TULLE

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The Journal of Australian Society of the Lacemakers of Calais Inc.

Australian Society of the Lacemakers of Calais Inc.

Meeting Times & Place:

ASLC meets at Don Bank Cottage, 6 Napier Street, North Sydney, NSW, on the third Saturday in February (AGM), May, August & November each year. All meetings commence at 1.00pm. You are invited to bring a plate to share with other members at afternoon tea and fellowship which follows.

Future Meetings:		Saturday, 21 November 2015
	AGM	Saturday, 20 February 2016
		Saturday, 21 May 2016
		Saturday, 20 Aug 2016
Find Us on the Internet:		www.angelfire.com/al/aslc
Want to Join or Membership Subscription Due?		Contact The Hon. Secretary Mrs Carolyn Broadhead
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Cover : "The Origin of the Stocking Loom" , painted by Alfred Elmore in 1847. Now part of the collection of Nottingham City Museums and Galleries.

This Coming Meeting: Saturday, 21 November 2016, 1.00pm

Guest Speaker: Our November Meeting will be a Christmas celebration and an opportunity for members to share a story of their Lacemaker family. There will be no Guest Speaker at this meeting.

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Issue 129, Volume 33 Number 4 – November 2015

President's Message

One of the things that sets our society apart from other family history groups is the engaging story of our Lacemakers and the path that led them to Australia. Having just returned from the annual conference of the NSW/ACT Association of Family History Societies, I was proud to share that story with many of the 220 delegates present. I would like to thank Marilyn Brown, who also represented ASLC, which meant we were able to keep our table open for the entire conference. We were pleasantly surprised to meet a number of Lacemaker descendants there and we hope that they will join us at our November meeting.

I am happy to report that our Facebook page is continuing to grow in "likers", including quite a few family history societies. One of our active contributors is a descendant of Calais Lacemakers who returned to England. He lives in Loughborough, LEI, and has been giving us regular updates on lace industry stories.

Most recently, we have made contact with an interesting network, Nottingham P:Lace. The group is associated with Nottingham Trent University and it is hoping to source funding to develop a virtual museum to tell the story of the Nottingham lace industry. They plan to produce digital heritage albums, which are like a digital version of a photo album, home video, collection and scrapbook, along with the shoebox full of memorabilia that many of us have. If you would be interested in participating, please let me know so I can keep you updated on the project.

Finally, I ask that you consider the Committee roles that will become vacant at the AGM in February – those of Secretary and Treasurer. If you would like to know more about the roles, please get in touch with Carolyn, Robbie or myself.

I would like to take the opportunity to wish you and your families a Merry Christmas and a happy and healthy 2016.

Megan Fox
President

Secretary's Report

Our August meeting began with a most informative and entertaining talk by our very talented Elizabeth Bolton who spoke about the 100 years since women commenced policing in NSW. What a story! On 1 July 1915 two women were sworn in as "special constables". They began with no uniform, no weapon and duties that were hardly 'policing' in the modern sense of the word. They even had to sign an indemnity stating that the police force was not responsible if any misfortune befell them in the line of duty. The story continued and as everyone knows great change has occurred for women in policing. They now hold some of the highest offices in the Police Force.

Hopefully this interesting story could appear in *Tulle* so you get the benefit of Elizabeth's painstaking research.

Talk at the meeting continued around the success so far of our Facebook presence and the action already occurring with 30 people already joining the conversation.

A motion was also passed that a committee be formed to gradually revamp the ASLC website. Suggestions were that we have an interface that is available to everyone and a section that can only be entered by financial members via a password. If you have any more ideas for what you would like to see on the website or if you have expertise in website construction we would love to hear from you on beachous279@gmail.com .

We wish you a very Happy Christmas and look forward in 2016 to hearing from your family members who would like to become members.

Please also consider accepting the position of Secretary or Treasurer when the AGM takes place in February.

Carolyn Broadhead

Editor's Comment

Abiding curiosity about one's forebears is nothing new; in fact, the study of genealogy dates back centuries. In Britain, early genealogy was intricately bound up with the class system. Genealogists were often more concerned with satisfying their client's expectations than finding the truth. This usually meant finding or trying to find questionable links with illustrious antecedents and the research done was therefore often very sketchy or non-existent. These days most genealogists and family historians are much more honest and diligent with their research.

