, 9 cylinders, 7 engines (9 in 1867). Compared to a few years earlier, the factory had shrunk but produced approximately the same amount of paper (21,000 quintals in 1873).

In 1874 the factory ceased production caught up in the crisis that had led to the closure of many paper mills, but resumed a few years later, in 1889, with 85 workers. When Dionisio died in 1899, Eugenio Courier took over, but was forced to close in 1903. In 1911, the municipal administration rented the building from the Società Bancaria Ticinese, Courier's creditor, to install the primary school. At the end of five years it would buy it for 160,000 lire. In 1912, an adaptation project was made to turn it into a school building. On 20 March 1914, the paper mill was put up for auction and purchased by Mr Beniamino Viscogliosi and the 6 Mancini brothers. On 15 January 1915, the third floor of the front collapsed in the Marsica earthquake. Angelo Mancini, already the owner of the nearby Tritto paper mill, remained the sole owner of the shares, bought out those of the others and began a renovation and refurbishment of the building. During this period and in the following decades, the factory employed a few dozen people, 50 or 60.

Roessinger-Boimond paper mill

The Boimond Paper Mill was derived from a small mill founded in 1840 by Francesco Roessinger, who converted a

mill built in 1832 by a certain Antonio Paolucci on the left bank of the Liri river. Roessinger, originally from Switzerland, wanted to set up a wool mill there. In 1860, the wool mill had a daily production of 140 quintals of 'reborn' wool (of excellent workmanship), was equipped with three hydraulic motors producing a driving force of 50 horsepower and employed 223 workers.²⁷³ In 1868, Roessinger also purchased a mill on the right bank of the Liri river, owned by Francesco Gemmiti and Carlo Gigli founded in 1811. Here he installed a pulp mill, which later became a paper mill. The Roessinger paper mill was also affected by the post-unification crisis. Roessinger was then administrator of the Liri Paper Mill, which has already been mentioned, and upon his death he was succeeded by his sons Eduardo and Enrico.

It was Enrico Boimond (1844-1926) who completed the purchase of all the Roessinger property. He was born in Sora to Francesco Claudio Boimond from S. Julien and Elisa Courier from Voiron, daughter of Joseph Courier. In 1892, he set up the first pulp factory in Valcatoio. The machinery installed was the best that the company Teodoro Bell from Lucerne could provide. It had a hydraulic power of about 200 horsepower. It employed 26 workers and produced about 26 quintals of wood pulp per day. When the Boimonds bought the Roessinger estate, Emilio and then his sons Enrico (1877-1934) and Mario (died 1947) were put in charge of the mill.

In 1922, major investments began after the partial destruction in the 1915 earthquake. In 1924-1925, the building on the right bank was converted into a hydroelectric power

²⁷³ In the *Statistica industriale* published in 1869 by the Ministry of Agriculture, Industry and Commerce, the factory appears among the mechanical wool factories, produced by mechanised means.

station with a project by engineer Vittorio Ribaudi. In the following years, the factory was further enlarged with the construction of an interior room for pulp production. In 1928, the Valcatoio factory was converted into a hydroelectric power station.

Piccardo paper mill in Fontana Liri

The Piccardo paper mill is a minor factory among the papermaking settlements in the Liri Valley.²⁷⁴ Giuseppe Piccardo was born in Voltri around 1770 in the place where most of Genoa's paper mills were concentrated. In 1838, we find him in Anitrella di Monte San Giovanni Campano, directing the Lucernari mill, to the right of the Liri river. His direction there lasted from 1838 to around 1850. His son Giulio Piccardo, who worked at the mill with his sons, managed it from 1850 to around 1870, until the Lucernari family leased the complex to the Società delle Cartiere Meridionali in 1873. When in 1879 Giulio Piccardo applied to the Caserta Civil Engineers for a water derivation from the Liri river to build his paper mill, located in contrada Ravaglie, in the municipality of Fontana Liri, he was 74 years old and had behind him a solid experience acquired in Voltri and then in Anitrella di Monte San Giovanni.

With their experience and skill, the Piccardo family made a decisive contribution to perfecting Lucernari paper, which was sold to the Roman Curia, Roman customers and the *Giornale di Roma*; the duck, which appeared as a watermark

²⁷⁴ Ottaviani Marcello, *Cartiera Piccardo di Fontana Liri*, pp. 176-182, in Studi Cassinati, Cassino (2010), no. 3.

in Lucernari paper, had managed to equal the 'Palomba' of Fabriano paper. After 1870 we find Giulio Piccardo, it is not clear whether as manager or partner or director, in Pietro Nicolamasi's mill, located opposite the Lucernari paper mill, on the left bank of the Liri river, but in Fontana Liri territory. The locality of Ravaglie, chosen for the construction of the new paper mill, also known as Le Paglie because of its abundant perennial weeds, is located about 500 metres from Anitrella, on the Valle del Liri state road at km. 69. The building, which also included the owners' dwellings, consisted of several floors. The surface area of the ground floor was about 400 square metres.

Major work was needed to build the road and reach the Liri, which flows further down. The water was taken further upstream, where today the small Enel hydroelectric power station of Fontecupa (today Fonte Serena) stands; the canal was 300 metres long, 1.80 metres wide and 1 metre high. Even today, more than a hundred years later, the remains of the canal can still be traced. The paper mill absorbed 1.02 cubic metres of water per second, capable of developing approximately 33 dynamic horsepower, sufficient for paper production. A drum or round machine was installed, modified in 1899 by Cesare Piccardo, Giulio's grandson, who came from Guarcino and settled in Fontana Liri. Between 7 and 20 workers worked in the factory, plus master Giulio Piccardo and his sons Carlo, Martino, Tommaso, Angelo and Stefano. It was clearly a family-run business, with a paternalistic character.

Daily production was around 700 kg of straw paper sold in the area, but also in the south and North Africa. In the years 1896-1898, the Italian Institute of Statistics published a census of paper mills and paper production in the Kingdom in its *Annuario*. From it we learn that three paper

mills were active in the municipality of Fontana Liri (then in the province of Caserta): **Cartiera C. Cerasoli & Fratelli**, the **Cartiera C. Fiorentini Giuseppe** and the **Cartiera C. Piccardo & Fratelli**: at least 32 workers worked in these paper mills. So, apart from the six owners of Piccardo, the other paper mills must have been very small.

These were in fact small mills, compared to those in Isola Liri-Sora, in which a total of 1,128 workers were employed and where paper machines had been installed. The problems of the paper workers were also different: in the small family-run paper mills it was easier to be absent and less risky to be dismissed. In the factories of Fontana Liri, Sant'Elia Fiumerapido, Atina and Anitrella, the lure of the countryside was still strong, the workers were not completely integrated into the factory and wage reductions or unemployment were less traumatic because they could be compensated by income from small livestock farming, carpentry or masonry work. In the large paper-making centres of the Liri Valley, on the other hand, particularly in Isola Liri-Sora, we are in the presence "... of a process of separation of the working class from the traditional rural context and culture".²⁷⁵ We are therefore witnessing, in the large Liri factories, the demise of the paternalistic system and the surest weapon employed against it is the strike, which weakens the bosses, who are forced to come to terms. It is precisely the workers of the Piccardo factory who are the first to go on strike, on 23 July 1912:

Fontana Liri (Caserta). On 25 July [1912] the workers of the Morino e Costantini wrapping paper factory, 54 in number, 34 of whom were men with wages varying from 1.60 to 2.10 lire and 20

²⁷⁵ Ottaviani Marcello, *Cartiera Piccardo di Fontana Liri* in "Studi Cassinati", no. 3 a. X, 2010, pp. 176-182.

women from 0.75 to 1.10 lire, went on strike demanding increases from 10 to 20 % depending on the category. The company granted the 6 to 10 % increase and work was resumed on the 29th. At the same time (23 to 29 July) the workers at the G. Piccardo and Sons paper mill, 11 workers in all (5 men and 6 women) went on strike for the same reason and obtained various increases for which wages rose from 5 to 20 cents a day. The workers at the two paper mills were not organised. (News from the Prefect, the Mayor and the companies).²⁷⁶

The paper mill continued its activities, although the balance sheets were not always entirely positive. On 13 January 1915, Angelo Piccardo fell victim to the earthquake that struck the area and died under the collapse of the 'Palazzo delle Botteghe' in Anitrella. The surviving owners of the paper mill, now elderly, gave the factory to Mr. Preve of Naples, on the advice of the Viscogliosi family of Isola Liri. When the latter, in 1921, sacked the worker Battista Nazareno for acts of indiscipline, the other workers went on strike out of solidarity and did not resume work, although pay was increased. The Isola Liri Chamber of Labour also threatened a general strike at the Sora paper mills. An agreement was finally reached but, after the stoppage, the paper mill did not recover and so the machinery, which was now old and unusable, was finally sold. The workers thus lost their jobs.