When Charles Bernau compiled the first edition of his International Genealogical Directory (IGD) in 1906, a publication similar to the former Genealogical Research Directory (GRD) with which many lacemaker family historians would be familiar, he received more than 1,400 entries from genealogists both amateur and professional in Britain, Europe and America, but none from Australia. However, by the second edition in 1909, he had inclusions from a Miss Matilda Warren-Jenkins of Rose Bay, Sydney; Joseph Coleman of Melbourne (who sought information about all the Quaker families in South Australia); Rev. William Alexander Fleming, BA, regarding Ulster families in Australia (especially the Fleming, Monaghan, Darroch and Doig families); Samuel Good seeking information on the Britten, Crougey and Good families; and Lionel Babington Ravenscroft from Perth who was "interested in all branches of the Ravenscroft family, particularly those living in the North of Ireland before 1800... and about the ancestors of Varin De Bivelie, alias Byvele, alias Bylegh, alias Ravenescroft, who granted lands to Dieulacres Abbey, temp Hen. III".

These five were undoubtedly amongst the first Australian family historians. At a time when even a telephone directory was still a novelty, their work must have been cut out for them. Contacting "strangers" and requesting what was considered the most intimate of personal details (your birth and marriage dates) went against all contemporary social norms. However, researching ones family history was undoubtedly facilitated by the establishment of the first family history societies in the 1960s. These enabled and encouraged researchers to band together and to share resources and data. The ASLC can also proudly view itself as a significant force in this light.

I wish you and your families a happy Christmas and a healthy and peaceful 2016.

Richard Lander
Editor

The History of the Hand-Knitted Stocking[1]

The introduction of knitting in northern Europe is presumably derived from the knotting of fishing nets - so-called "netting". Up to now, the oldest known knit artefact is a wool cap - found in a Moor grave near Borum, Jutland (Denmark) and dated 1100 BC. However, the fabrication is unclear, as the cap could be netted, crocheted, or knitted.

The origins of knitting probably stem from the Near East. Knitted goods excavated in the Syrian region of the Euphrates are dated to the 2nd or 3rd century AD. The excavated goods were various differently striped stockings and socks, with blank spaces left between the big toe and second toe, presumably to accommodate sandal straps. Two knitting needles made of bone were found in a woman's grave in Thuringia - dated app. 300 AD. In a Merowing Age grave, iron knitting needles dated 500 AD were found. The first knitted articles were probably knitted using the two-needle technique, so it is assumed that the first European stockings were knitted in separate parts and then sewn together. Circular-knitting with several needles was not invented until later, probably in Switzerland or in Italy, where a pair of knitted silk stockings from 1254 are allegedly preserved. Additional knitted goods - some of the few references to European knitwear of the 13th and 14th centuries - still exist today in Switzerland. It is assumed that Arabs brought knitting to Spain, which then spread out across Europe.

As seen in knitted pillows found in graves from the time, hand-knitting was widespread in Spain in the 13th century. Italians probably already had knitted stockings in the 13th century. In Germany, the first proof that the knitting technique was known was a depiction of the Buxtehuder Altar by Master Bertram at the end of the 14th century. In the depiction, Mary is knitting a garment for baby Jesus with four knitting needles. Master Bertram probably learned this knitting technique in Italy, where he was an apprentice. It is proven that coarse-knit wool caps, which were milled after knitting, were produced in England and France in the 15th century. Stockings were presumably not knitted yet during this time, but rather woven from elastic wool fabrics such as "Scharlach" (a red-dyed wool fabric) and then cut and sewn together.

The fashion of tights, which was brought to central Europe by Spain and Italy, certainly popularized knitting. It is proven that hand-knitted stockings were produced in Spain

[1] I regret that I am unable to provide a proper attribution for this article because the material appears on several websites. I believe that I first found it on a German website and this seems to be supported for the German-centric historical aspect of the article. I apologise to all for not being able to give proper attribution but believe the article makes a significant contribution to the history of both hand and machine knitting and have included it in the pages of *Tulle* for this reason – RJL

during the first half of the 16th century. With time, this stocking displaced the previous stockings and tights, which were cut from fabric, sewn together and then enhanced with booties, or the foot part. The new art of hand-knitting came to England from Spain. William Rider is named as the first English stocking knitter, who hand-knitted fine stockings from worsted woollen yarn. He is responsible for introducing the traditionally male occupation of trouser knitting to England around 1564.