Thanks to the work brought by the Piccardo paper mill and other small mills and the powder mill, the municipality of Fontana Liri had a population growth between 1871 and 1911 of 71.70%, the highest in the Liri Valley. And few emigrated: 48 in 1903 (while there were 216 from Arce; 170 from Arpino; 155 from Sora; 33 from Isola del Liri). Although covered by

²⁷⁶ *Ibid.*

vegetation, the remains of the paper mill are still present at km. 69 of the S.S. Valle del Liri.

Bartolomucci paper mill of Picinisco

The failure to modernise manufacturing methods and the demand for a cheaper product led to the decline of the supremacy of many southern paper mills. All the paper mills in the Kingdom of Naples were in a very backward situation in the early years of the 19th century: paper quality was mediocre due to manufacture still being based on manual methods; in the same years, the paper industry could not fail to suffer the repercussions of the political unrest of those years.²⁷⁷ It has been said, however, how important and strategic the introduction of papermaking was in those years in the Liri valley, encouraged by the presence of several rivers – the Liri, the Rapido, the Fibreno – rich in pure water, particularly suitable for papermaking. It was enough for the inhabitants of the area to first assimilate the papermaking process pioneered by the people of Fabriano and Amalfi and then, in the following centuries, to import machinery from abroad. In fact, the first paper mill in the Liri area dates back to 1516 and was founded in S. Elia Fiumerapido on commission from the Abbey of Montecassino, which wanted to make its industrious *scriptorium* more autonomous also from the point of view of the production of supports.

An important place in the list of paper mills in the area belongs to the Bartolomucci paper mill in Picinisco, in a locality today known as 'Borgo Castellone'. The earliest

²⁷⁷ Pelliccio Assunta, *La cartiera Bartolomucci a Picinisco in due documenti ottocenteschi*, in 'Studi Cassinati', no. 1 a. V (2005), pp. 29-34.

historical information on this mill indicates that it was founded around 1630, based on a specific project commissioned by the Duke of Alvito, Francesco Gallio; but we have to wait until the beginning of the 19th century for other indications that it was enlarged to adapt it. The entrepreneurial success of the *Manifatture del Fibreno* had also borne much fruit for others. The factory in question must have immediately begun to bear fruit, since in the first quarter of the 19th century the owners (from 1826), the Bartolomucci brothers, began complex and costly extension work by constructing a three-storey building 130 palms long, 30 wide and 60 high. The factory had state-of-the-art machines with which more than twenty different types of paper were produced, for the sale of which a warehouse (*fondaco*) was purchased in the centre of Naples. The 64 workers (32 women and 32 men), who were trained by French personnel, stayed in houses in the paper mill, as did the plant manager Lorenzo Montgolfier.

In 1828, due to the distance from the consular road that required costly transport of materials by mule, the Bartolomuccis requested the construction of a road from Picinisco to Atina; these improvements were carried out when Bartolomucci became a supplier to the Ministry of the Interior. In 1834, Giuseppe Bartolomucci in agreement with Charles Lefèbvre opposed the purchase of a endless machine from an owner of a historic paper mill in Amalfi. In 1850 it was considered the best paper mill in the Kingdom of the Two Sicilies, surpassing Lefèbvre, but only for a few years.

Production proceeded more than satisfactorily until around 1870. Following a crisis, the Bartolomucci family sold half of the mill to the Visocchi family, owners of the Atina paper mill. On the occasion of this change of ownership, a survey was carried out and a plan drawn up to be attached to the deed of

sale, *Pianta della Cartiera Granili e sue Adiacenze* and the *Pianta del terreno denominato S. Lucia 2 dei Signori Fratelli Bartolomucci in Picinisco*, which form an exhaustive description of the small but well-functioning property.²⁷⁸ This new dual ownership seemed to give further impetus to the paper mill, which employed 90 workers between 1876 and 1890 and was unable to meet all the demands of the market. At the turn of the 19th and 20th century, in the wake of what was happening in Europe, new raw materials such as wood pulp and cellulose began to be adopted, which necessitated a radical renewal of technology for which not all companies were prepared. Modernisation affected Northern Italy in particular, where paper mills and resources were located and consumption was particularly high; perhaps it was also for these reasons that the Bartolomucci paper mill began a slow but inexorable decline from 1896 onwards, so much so that it employed only 10 workers compared to the 90 a few years earlier. In 1906, the Bartolomuccis sold the other half of the mill to the Visocchi family.²⁷⁹ The paper mill continued to operate into the 20th century and was taken over by private owners in 1984.

The planting is described in detail and the floor plans are very precise. A 'Villa Palazzata' is described and, among other things, a small house for the manufacture of lye. Another element that is clarified by the analysis of the document is that

²⁷⁸ We can date these documents very precisely from the stamp cancelling the revenue stamp worth 4 lire on which the effigy of Victor Emmanuel II appears: 20 October 1868. Another common element are the three signatures at the bottom, probably of the technicians who carried out the survey and drawing of the two properties: Giuseppe de Nicola, Francesco Coccoli and Raffaele Danese.

²⁷⁹ Pelliccio Assunta, *La cartiera Bartolomucci a Picinisco*, *op. cit.*, pp. 32-33.

the building that now closes the complex and appears on the far left of the entrance did not exist at that time, while in its place the complex was bordered by a simple wall; as was the current central core, the highest building: they are therefore both to be ascribed to the period immediately following the drafting of the plans, the period of maximum development of the factory, between 1870 and 1890.

Visocchi paper mill in Atina

In this area of large and medium-sized paper mills, the Visocchi paper mill in Atina, which stands on the banks of the River Melfa after the confluence of the Mollarino, also has a certain importance. Atina is an ancient town not far from Arpino. The year of foundation is 1841, although the purchase of the machinery and the building of the factory led to full activity later, with start-up between 1844 and 1845 when it was solemnly inaugurated on 8 May in the presence of the authorities. A paper mill of that size, medium-sized but important for the Atina area, meant work for many.

In general, the 1840s were very fruitful years for this area. The success of the Manifatture del Fibreno had led to a chain of other foundations of manufacturing companies that would, in part, become very large, and which aroused the interest first of Neapolitan financiers and later of groups of entrepreneurs from all over Italy as well as, as always, from France. The first partner of agronomist Pasquale Visocchi (1817-1903) was a Frenchman, Pierre Peuche, who was soon replaced by Giacinto Visocchi (1819-1854), the founder's brother. Peuche and

Visocchi met in Naples where Pasquale had studied botany.²⁸⁰ He instructed Peuche to leave for France and buy the machinery while the factory was built by engineer Patrelli. The cost was such that the family had to mortgage their property in Atina. Around 1870, the paper mill employed 120 workers with 3,200 quintals of paper produced annually, so it was of medium size.²⁸¹ Also important was the figure of Francescantonio Visocchi (1834-1905), son of Giuseppe Visocchi (1785-1841) and Gaetana Fasoli. He studied in Naples with some of his 11 brothers and sisters and participated in the activities of his brother Pasquale. When his father died in 1841, he returned from Naples and continued his studies for three years at Montecassino under Luigi Tosti. To learn technology and engineering he studied in Switzerland, England and France and in 1859 married Maddalena Serafini, Baroness of Opi and Pescasseroli. Francescantonio worked to improve his wife's estates in Capitanata,²⁸² but he also devoted

²⁸⁰ In the capital, he followed the lessons of Marquis Basilio Puoti in his public school with Giacinto, and in the university he attended lectures on botany by Professor Michele Tenore and those on agriculture by Professor Cua. The death of his father in 1841 forced Pasquale to return to Atina. Having settled the succession, he ensured that the brothers continued their studies. During the war years, the brothers Giuseppe and Giacinto were under suspicion. Giacinto became a wanted man and hid in unhealthy places to the extent that he died prematurely in 1855.

²⁸¹ The Visocchi paper mill is mentioned in many works, even contemporary ones, from the 19th century. Raffaele De Cesare praises it as one of the best known industries in the Kingdom of Naples: R. De Cesare, *La fine di un Regno*, Lapi, Città di Castello 1908.

²⁸² He introduced newly developed machines and tools almost all imported from France. The reclamation of his wife's large estates in Capitanata, where desolation and malaria reigned supreme, was a great success. The Minister of Public Works, Silvio Spaventa, pointed to it as an example of a splendid private initiative and subsidised it with fifty

much care to the paper mill, which was soon to become renowned for its modern facilities and quality products. Like Lefèbvre, he tried to update his production and facilities by looking at European experiences. He realised that it was important to increase the power of the machines: the meagre hydraulic fall on which the paper mill could rely was not enough and so he planned how to transport the hydraulic force of the ironworks' fall using electricity. The first attempt was unsuccessful, but at the Paris Exposition of 1867, he explored the first applications of the rotating magnetic field and this enabled him to build devices to transport hydraulic energy using alternating electric current. He therefore had the Castellone power plant built, which went into operation in 1898 and which brought as much as 600 hydraulic horsepower to the mill, enough to run it for the next 40 years.

In 1867 the paper mill appeared, together with Miliani, in a yearbook entitled *Italie Economique* (Barbèra, Florence 1867) published on the occasion of the Universal Exhibition in Paris that year, where it had exhibited as a producer of various types of paper. The paper mill won an honourable mention together with Cartiera Miliani.²⁸³ Curiously, not many Italian paper manufacturers participated in the great exhibition of 1867.²⁸⁴ The building, which is now in a poor state of repair, is still visible and consists in its 19th-century part of two long

thousand lira. For these merits in the industrial and agricultural fields, he was elected 'cavaliere del lavoro' (Knight of Labour) in the first list after the institution of the honour, with Royal Decree of 1901.

²⁸³ *Italie Economique en 1867*, Barbèra, Florence 1867, p. 578.

²⁸⁴ Dell'Orefice Anna, *L'industria cartaria nel Mezzogiorno d'Italia 1800-1870*, in "Cahier Internationaux d'Histoire Economique et Social", Droz, Geneva 1979; Martini Alfredo, *Biografia di una classe lavoria. I cartai della Valle del Liri (1824-1954)*, Bulzoni, Rome 1984.

buildings and an entrance hall with living quarters and now a courtyard.

The Visocchi family ran the paper mill continuously until 1937, then it was bought by the Vita-Mayer industrialists, owners of the Cairate (Varese) paper mill. It continued for another 27 years until they declared bankruptcy in 1977.

Chapter 11

Amalfi Coast

The ancient factories of the Amalfi highlands

The art of papermaking soon spread to the Amalfi coast area, at the time of the Maritime Republic of Amalfi, due to a series of favourable conditions: the ease of transporting the raw material, rags, the ease of transporting the finished product by sea, and the abundance of water. Of course, the proximity of a large city like Naples greatly favoured trade.

The art of papermaking was introduced in Italy in Fabriano and Lucca, but in a very short time it also took root in Amalfi where, already in the 13th century, the first paper mills were founded along the so-called Valle dei Mulini. The people of Amalfi thus immediately distinguished themselves as important producers of paper in terms of quality and quantity throughout the late Middle Ages and the Renaissance. Towards the end of the 18th century, there were 13 to 16 paper mills whose owners' names are known: the Amatrudas, Lucibellos, Taianos, Bonitos and Towers.

The Amatruda, in particular, was the most prominent family in Amalfi, present in the Pogerola area since 1198. Members of this family participated in the political and commercial life of the seaside town and devised a watermark that still bears their name. The first paper produced here was of course bambagina (which was also called Amalfitan paper), despite official bans on its use due to its lack of strength and durability. Soon, as in the rest of Italy, they switched to using

increasingly resistant fibres such as those made from rags. In the 19th century, Amalfi's paper mills were already in great difficulty and could not compete with the strength of the paper mills in the Terra di Lavoro.

Despite the help of the Bourbon protectionist policy that led to an increase in production for a certain period between 1820 and 1840 and that brought the number of Amalfi paper mills to around 38 active in 1861, soon after came the decline with a continuous decrease in paper mills that by the middle of the next century numbered around 15, reduced to 2 after a disastrous flood in 1954.

Apulia and Molise

There are not many paper mills active in Apulia throughout the Middle Ages and Renaissance up to the end of the modern age. These include the **Sepino paper mill** documented in a drawing from 1778 in the Atlas for the reinstatement of the Pescasseroli-Candela sheep-track by Nicola Conte (Foggia State Archive) and in the *Atlante Geografico del Regno di Napoli* by Giovanni Antonio Rizzi Zannoni (1788-1812).²⁸⁵

In Rocchetta di Volturno there was the **San Bernardo Paper Mill** during the 18th and 19th centuries. It was a small artisanal paper mill, with an adjoining manor house, which made use of the work of several mills. As a small mill, it functioned for quite a long time. In the mid-19th century, the factory produced large quantities of paper, in the most varied types (from cardboard to tissue paper, required by Sicilian

²⁸⁵ *Atlante Geografico del Regno di Napoli di Giovanni Antonio Rizzi Zannoni* (1788-1812), plate VII 1809, Campobasso, Biblioteca Provinciale P. Albino, FC M ANT, 49.

companies to individually package oranges for export). It had 'continuous cycle' machinery installed during an expansion and modernisation of the factory in the very early 1900s. However, the flourishing activity of the factory was interrupted around 1916. In that year, in fact, the construction of a large hydroelectric power station was completed downstream of the Rocchetta al Volturno plain, built to supply the mechanical industries in Naples. A large adduction canal deprived the paper mill machinery of the necessary water and a 76-metre high dam dammed the Tegli stream, a tributary of the Magra.

Sicily

Sicily had a minor history in the paper industry due to environmental conditions and water scarcity compared to other Italian regions. In the 14th century there were 29 mills, 25 of which were located along the course of the Oreto. Until the 20th century, the Oreto valley was not urbanised because the torrential nature of the river made it difficult to build houses. The Oreto was used to irrigate gardens and orchards but also to move mills with natural or artificially created water jumps with masonry canals. One of the earliest historically known paper mills is the **Aquino paper mill** (suburb of Montelepre) that set in motion gears for pounding rags.

A paper mill was founded in 1702 by Don Pietro Opezzinghi in Montelepre, which we can name **Cartiera Opezzinghi** after the owner. The paper mill was built inside the town under the tower known as Ventimiglia beside a canal

about 1.5 kilometres long called the 'internal river'.²⁸⁶ It had 7 stacks and was later also used as a mill. The Opezzinghi family had become wealthy during the 16th century through trade and also because they had previously established another paper mill or 'artificio di far carta' in 1595 at Palazzo Adriano in Palermo.²⁸⁷ Protection was granted for the supply of rags, but rags would always be scarce. In 1609, another Opezzinghi, Don Mariano, called master Bartolomeo de Ansaldo da Bizza to work on the five stacks installed. The **Palazzo Adriano paper mill** supplied paper throughout the 17th century to Palermo and neighbouring towns and to the local Jesuit presses. In 1671, the paper mill became the property of this master Pietro Italiano, who also sublet the small **Montelepre paper mill**. In 1750, there were 55 mills, some of which were used as paper mills, such as the Molino delle Carte, and the three mills at Aquino-Molara (one of which has already been mentioned as ancient) in the municipality of Monreale. They were called the **Cartiera del Maglio**, the **Cartiera Grande** and the aforementioned **Cartiera d'Aquino**. In 1787, when the barony of Palazzo Adriano owned by the Duke of Villarosa in emphyteusis passed to the Commenda of the Magione of Palermo, at the behest of Ferdinand III of Bourbon, the paper mill was also included. In 1790, a further 10 stacks were built. The paper mill in Palazzo Adriano continued to function for most of the 19th century, until its closure.²⁸⁸

²⁸⁶ De Marco Spata Bruno, *Le cartiere di Sicilia. Gli Opezzinghi e l'artificio di far carta a Palazzo Adriano* (secc. XVI-XIX), Palermo, 2007, s.e. pp. 8-11.