Because fine, hand-knitted hosiery fabrication was a lengthy and expensive process, stockings made from various woven fabrics or wool cloth remained the most popular form of legwear until the middle of the 17th century, at least for the majority of the population. Even King Henry VIII and his son Edward VI still had stockings or tights which were cut and sewn from wool or silk fabrics. Only very few hand-knitted silk stockings, which were probably imported from Spain at a very high cost, supplemented the hosiery collection of the English royal court in the middle of the 16th century. Henry VIII supposedly only owned six pairs of the famous Spanish black silk long stockings.

Even his daughter Mary I, who probably had her own source of knitted Spanish silk stockings through her marriage to Philip I of Spain in 1554, still ordered 27 pairs of sewn cloth stockings from her English hosiery maker Myles Huggarde in 1554. Elizabeth I was also supplied with 20 pairs of cloth stockings annually until 1577.

Hand-knitting was strongly circulated during the reign of Queen Elizabeth I, who received her first pair of hand-knit silk stockings in 1561. In the last quarter of the 16th century, a surge of hand-knitting occurred in England. Even by the middle of the 17th century, the majority of socks, stockings and tights were hand-knitted. Seamless stockings which were knitted using five needles were mentioned for the first time in 1560 in Switzerland.

In Germany, knitted stockings and tights came into use in the second half of the 16th century. However, they were so expensive and valuable at first that stockings and tights sewn from wool cloth were still produced for a very long time. Most people wore wool stockings; silk was reserved for Kings and the aristocracy. Margrave Johann von Küstrin was so delighted about his knitted silk leggings in 1569 that he enthusiastically wrote the following: "I have silk tights too, but I only wear them on Sundays and holidays."

THE INVENTION AND DISTRIBUTION OF THE HAND KNITTING FRAME

Mechanical hosiery knitting began in the 16th century and the method carried on into the 19th century almost unchanged. William Lee, as we know, a theology student from Woodborough near Nottingham, built a mechanical hand knitting frame in 1598, which

was the first attempt at mechanising hosiery knitting. From this time on, it was possible to hand-knit stockings with mechanical help.

Lee's knitting frame, fully constructed using iron, was an upright chair fitted with a bench for the knitter. Lee's first knitting frame could form 600 stitches per minute, as opposed to a practiced hand-knitter, who could only form about 100 stitches. Queen Elizabeth I prohibited the patent which would have been necessary to produce mechanically-knitted stockings and allow Lee to distribute his knitting frame throughout England. Her explanation was that the knitting frame could only produce coarse woollen goods which could not compete with fine hand-knitted silk stockings. The real reason, though, was probably the fear that hundreds of hand-knitters would be unemployed if Lee's knitting frame were launched. Lee attempted to establish his now improved "machine" in London in 1609. His knitting frame could meanwhile produce silk stockings with 1500 stitches per minute. Again, his patent application was rejected.

With the help of the Duke of Sully, Minister of King Henry IV of France, Lee established his knitting frame in Rouen in 1612. Lee agreed to deliver eight machines to Rouen, and to send six English knitters to teach the French how to produce hosiery mechanically. Lee was apparently working in Rouen with another two Englishmen in 1615, but this was the last mention of him - he probably died in France. After William Lee's death, his brother James brought seven of the knitting frames and most of the English knitters back to England, where the knitting frame was improved in the 1620s. Instead of the original fineness of 12 gauge (12gg - this means 12 needles per 1.5 inches, or 3.81 cm), stockings with 24 gauge fineness could be produced. Other improvements most likely led to the fact that it now required only one knitter to operate the knitting frame, as opposed to two knitters for the original knitting frame.

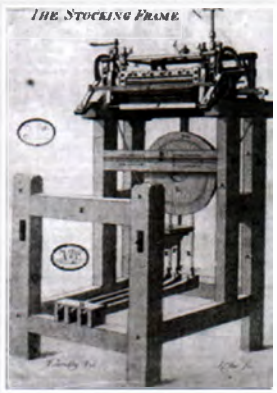
In 1641, there were two stocking knitting master craftsmen in Nottingham, who produced stockings on an unknown number of knitting frames. Most of England's knitting frames, though, could be found in London near the King's Court - the largest consumer of hosiery. In 1660, there were 650 knitting frames in England, 400 of them in London. By 1695, the number of knitting frames in London increased to 1500, and between 1670 and 1695, an additional 400 knitting frames were exported to France, Italy and Spain. This happened although in 1663 King Charles II ordered an export embargo for all knitting frames with which silk stockings could be produced. The knitting frame continued to be improved. At the end of the 17th century, the knitting method and thus the mesh structure became smoother. This made England the leading producer of knitted stockings, which were in

demand all over Europe. Knitted stockings were one of England's most important exports during this time.