²⁸⁷ State Archives of Palermo. Privilege given by Count de Pinares, Viceroy of Sicily, on 26 August 1595.

²⁸⁸ Todaro Pietro, *Le architetture d'acqua dell'Oreto. Adduzioni idriche, mulini e cartiere*, WWF Conference, 27-28 June 2014.

Sardinia

Sardinia is one of the few areas in Italy where the paper industry has not developed, probably because the production made here had to be transported to the continent or consumed in the island's main cities which, although they had publishing activities of varying size and importance, found it convenient to import mainly from the Genoese or Southern Italy. The first large plant, however, was founded in Arbatax in 1963, thus effectively outside the timeframe of this study. There were, however, attempts to set up paper mills, such as the one led by the King of Sardinia. The plant was built in Tresnuraghes, a suitable location due to its conformation – the abundance of water – and the supply of raw materials and was designed by Marquis Vittorio Pilo Boyl; it was built starting in 1809, committing 200,000 francs in all for the project. The structure consisted of three levels. Unfortunately, the mill only produced paper essays, and not good ones, because they were too dark, so it was abandoned within two years.

In Quartu Sant'Elena stood the **Pierri paper mill** founded in 1911 that produced paper for packaging.

Summary on Southern Italy by Giuseppe Galanti

With the exception of the paper district of Amalfi (characterised by artisanal production in proto-industrial structures, renowned productions that did not resist the introduction of automatic machines) and the important district of Sora and Liri-Fibreno, the production of the paper industry

in southern Italy is less studied.²⁸⁹ In 1798, Giuseppe Galanti wrote some notes on the paper industry in the Kingdom of Naples in *Descrizione geografica e politica delle Sicilie*.²⁹⁰ This work is considered a forerunner of the works of the French period, written by an up-to-date intellectual with an interest in economics, statistics and industry.²⁹¹ Galanti's words are considered an important historiographical basis for understanding the state of the paper industry in the Kingdom at the end of the 18th century, before the development of initiatives in the Liri Valley, which was destined to become the most important and modern paper district in southern Italy.²⁹²

²⁸⁹ Assante Franca, *Le cartiere amalfitane: una riconversione industriale mancata*, in C M. Cipolla-R. S. Lopez, cur., *Fatti e idee di storia economica nei secoli XII-XX. Studi dedicati a Franco Bolardi*, Bologna 1977, pp. 743-762; Anna dell'Orefice, *L'industria della carta nella Valle del Liri durante il XIX secolo. Dallo sviluppo alla crisi*, in AA.VV., *Trasformazioni industriali nella Media Valle del Liri in età moderna e contemporanea*, Isola del Liri, 1988, p. 117; Gregorio E. Rubino, *Le cartiere di Amalfi. Profili. Paesaggi protoindustriali del Mediterraneo*, Naples 2006; Edoardo Currà, cur., *Vie d'acque e lavoro dell'uomo nella provincia di Frosinone. The paper industry*, Rome 2010; A. Musi, *Manifatture, preindustria e protoindustria in principato Citra* (16th century-first half of the 19th century) in F. Barra, *op. cit.*, pp. 305-318; *Alle origini di Minerva Trionfante. Cartografia della protoindustria in Campania* (secc. XVI-XIX), 2 vols, v. I, edited by G. Cirillo, A. Musi, vol. II, edited by R. Dentoni Litta, 2008.

²⁹⁰ Galanti Giuseppe Maria, *Della descrizione geografica e politica delle Sicilie*, Presso i Soci del Gabinetto Letterario, Naples 1789, pp. 302-305.

²⁹¹ Rao Anna Maria, *Repubblicanesimo e idee repubblicane nel Settecento italiano: Giuseppe Maria Galanti fra antico e moderno*, in *Studi storici*, no. 4 (2012), p. 893.

²⁹² Dell'Orefice Anna, *L'industria della carta nel mezzogiorno d'Italia durante il XIX secolo* in Barra F., cur., *Manifatture e sviluppo economico nel mezzogiorno. Dal Rinascimento all'Unità*, Avellino 2000, pp. 265-267.

Galanti's 'Papers' reports that there were 65 active paper mills in Reggio Emilia in 1789, a figure later confirmed in modern studies.²⁹³ The figure is also confirmed in Lodovico Bianchini's *Storia delle Finanze del Regno delle Due Sicilie* (*History of the Finances of the Kingdom of the Two Sicilies*), which, omitting one paper mill, reports the number as 64.²⁹⁴ According to Galanti, in the period 1786-1794, 48 paper mills were concentrated in the Principato Citra and the Amalfi Coast, in Maiori (15 mills), Minori (13 mills), Vietri and Amalfi.²⁹⁵ More recent studies have attributed Minori the primacy as a proto-industrial paper centre (until the end of the 18th century) and Vietri the primacy of quality.²⁹⁶ In addition to the 48 paper mills that arose between Amalfi and Vietri, Galanti enumerates areas that had been characterised by the development of wool mills, such as the Liri Valley (Sora and Sant'Elia), Marsica in Abruzzo, L'Aquila and Celano, Matese (Piedimonte and Sepino), Alto Sannio (Isernia) and Irpinia (Atripalda, Sorbo and Nusco). Galanti in 1792 also mentions a paper mill in Soriano that had been active for a long time and had apparently been closed in 1790.²⁹⁷ The mill had been damaged in the 1783 earthquake but had recovered and produced 'passable' paper. Even in 1834, the paper mill was

²⁹³ Dell'Orefice Anna, *op cit.*, p, 257; T. del Conte, *L'industria della carta nel mezzogiorno preunitario in Risorgimento e mezzogiorno*, in "Rassegna di studi storici", a. 8 (1997), nn. 15/16, p. 159.

²⁹⁴ Bianchini Lodovico, *Storia delle finanze del Regno di Napoli*, 4 vols. Naples 1834-1835, vols. III, p. 363.

²⁹⁵ Rubino G. F., *op. cit.* p. 137.

²⁹⁶ Cirillo Giuseppe, *Alle origini di Minerva trionfante. Protoindustrie mediterranee: città e verlagsystem nel Regno di Napoli nell'età moderna*, Rome 2012, p. 82.

²⁹⁷ Galanti G. M., *Giornale di viaggio in Calabria* (1792) ed. crit. edited by Placanica, Naples 1981.

remembered and considered renowned and was believed to have been closed for a few years.²⁹⁸

Another mill stood in Reggio Calabria along the Gallico river.²⁹⁹ Other paper mills in the area were Pizzone, Sambatello and possibly others.³⁰⁰ After 1798, Galanti took on the role of visitor and noted other paper mills that did not belong to the 2 main areas, such as the Pianca (Chianche) paper mill added to the 1790 description, which he described as being of poor quality and badly run. Then there is the Castropignano paper mill, from Molise, which he defines as bad, and the Torre Annunziata mill, which he defines as excellent, the traces of which were lost after 1805.³⁰¹ Various sources and scholars and contemporaries assign a particular quality to the Abruzzo paper mills of Vetojo, Tempera, Sulmona (which in the Middle Ages had 4, reduced to 2 and then to 1) and especially Celano on Lake Fucino.³⁰² The Sulmona paper mill dates back to the mid-16th century and remained active until 1896.³⁰³ The paper mills of Tempera and Vetojo, founded in the 15th century on the outskirts of Aquila,

²⁹⁸ Parisi Roberto, *Carta e Cartiere nell'Italia Meridionale*. Cit., pp. 209-233. Ibid, pp. 223-224.

²⁹⁹ Vivenzio Giovanni, *Istoria de' tremuoti: avvenuti nella provincia di Calabria ulteriore e nella città di Messina nell'anno 1783*, 2 v. Naples 1788, v. II, table VIII.

³⁰⁰ Parisi Roberto, *Carta e Cartiere nell'Italia Meridionale*. Cit., pp. 209-233. Ibid, p-224.

³⁰¹ Parisi Roberto, *Carta e Cartiere nell'Italia Meridionale. Appunti per un bilancio storiografico*, in *Il patrimonio industriale della carta in Italia*, Atti del Convegno, Fabriano (27-28 May 2016). Cur., G. Castagnari-Livia Faggioni, Istituto della Storia della Carta Fedrigoni, Fabriano, 2017, pp. 209-233. Ibid, pp. 219-220; p. 225.

³⁰² Palermo Salvatore, *Notizie del bello, dell'antico, e del curioso che servono di continuazione all'opera del canonico Carlo Celano*, Naples 1792, pp. 97-98.

³⁰³ Parisi Roberto, *op. cit.*, pp. 220-221.

were run in the late 18th century by the Vicentini family of papermakers, and survived until the beginning of the 20th century.³⁰⁴ In the course of the century, the Vetojo paper mill supplied other southern lands with excellent paper and was praised by the naturalist Michele Tenore in his *Succinta relazione del viaggio fatto in Abruzzo*.³⁰⁵ He also mentioned in the text a paper mill founded in Palena by Baron Perticoni and in Sulmona by himself.

Particular success was achieved by the Loreto Aputino paper mill mentioned in the 1830 editions of the Royal Statistics. In the industrial exhibitions held in the Kingdom of the Two Sicilies, the Civitella Rovetto paper mill, which was set up in 1850 and lasted about a century, also achieved good success.³⁰⁶ The historian Trombetta observes that during the 19th century, all the interest of the publicity of the time went to the progress of the Liri Valley with respect to the ancient methods practised in these factories and the one in Amalfi. Thus the periodicals *Annali Civili* and *Il Regno*. Above all, Lefèbvre's supremacy was also celebrated with praise: 'If grandeur of manufacture, copy and novelty of machines are enough to give primacy, it alone can be rightly assigned to the latter'.³⁰⁷

³⁰⁴ Petrella Giovanna, *Archeologia dell'acqua all'Aquila e nel suo territorio. Tecnologia e sfruttamento delle costruzioni idrauliche per le attività artigianali*, in "Archeologia Medievale, a XI 2013, pp. 367-386.

³⁰⁵ Tenore Michele in his *Succinta relazione del viaggio fatto in Abruzzo ed in alcune province dello Stato pontificio dal car. Michele Tenore in the summer of 1829*, Naples 1830, p. 23.

³⁰⁶ Feliciani Franco, *Impianti dell'industria tessile e della carta*, in Franco Feliciani - Giuseppe La Spada - Walter Pellegrini, ed., *Archeologia industriale in Abruzzo*, L'Aquila 1985, pp. 217-219.

³⁰⁷ Liberatore Raffaele, *De' saggi delle manifatture napoletane in Annali Civili del Regno delle Due Sicilie* (1834) fascicolo VIII, p. 17.

Chapter 12

The situation of the paper industry in Italy

Statistics on the performance of the paper industry in Italy are rather fragmentary considering that, from the late Middle Ages until the Unification, there were dozens of pre-unitary States, and they had different systems of calculation, not all of them carried out statistics and when they did, they often followed different evaluation systems. However, for the period that interests us most, the 18th and 19th centuries, it is possible to sketch a general outline that includes some statistics where they were compiled by organisations of that time, with the description, size, production of the most notable factories. In this respect, one may ask: which are the 'remarkable' factories, worthy of mention for the originality of their production, the size of their plants, their productivity and the number of employees?

It depends from time to time. A large paper factory in the 15th or 16th century could have 20 employees, in the 17th century we have plants with 30 employees or even more. In the 19th century, the first modern factories appeared: buildings built according to the factory 'type' and equipped with bulky machinery that needed energy, first hydraulic, then coal and then real electricity, produced by turbines, to function. These also employed hundreds of workers and labourers, including children.

Let us first look at the numbers we have, starting with the period of the First Industrial Revolution in the 18th century. Let's start by looking at the number of people employed, which

is a fairly accurate indicator considering that manufacturing was similar everywhere.

The size of paper mills

- 1803. Magnani paper mills, 9 sites, '80 families'.
- 1807. Vaprio d'Adda paper mill, 102 workers.
- 1817. Mocenigo-Sartori paper mill (Cordignano), 60 workers (reduced to 42 in 1871).
- 1823. Manifatture del Fibreno paper mill, Pietro Coste & Soci, 100 workers.
- 1824. Miliani paper mill, 33 workers.
- 1836. Miliani paper mill, 80 workers (see 1824).
- 1840. Isidoro de Mori's paper mill, 40 workers.
- 1840. Masini paper mill (Treviso), 50 workers.
- 1840. Mori 'Carteron' paper mill, 40 workers.
- 1844. Manifatture del Fibreno, Isola di Sora, 700 workers.
- 1845. Manifatture del Fibreno, Isola di Sora, 750.
- 1847. Giuseppe Colombari's paper mill, Trento (Vela), 59 workers.
- 1865. Manifatture del Fibreno, Isola del Liri, circa 900.
- 1870. Gentili-Botteon-Conventi paper mill (Treviso), 36 workers.
- 1870. Bernardino Nodari paper mill (Lugo Vicentino), 200 workers.
- 1870. Visocchi paper mill (Atina), 120 workers.
- 1871. Maffioletti paper mill (Omegna, Novara), 600 workers.
- 1880. Vonwiller paper mill in Romagnano Sesia, 300 workers (?)
- 1883. Miliani paper mill, 160 workers.
- 1888. Fedrigoni paper mill (Prov. Treviso), 147 workers.
- 1888. Binda paper mill in Vaprio d'Adda, 370 workers.

1890. Wasserman - Gentili and then Isidoro de Mori paper mill, 35 workers.
1900. Rossi paper mill (Perale di Arsiero, Vicenza), 1021 workers.
1903. Fornari paper mill (Fabriano), centuries old, 300 workers.

The fragmentary data reported above – certainly to be completed as research on the individual paper mills progresses – show a progressive enlargement of the mills which became, especially from the 1830s onwards, veritable modern industries purpose-built according to entirely new types imported from France and England. In the beginning, the factories were derived from the *gualchiere*, which were progressively enlarged, but, at a certain point, they began to be built from scratch. Early examples include the Lefèbvre, Bernard, Nodari, Jacob, Fedrigoni, Miliani and Rossi factories.

Paper mill facilities

Modernisation is directly linked to the vitality of manufacturing districts: we have mentioned the obsolescence that took hold very early on in the Voltri district and, later, those of Fermignano, Lucca, Amalfi and various parts of the Papal States. At the same time, the plants in Piedmont, Lombardy and Terra di Lavoro were constantly being updated. While the first endless machine was installed in 1828 in the Manifatture del Fibreno, Carnello, and three more were installed over the next 20 years, another was installed very early on in Count Lucernari's paper mill. After the middle of the century, the paper mills that came into being or were

restructured and enlarged in Piedmont, Lombardy and Veneto, such as Nodari, Vonwiller, Jacob, Rossi, Donzelli and Binda, were all equipped with modern paper machines, flat or drum. And so the Liri, Boimond and Lefèbvre mills were not lacking in upgrades when it was purchased by the Società delle Cartiere Meridionali. Paper production in the 19th century seems to have undergone various cycles: there is an expansive phase that lasts until at least 1870, a phase of regression in spots (not all territories are the same), and a new, vigorous expansion between the 19th and 20th centuries when large factories are set up that surpass in size the one that, for almost fifty years, had remained the largest on the peninsula, above all because of the diversification of its production: the Lefèbvre's Manifatture del Fibreno. When big international capital and modern banks, such as Credito Commerciale, came in, the ruling class of the old factories disappeared.