In 1658, the industrial spy Jean Hindret smuggled design drawings of Lee's knitting frame to France. A century later, these drawings were published in Diderot's encyclopaedia, which today is the only reliable source of exact details on the construction of Lee's 17th century knitting frame. In 1667, Jean Hindret opened the first Royal silk hosiery mill in the Château de Madrid in Bois de Boulogne near Paris. Other hosiery mills began appearing all over France - but a royal decree in 1700 limited the production of hosiery to the following cities: Paris, Dourdan, Rouen, Cannes, Nantes, Oléron, Aix-en-Provence, Toulouse, Uzes, Romans, Lyon, Metz, Bourges, Poitiers, Orleans, Amiens, Reims and Nîmes.

James Lee brought seven of the eight knitting frames in Rouen back to England - the 8th knitting frame ended up in Venice with its English knitter. There it was copied and distributed to various European cities. Around 1700, one of the knitting frames could be found in Dresden, where it was used by a Frenchman.

Johann Esche, whose father operated a dyeing mill in Limbach near Chemnitz, had the opportunity to see a knitting frame while purchasing stockings. After several visits and in-depth studies of its construction, Esche was able to reproduce the knitting frame in wood. Esche opened a hosiery mill, and with his reproduction of the knitting frame, a flourishing hosiery industry was founded in the Erz Mountains. At the end of the 17th century, a knitting frame cost approximately 50 to 60 Taler - therefore even a small master craftsman could afford it.



Another reason that hosiery knitting spread throughout Germany was the persecution of French Protestants after the murder of King Henry IV and the subsequent annulment of the Edict of Nantes (1685). Many of the Huguenots who worked in knitting production fled to Germany and brought their knowledge - as well as the knitting frames - with them. The general distribution of the knitting frame in the 17th century eventually led to the replacement of sewn and hand-knit stockings by mechanically-knitted stockings.

THE HISTORY OF THE HAND KNITTING FRAME

In 1589, the hand knitting frame was invented by William Lee, who was from Woodborough, Nottingham in England. With the hand knitting frame, the production of knitted stockings with 600 stitches per minute and a fineness of 12 gauge (12 needles per 1.5 inches/3.81 cm) was possible. All goods produced on the hand knitting frame were smooth, or unpatterned. In 1609, Lee's knitting frame was improved. 1500 stitches per minute and a fineness of 24 gauge became possible.

During the beginning of the 18th century - when the hand knitting frame became known throughout France and Germany - the knitting frames, which were originally made from steel, were reproduced in wood in Württemberg and the Erz Mountains and renamed roller chairs. Many of the parts of Lee's knitting frame, which were originally made from steel, were fabricated from wood in Germany due to the shortage of steel workers and of steel itself. The steel hand knitting frame was not introduced in Germany until 1770.

In 1740, due to the introduction of the pressing machine, the production of stockings with coloured pressed patterns became possible.

In 1758, an invention by the English Jedidiah Strutt from Derby made the production of elastic ribbed stockings possible with Lee's knitting frame - this became known as double face fabric. This ribbed fabric, also called ribbed goods or "derby-ribs" in England, became a major competitor of the ribbed goods previously only possible by hand-knitting. Until this time, hand-knitted ribbed stockings were more popular than the machine-knit smooth stockings since they were more elastic and fitted the feet better.

In 1763, an Englishman called Morris received a patent (and an additional patent in 1781) for the "Petinet Machine", which enabled ornamental pierced patterns in the clock or feet of the stockings. These patterns could automatically be knitted into the stockings.

In 1776, the Englishman William Brockey from Nottingham invented a contraption for producing plated goods. In plated goods, the outside of the knitted article is made of a different yarn than the inside. He produced stockings that were cotton on the inside and silk on the outside.

In 1785, independent of the invention by Jedidiah Strutt, the stocking knitter Linder, from Chemnitz, invented a contraption for producing ribbed stockings.

In 1862, Ronneberger and Roscher from Clausnitz, Saxony, received a patent for a hand knitting frame which could produce "double-double" face fabric e.g. wider ribs. They called this the Patent Rib Knitting frame.

THE HISTORY OF THE MECHANICAL FLAT KNITTING FRAME

As opposed to hand-knitting, where stitches are formed one-by-one with moving latch needles, machine-knitting produces a row of stitches with the help of bearded needles and hooks. The construction of mechanical knitting frames can be retraced into the 18th century - the hand knitting frame was the basis. At first, the hand knitting frame was furnished with a revolving shaft and fitted with levers and cams - the whole contraption was then built into the base of the knitting frame. The machine was powered using a crankshaft, which was operated either by hand or through transmittal of elemental power. With the availability of water and steam power, the factory production of warp-knit and later knitted stockings began.

At first, only products with uniform widths could be produced using mechanical knitting frames. Single pieces of the basic commodity had to be cut out from the produced piece goods and then sewn together. Stockings produced by this method were cheaper, but the fit was not optimal. Therefore, stockings produced with the hand knitting frame - where stockings were narrowed according to the leg shape - were considered the better product in comparison to machine-knit stockings for a long time.

In 1769, the Englishman Samuel Wise patented a flat-bed rotary-driven machine with a revolving shaft built into the base frame. The shaft was set into motion by an elemental power source. Unless one preferred to produce a knitted good with a uniform width, the narrowing of stitches still had to be done manually with a hand narrowing device on this machine.

This machine is the predecessor of the mechanical rotary frame machine which was fashioned from hand knitting frames mainly in Saxony until the end of the 19th century.

In 1832, Egbert Egberts and Timothy Baley from Albany, New York, invented a hand knitting machine which was powered by a water-wheel. At first, this machine could manage 32 revolutions e.g. 32 rows of stitches could be produced per minute.

In 1834, the Frenchman J. A. Delarothière developed an automatic narrowing mechanism for knitting frames. This method was improved so that in 1836, two stockings could be produced at the same time. In 1837, the Englishman Coltmann invented a rotary frame machine which was steam-powered.

The mechanical flat knitting frame could not be used productively until a mechanical narrowing device was added to it. This enabled the production of stockings which were fitted to the leg form, such as those produced with a hand knitting frame.

In 1838, Luke Barton received a patent in Nottingham for the invention of the steam or water-powered wide rotary frame machine. This knitting machine could automatically produce tubular cloth and had several workplaces side by side. By dividing the labour, the makers strove for a more profitable use of the knitting machine. Using the lengthening machine, the heel was attached to the length of the stocking, and then the foot top and sole were attached to the heel and length of the stocking with a hand-powered footing machine. With these over-length machines, which were especially useful in manufacturing companies, one hoped to increase the production capacity of stockings.

In 1839, Bauer and Jahn received a patent for a mechanical flat knitting frame in Saxony. This machine enabled the production of five stocking lengths in a single working step and was very suitable for industrial stocking production. Also in 1839, the Frenchman Jules-Nicholas Poivret built a hand-powered knitting frame which enabled the production of two stockings with automatic narrowing.

In 1856, the Frenchman A. Simon introduced a mechanically-powered machine for the production of narrowed stockings at a trade show in Troyes. By 1860, this machine evolved into a model with four needle rows, or knitting heads, with which four stockings could be produced simultaneously.

In 1857 in Loughborough, Arthur Paget invented the movable bar frame in hopes of aiding hand-knitters and the cottage industry - who were worried about their livelihood - to compete against England's emerging hosiery industry. The first English hosiery factories were founded in 1853 and 1854. The Paget Frame - as opposed to the time-consuming operation of the hand knitting frames by foot or hand - could be worked using a crank. The first generation of the Paget Frame could produce only one stocking at a time, but much faster than before.

Improvements were made to the Paget Frame in 1858 and 1860. The strength of the Paget system was its work division - in the production of stockings, different machine widths were used to produce the length of stocking, the heel parts or the front and toe part of the stocking. This method decreased the cost of producing regularly fashioned stockings. For hosiery production, a set of machines was required. The set consisted of three machines for fashioning the lengths, one heel and one toe (or footing) machine.