Cultural and technical training of the ruling classes

The survival of the family-run paper mills, which are the majority in Italy throughout the 19th century and the first part of the 20th, is certainly due to the training of the managers. A particular case in point is that of the Manifatture del Fibreno, whose male son, who was to take over the family's affairs, received an excellent education that included a stay, lasting more than two years in all, in Germany, England and France, which was after all his second homeland. However, Ernesto Lefèbvre's (1817-1891) education was not purely technical: he informed himself, certainly studied and observed the organisation of the best factories, especially in England, the Netherlands and Germany, even though it was not his job to

take care of the company directly. From the beginning of their entrepreneurial adventure in Italy, which was in any case multifaceted and included other activities, the Lefèbvre family always took experienced technical managers, generally French, as collaborators, including Coste, Martin, Grévenich, Montgolfier and Didot. However, even if technical management was entrusted to technicians, there was still a need for shrewd resource management and this was lacking with the third generation. Towards the end of the 1880s, complex family affairs created a liquidity crisis that prevented the company from renewing machinery just as a technological change was taking place. The company was therefore dismembered and the major part leased and then bought, at a favourable price, by entrepreneurs from the North who, shortly before, had also bought the Liri Factory, founded by Perquier and partners in 1844. Compared to the entrepreneurial genius of Charles Lefèbvre, who was active in many pioneering fields, Ernesto (the second Italian generation of this family) showed himself to be shrewd, competent and also, in turn, a courageous interpreter of change when he founded a very modern wallpaper factory and a chemical factory, the only one of its kind. But he was operating in a totally different economic environment and the sinking after about 20 years of these two activities was also aggravated by the disastrous situation of the post-unification southern economy.

The case of another family in the area, the Viscogliosi, was different. They bought a small paper mill, as we have seen, from people who had been involved in the founding of the Manifatture del Fibreno, in particular Pietro Coste and Vittorio Courier, and began to run it. The Viscogliosi had been industrialists in the textile industry in Arpino for generations. They managed to convert their skills well. They were also a

large, wealthy family – although not as wealthy as the Lefèbvre family – but above all they succeeded in the generational transition of the third generation because Angelo Viscogliosi, who would run the paper mill until his death in 1918, put his son Beniamino (1873-1958) through an excellent technical education. He was sent to Zurich to attend the Polytechnic, where he graduated as a Mechanical and Hydraulic Engineer. After graduation, he worked in the Escher Wyss Workshops in Zurich, where he became a designer of hydraulic turbines and paper machines. He continued his training at the Perlen Paper Mills in Lucerne, studied chemistry at the Technikum in Winterthur and worked at the Smith & Meyner paper mill in Rijeka. Finally, he attended the Imperial Institute for Materials Analysis, Paper Section in Berlin. When he returned to Italy, he was well prepared and when he took over the management of the factory, he succeeded in bringing it to considerable success by designing turbines, power stations and machines. In this way, the factory lasted for more than half a century. But the Viscogliosi were deeply rooted in the territory, between Arpino and Isola, while the Lefèbvre had many other interests in Naples, and suffered in the backlash that the former capital of the Kingdom had suffered.

The Rossi paper mill, president Alessandro Rossi, also relied on the management of his son Francesco, who was completely dedicated to the paper mill and learned every secret from his father and the technicians. The third generation of the Rossi paper industrialists (they were also wool industrialists) received specific technical university training. Alessandro (1880) attended a four-year technical-industrial school in Ghent, a highly-regarded European paper school in Leipzig, and trained at a paper mill in Manchester. In 1906, took over

the technical management of the mill while his brother Girolamo (1882) was more inclined towards administration and finance.

General statistics

General national statistics began to be compiled during the latter part of the 19th century.

One of the earliest national statistics that can be cited is that of 1879, which reports data from 1878. It is the *Statistica di alcune industrie italiane*, Ministry of Agriculture, Industry and Commerce, edited by Vittorio Ellena (1844-1892), later Minister of Finance. The *Statistica* gave the following situation:

521 paper companies
17,312 workers
13,980 hp total motive power
813 vats
73 drum machine
95 paper machines
600,000 quintals of annual production.³⁰⁸

In about 1878, Lombardy, with its 69 paper mills out of 374, and then Piedmont and Veneto, led the Kingdom's production. In this context, the two Binda factories, in Conca Fallata and Vaprio, were among the most fierce and the Manifatture del

³⁰⁸ Ellena Vittorio, *La statistica di alcune industrie italiane*, Ministero di Agricoltura, Industria e Commercio, pp. 117-126; ID *Notizie statistiche sopra alcune industrie*, Roma 1879.

Fibreno was still the largest Italian factory, with almost 1,000 workers.

Another statistic from 1880 shows the data in a table that we reproduce in full:

COMPARTIMENTI	Num. degli opifici	Forza motrice in cavalli		Numero degli operai			Numero delle macchine		Numero dei tini	
		a vapore	idraulica	Adulti		fanciulli	senza fine	a tamburo	attivi	inattivi
				uomini	donne					
Piemonte	49	53	2796	1383	1370	411	32	8	88	31
Liguria	95	25	683	300	307	88	5	14	93	3
Lombardia	98	90	2260	1333	1619	886	18	18	136	25
Veneto	59	...	2502	863	877	222	4	1	136	37
Emilia	32	20	450	250	217	69	2	3	68	20
Umbria	11	...	301	166	31	28	...	1	17	...
Marche	15	30	446	571	221	114	3	4	29	11
Toscana	78	19	781	857	655	101	3	3	150	...
Roma	18	...	510	347	157	103	3	14	18	3
Abruzzi e Molise	3	...	...	18	...	...	...	...	4	...
Campania	58	30	2290	1415	1300	700	25	7	65	35
Sicilia	5	...	4	10	10	15	...	...	5	10
<i>Regno</i>	<i>521</i>	<i>258</i>	<i>12732</i>	<i>7412</i>	<i>7144</i>	<i>2756</i>	<i>55</i>	<i>71</i>	<i>813</i>	<i>175</i>

Here, the total number of workers is 17,312 with substantial equality between men and women (7412 and 7144) and a substantial decrease in the number of children, 2,756. The largest number of workers are in Lombardy, with an increase of about 30 in about two years. They were followed by Liguria with 95 (but on average smaller), Veneto (59) and Piedmont (49), where we know, however, that there were structures as

large as in Lombardy.³⁰⁹ As for Terra di Lavoro, it was part of Lazio, so the number of 18 factories totally corresponds to those in the Sora area. Only the lower part of the ancient province had been subject to Campania. The total number of factories was still 521.

Fifteen years later, the situation has changed, and not a little, certainly due to the structural crisis in the sector and the need to renovate machinery and buildings, which had resulted in a concentration and amalgamation of a good number of industries and the disappearance of the smallest ones. However, the overall number shows a decrease of as many as 125 factories, almost all of them very small. This phenomenon is most visible in Lombardy, where there are almost 30 fewer industries (but employment had increased and so had production). There is a slight increase in Tuscany and a decrease of 14 units in Piedmont. Ligurian paper mills also decreased by 32 units and in that case there were no replacements or mergers.

The general situation of Italian paper mills and the paper industry as a whole is photographed in the *Annali di Statistica* published by the Ministry of Industry and Commerce in Rome in 1898. This document provides data on paper production in 1896, with the distribution of the 396 Italian paper mills. The process of concentration is evident, although very uneven. According to this ranking, region by region, they are:

Veneto: 35 paper mills (89,250 q, 11% from endless machines)

³⁰⁹ Ministero Agricoltura, Industria e Commercio, *Annali di statistica*, serie II, n. 13, Tipografia Eredi Botta, Roma 1880, p. 105-108.

Tuscany: 85 paper mills (3% from endless machines).

Lombardy: 69 paper mills (202,900 q.).

Liguria: 63 paper mills.

Abruzzo: 38 paper mills.

Piedmont: 34 paper mills (234,000 q.).

Campania: 38 (Amalfi, Maiori).

Lazio: 15 (114,700 q.)

Tuscany: 85 (approx. 109,150 q.).

Emilia Romagna: 19.

Brands: 15.

Abruzzo: 2.

Sicily: 2.

Sardinia: 0.

In all, there were therefore 396 active paper mills.³¹⁰ The largest concentration is in Tuscany, but the mills are, except in a few cases, small. Some large paper mills such as Miliani are found in the Marche but the large number of small proto-industrial paper mills are mostly reconverted, close to closure or closed. Lombardy has 69 paper mills and some of them, such as the Vaprio and Maslianico mills, are very large: European-level factories.

Between 1910 and 1927 the sector saw an acceleration of the concentration process, a process that had begun at the turn of the century. At that time, the 13 largest paper mills (27 mills in total with over 500 workers) employed a total of 13,000 workers and 800 employees.

³¹⁰ *Annali di Statistica. Statistica Industriale*. Fascicolo LXIII, Bertero, Roma 1898, summary tables on pp. 44-55.

Of these:

5 in Lombardy (Vaprio, Maslianico, Conca Fallata)
4 in Piedmont (Jacob, Borgosesia, Maffioletti di Omegna)
1 in Veneto (Rossi)
1 in Emilia
1 in Marche (Miliani)
1 in Lazio (Cartiere Meridionali, which came to join
Lefèbvre and Boimond).

A statistic from the early 20th century, edited by Giancarlo Subbrero, reports the presence of 8 paper mills in the Bergamo area in 1901 compared to 9 in 1861. There were 247 employees (against 318 40 years earlier).

Total engine power 456 hp (380 hydraulic, doubled since 1861).³¹¹

As can be seen, the phenomenon of concentration can also be observed locally: a few years later the number of employed people rose and the number of paper mills fell. In this period there were 18 pulp mills (pastalegno), 12 of them in Tuscany. Small paper mills were still widespread and resisted because it was easy to obtain raw materials. At the end of the nineteenth century, there were 169 endless machines, 220 drum machines, and 216 active vats for hand manufacturing. In general, papermaking did very well from 1888 to 1896, in contrast to other sectors that were in crisis.

³¹¹ The equipment included 6 drum machines and 8 defibrators (for wood). Subbrero Giancarlo, *L'industria cartaria e poligrafica*. In Zamagni Vera-Zanincelli Sergio, curr., *Storia economica e sociale di Bergamo fra Ottocento e Novecento*, II, *Il decollo industriale*. Bergamo, Fondazione per la storia economica e sociale di Bergamo 1997, pp. 322-323.

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Archivio Notarile di Bergamo (ANB), Atto n. 5053 del 7 febbraio 1895 del notaio dott. Giovanni Dolci di Bergamo.

Archivio Catasti 19/3 Scurelle ad. A. 1830 min AST.

ASTV, Bontempo, b. 4462, cc. 12-18.

AST, Ms. 4060/2. Taglione dell'anno 1693. In Arch. Cons. (B.C. di Trento) where the name of Giacomo Bozzoni Cartaro is replaced by that of Biaso Golin (14 July 1693).

British Association of Paper Historians, at baph.org.uk.

MAIC, DirStat, *Annali di Statistica. Statistica industriale*, f. V. *Notizie sulle condizioni industriali della provincia di Bologna*, 1824.

Iconographic appendix



Above and below, images of the old Amatruda paper mill, Amalfi.

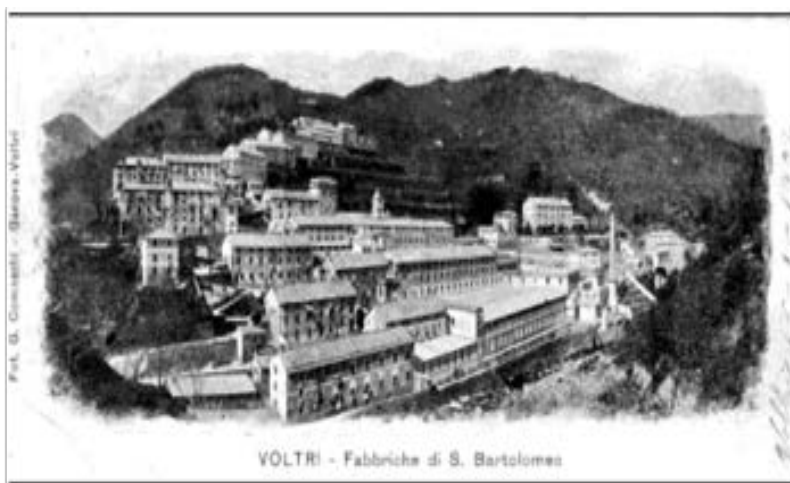




Antique hydraulic pile with multiple hammers.
Fabriano Paper Museum.



Vivaro Paper Mill (Friuli Venezia Giulia) 16th century.



Vintage postcard. Courtesy of Mr. Angelo Nesta.



The 16th-century Paper Factories of Voltri S. Bartolomeo (Località Fabbriche).



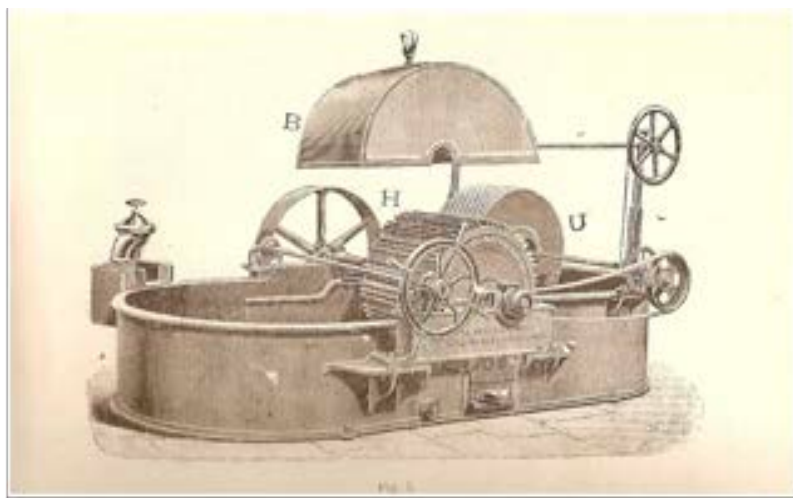
Paper Mill Bagni di Lucca.



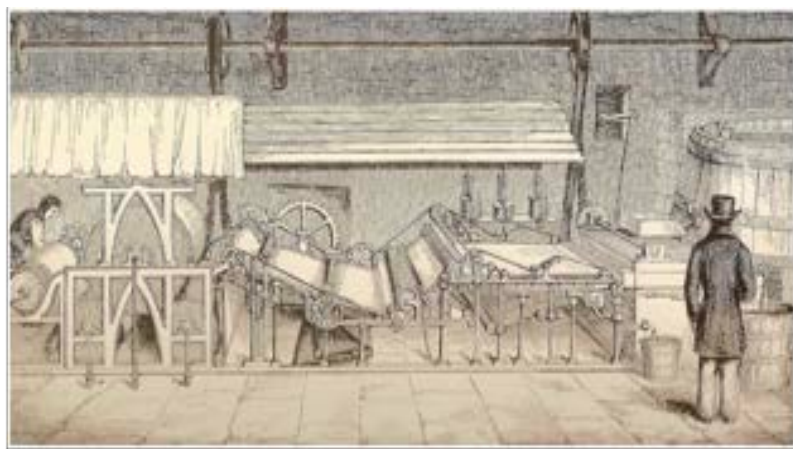
Old paper mill in Pescia.



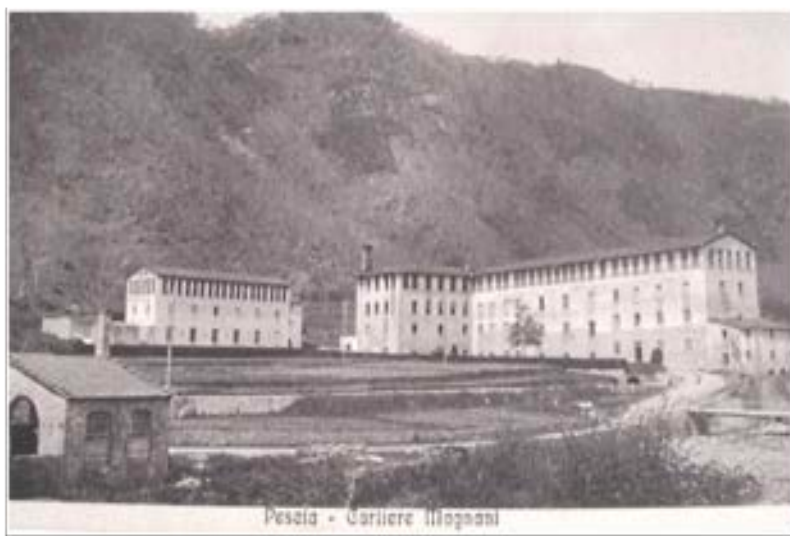
“Pistogio” for beating rags in the 18th century paper mill.