The water or steam-powered Paget Frame displaced Lee's hand knitting frame. The Paget Frame was improved by C.G. Mosig in 1869, and was then able to produce two, then

three and later four fashioned stockings simultaneously. By using a special yarn guide in the Paget Frame, it became possible to automatically narrow stockings without interrupting the fashioning process. Although Paget Frames were very efficient, their set-up and use was complicated. The Paget Frame continued to be improved by French and German manufacturers, e.g. the French company Poron Frères in Troyes or the Chemnitz-based machine construction company Hilscher. In 1868, the Frenchman Linard Hubert again improved the Paget Frame. He introduced "French Narrowing" which allowed the foot part to be produced automatically with the stocking. The seam was situated at the middle of the sole and connected to the rear vertical seam of the stocking. Fine and Cotton patent stockings narrowed using this method can be found until the late 1950s.

In 1875, the company Brauer and Ludwig in Chemnitz received patents for the production of multi-coloured striped patterns and simple press patterns on the Paget Frame.

Also in 1875, the factory Poron Frères in Troyes received a patent for the Paget Rib-Top Frame, which could produce ribbed stockings with so-called patent edges. They also set up the Paget Frame to produce the Petinet pattern.

Numerous improvements to the Paget Frame were made during the 1870s by the knitting machine factory Gottfried Martin Hilscher in Chemnitz. At first, they expanded the one and two-needle row Paget machines, and then later specialized in building machines with four needle rows. Until approximately 1915, flat knitting frames were produced according to the Paget system, but these were later displaced by the more productive Cotton patent frames.

Between 1860 and 1864, the Englishman William Cotton constructed and patented a powered knitting machine - which was based on Lee's flat knitting frame - with a vertical movable needle bar. This machine later became known as the Cotton patent machine. As opposed to the Paget Frame, the invention of the Cotton patent machine had a major impact on manufacturing because with the machine, first eight, then twelve and later up to 36 automatically narrowed stocking lengths could be produced. This made the Cotton patent machine extremely suitable for mass production. Shortly after the machine was patented, the machine manufacturer Hermann Stärker from Chemnitz acquired the license rights for the entire European continent. Around the turn of the century, five machine manufacturers in Chemnitz, Oberlungwitz and Hohenstein-Ernstthal were producing 75% of the world production of Cotton patent machines.

In 1874, through the use of several yarn guides in the Cotton patent machine, it became possible to produce coloured designs using striped patterns and fashioned designs using tucking patterns.

In 1876, the Petinet or knitted lace pattern, which was previously produced on Paget Frames, could also be produced using Cotton patent machines.

In 1878, coloured applicable patterns enabled further design enhancements using the Cotton patent machine.

In 1880, with the invention of the "Tartan" device, the application of wide stripes onto stockings became possible. In combination with coloured striped patterns, this resulted in the "Glencheck" or Scottish look.

When William Cotton's patent expired in 1888, numerous machines were built according to his system. The most prominent company to continuously improve the Cotton patent machine was G. Hilscher in Chemnitz. Starting in 1885, even before the patents expired, the company became a specialist in the construction of Cotton patent machines. In 1888, they marketed their own, very powerful Cotton patent machine with six knitting heads, called "System Hilscher". Shortly thereafter, machines with eight and 12 knitting heads were produced, enabling the simultaneous production of up to 12 stocking lengths.

In 1892, with the automatic dropping of single stitches on the Cotton patent machine, stocking "run" patterns could be produced.

In 1895, new designs were enabled by the invention of the vertical striping device. Vertical stripe patterns could be produced using improved stripers or by doffing. Later, these patterns were usually produced using the "Jacquard device", which created a multi-coloured vertical jacquard effect.

Jacquard attachments for the Cotton patent machine led to the introduction of multi-coloured jacquard patterns at the end of the 19th century. In combination with the jacquard attachment for looms, a multitude of patterns became possible using Cotton patent machines and Paget frames.

In 1912, the company G. Hilscher in Chemnitz succeeded in constructing a Cotton patent machine which could produce fine-knit, smooth and circular stockings, which for a long time had been found a very difficult process. However, this method did not attain much popularity.

In 1917, G. Hilscher, Chemnitz began constructing high-performance Cotton patent machines (Model "Tandem") for lady's stocking lengths, foot parts and socks with 24 knitting heads.