Dutch machine model.



First endless machine model.



Pescia - Magnani Paper Mill.



Valley of the Paper Mills, Pescia.



Paper mills in Toscolano Maderno in the ancient area
production area of Lake Garda.



Paper Museum in Toscolano.



Rizzardi Galvani Paper Mill in Vittorio Veneto
(active ca. 1635).



Papal Paper Mill in Ascoli, 16th-19th century



Manifatture del Fibreno, for a long time the largest plant in Italy.
Soffondo and Forme unit.

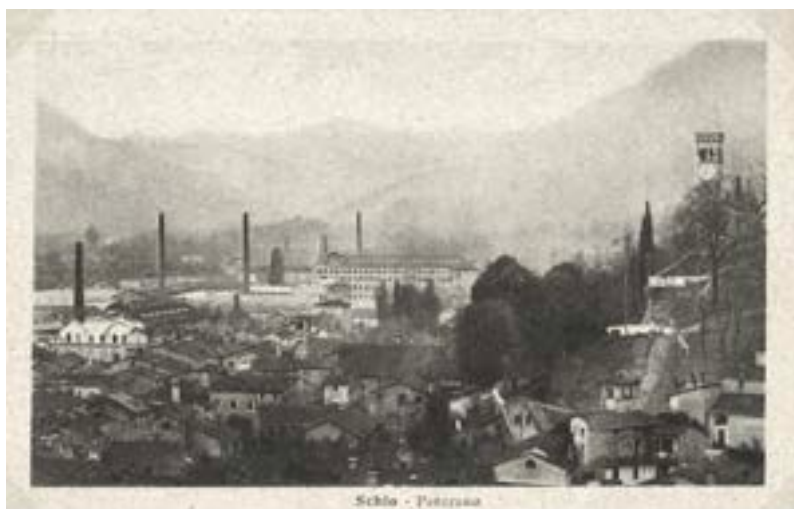


Fourth production unit of the Manifatture del Fibreno.
The Carnello Factory (Sora).



Above and below, Jacob Paper Mill.





Above and below, Rossi Paper Mill in Arsiero (Schio). (Schio).





Rossi Paper Mill, Pieve di Torrebelficino (Vicenza).



Rossi Paper Mill, Schio.



Above and below, Germagnano Paper Mill (Turin).





Above and below, the Fiume Rapido Paper Mill in Isola del Liri.





Lucernari Paper Mill in Anitrella.



Fedrigoni Paper Mill in Verona (ca. 1905).



Above and below, Nodari Burgo Paper Mill in Lugo Vicentino.



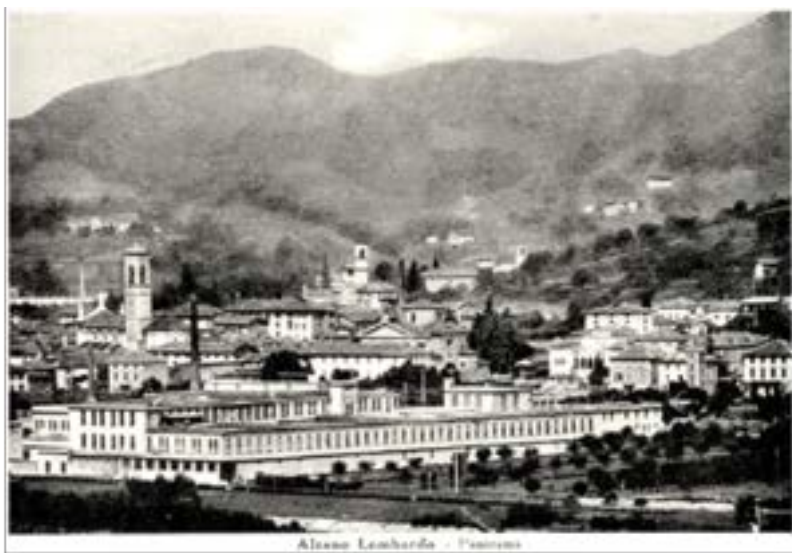


Above and below, Miliani Paper Mill in Fabriano, late 19th century.





Above and below, Pigna Paper Mill - Alzano Lombardo.





Gaillard-Bernard's Fossano Paper Mill.



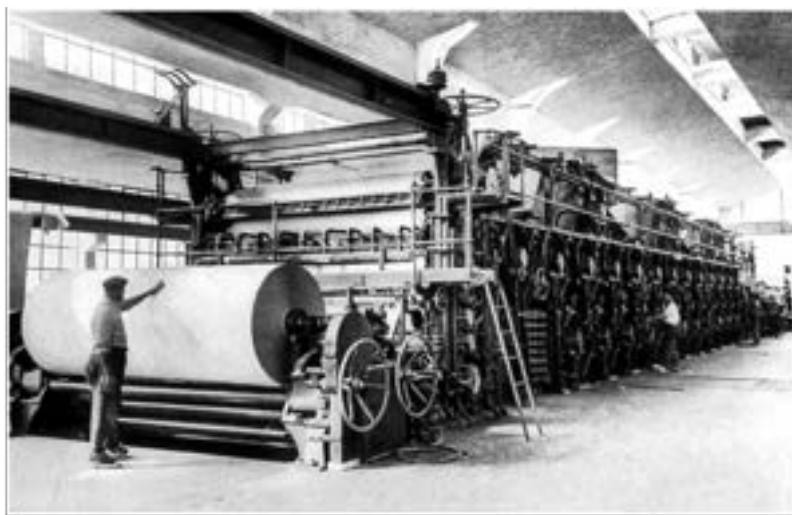
Gaillard stationery shop (Turin).



Emilio Boimond Paper Mill - Isola del Liri.



Dutch machines also used to the last at Boimond.



Endless machine (ca. 1920). Cartiere Meridionali, Isola del Liri.



Boimond Paper Mill, Isola del Liri.



The large Binda Paper Mill in Milan (Conca Fallata, built in 1857).



The Binda Paper Mill in Vaprio d'Adda (photo early 20th century).



Isola del Liri. Società delle Cartiere Meridionali.
General view of the 'Liri' plant (Emery 1935).



Isola del Liri. Società delle Cartiere Meridionali.
Liri Paper Mill. Sorting the sheets (from M. Scavia, *L'industria*).



2a



2b



2c



2e

1: La Valleriana e le sue cartiere

2: Fotografie storiche di alcune cartiere della Valleriana:

- a. Cartiera Carreto,
- b. Cartiera Le Carte,
- c. Cartiera Paradiso,
- d. Cartiera San Lorenzo,
- e. Cartiera Santa Caterina

3: Macchinari per la lavorazione della carta:

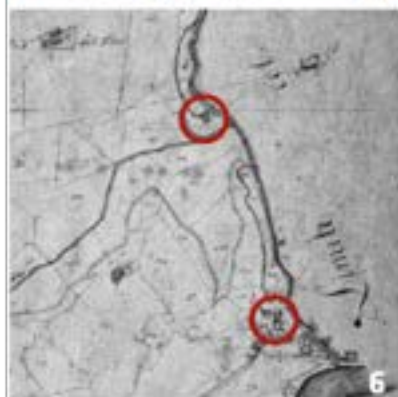
- a. Pila, b. Pressa, c. Tino



3a



3b



4: La cartiera Bocci di Pietrabuona

5: Carta dei Capitani di Parte Guelfa, 1783
Archivio di Stato di Firenze, Piante dei
Capitani di Parte Guelfa, cartone XXVI,
numero 36

6: Catasto Terreni, 1825
Archivio di Stato di Pistoia - sede di Pescia,
sezione K, numero 2

7: Nucleo primitivo della cartiera Bocci in una
fotografia del 1935.

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