In 1922, a device and a method for inserting an elastic band in ribbed goods was invented.

In 1925, the company Hilscher in Chemnitz began producing the so-called rib-top frame, which was used in the fashioning of ribbed borders for ribbed goods. In each row, a right stitch alternates with a left stitch. Both sides of the knitwear are identical. Goods produced with this method have a high degree of cross elasticity and can be stretched by 100%.

In 1927, the Société Générale de Bonneterie in Troyes invented a device for producing ribbed stockings on Cotton patent machines.

In 1938, when the mechanical narrowing of sinker loops on Cotton patent machines was introduced in Germany, the production of complex and fine structured patterns, also called Pineapple patterns, became possible.

The Cotton patent machine was particularly suitable for the production of fine lady's hosiery. Beginning in 1860, cotton or silk stockings were produced on Cotton patent machines. Later, when synthetic silks for hosiery production began appearing, the machines were primarily used for the production of Nylon and Perlon stockings. After World War II., 45 gg, 48 gg, 51 gg, 60 gg and 66 gg machines became available, and the finest yarn available was 15 Denier Nylon or Perlon. In 1953, the finest stitches produced with the Cotton patent machine was 75 gg; in 1956, this increased to 90 gg. The finest stockings produced were with 12 Denier yarn, which meant that 9,000 meters of this yarn type weighed 12 grams.

The Cotton patent machine underwent numerous improvements, so that by the end of the 1950s, it remained the most important machine for the production of lady's fine stockings with seams. With the emergence of fully-automatic circular knitting machines for the production of seamless lady's fine stockings around 1952, the Cotton patent machines were eventually replaced. Most Cotton patent machines became obsolete by the end of the 1950s.

ANNUAL SUBSCRIPTIONS

THE ANNUAL SUBSCRIPTON ($38.00) FOR MEMBERSHIP OF THE AUSTRALIAN SOCIETY OF THE LACEMAKERS OF CALAIS INC. IS DUE FOR PAYMENT BY 31 DECEMBER 2015. PLEASE MAKE YOUR SUBSCRIPTION PAYMENT WITHOUT DELAY TO ENSURE THAT YOU CONTINUE TO RECEIVE *TULLE* AND ALL THE OTHER BENEFITS OF MEMBERSHIP. A RENEWAL FORM IS ENCLOSED.

Henri Hénon

In this edition of *Tulle* we continue Lyndall Lander's translation of *L'Industrie les Tulles & Dentelles Mécaniques dans le Département du Pas-de-Calais, 1815-1900* by Henri Hénon. Her translation was commenced in *Tulle*, August 2015.

1816-1817

According to an interesting statistic and from information furnished by the Mayor of Saint-Pierre to the Deputy Prefect of Boulogne, several lace machines (mécaniques as they were then being called) were built in Saint-Pierre as early as 1818. At this same time, and independently from the Warp machines which he had imported from England, Mr Robert Webster built in his workshop (*atelier*) two Warp machines and a Circular-Bolt machine (the inside workings of which were illegally imported from England). In 1819 two Warp machines were imported by Mr William Tyler and two others built in Saint-Pierre by Mr Robert West.

The company, Clark, Bonnington and Webster, established in Saint-Pierre in 1817, was dissolved on 28 October 1818. Messrs Bonnington and Webster continued manufacturing together but the former mentioned withdrew from the partnership in May 1819 and relocated to Paris with one or two machines. Mr Webster was thus left alone to continue with his business. On 13 April 1819, James Clark set up in Calais with Messrs Richard Polhill, Thomas Pain, Edmund Pain and Thomas Dawson to produce Warp and Twist, Mechlin and Bobbin tulle. The notification of the formation of this business partnership appears in one of the registers in the municipal archives of the Calais Town Hall. On 25 August 1819 a general and public exhibition opened in the Louvre in Paris. Under the authority of the Deputy Prefect, the Mayor of Saint-Pierre requested Mr Webster to provide him with samples of the lace which he was manufacturing so that they could be sent to the exhibition; but Mr Webster refused giving the excuse that "he wasn't as happy with the quality of his lace as he might wish and that he couldn't supply samples which were beautiful enough to be subjected to scrutiny by a jury". The number of exhibitors who showed at the expo, which lasted 35 days, was 1,662.

1820-1821

At the beginning of 1820, Messrs Thomas and William Shipman assembled a machine in premises in Rue de la Pomme d'Or in Saint-Pierre. On 17 April (that year), James Clark gave notification to the Calais Town Hall that dating from that very day he ceased to be

associated with his business established in the town for making lace. Mr John Oswin, a man of independent means, replaced him; however he died shortly after and left four machines to his widow and son, James. Madame Oswin set up at 18 Rue Saint Denis, with two machines and her son set up in Rue Saint-Michel with two machines. During the course of the same year Robert West went into partnership with Mr Maxton and their establishment was situated at 38 Rue Française.

In 1821, two Straight-Bolt machines and three Pusher machines appeared in Saint-Pierre, all of them built in either Saint-Pierre at Mr Webster's establishment, or in the workshops of Mr John Derbyshire. Syner was the first to perfect on a Pusher machine a type of tulle called Grecian. (Henon's description is too technical to translate accurately but reads something like the following). He applied a long lever pusher to each carriage; but when open work was to be made, it was raised and missed the required carriage leaving a hole in the web; which once repeated and changed to the next carriage made Grecian net; if further repeated it produced a still larger mesh or open work. In the archives for the same period we can also find a copy of interesting statistics on the state of the lacemaking industry in Calais and Saint-Pierre for September 1821. This unexpected document appears to have been reproduced in part by the table on the next page. Mr Farrands was thus still waiting for his first machine so that he could establish his workshop. The number of workmen employed was roughly 210. It was in the course of this same year that the Leaver family, i.e. father, son and nephew, followed by Heathcoat and Lacey applied for their patents so they could use chariots and bobbins, left England and went on to establish machines utilising their system at Grand' Couronne near Rouen according to an account by Monsieur Lefort.

A law dated 28 April 1816 had prohibited the manufacturers from putting any distinguishing trademarks on their products. The Deputy Prefect of Boulogne-sur-Mer wrote on 5 December 1821 to the Mayors of Calais and Saint-Pierre requesting they advise the lacemakers that they were to conform with the new law and that they had to register with the Deputy Prefect the designs or prints of their stamps and seals. "Would you please inform them" said this public servant "that should they fail to complete this requirement their current production output could be considered to be foreign-made and seized under the Customs regulations." The net manufacturers hurried themselves to comply with the order from on high and it was because of this compliance that we have found precise information about the names of the first French lace makers who set up shop in Calais at this time. A public administration rule also required the manufacturers to submit similar sorts of information to the local Mayor.

13 septembre 1821. — État des fabriques de tulle existant à Calais et Saint-Pierre-les-Calais.

NOMS des PROPRIÉTAIRES	RUES de LEURS DEMEURES		NOMBRE de métiers en activité.	NOMBRE D'OUVRIERS	NOMBRE de personnes pour			CONTENANCE des pièces faites à la			QUANTITÉ DE COTON qu'ils emploient pour le tulle à la		
					brider.	raccommoder.	diviser.	bobinette. Grande largeur.	bobinette. Etroit.	Ordinaire.	bobinette. Grande largeur.	bobinette. Etroit.	Ordinaire.
								aunes.		aunes.	onces pr 1 pièce.	onces pour 1 pièce.	livres.
Polhill et Cie. .	du Port.	Calais.	10	14	30	18	6	32	500	3500	9	9	12
Oswin	Saint-Michel.	»	2	2	2	2	1	»	»	1365			7
Veuve Oswin. .	Saint-Denis, 18.	»	2	2	4	2	1	»	»	1540			6
Maxton et West.	Française, 38.	»	4	4	12	3	2	»	»	1240			8
Pain	du Cygne.	»	5	7	15	9	3	»	»	»			
Dubout.	de l'Étoile.	»	4	4	12	9	3	»	»	»			
Webster	le long du canal.	St-Pierre.	6	8	16	11	3	24	»	1300	9 onces pr 4 pièce.		6
Tyler.	»	»	2	2	9	2	1	»	»	1000			5
John Pain . . .	dans une rue près de la Grande rue.	»	1	1	4	2	2	»	»	400			2
Thom Shipman.	»	»	2	3	20	2	1	»	»	1000			4
Farrands. . . .	»	»	»	»	»	»	»	»	»	»			»
			38	47	124	60	23	56	500	11385	1 livre.	9 onces.	50 livres.

If the lace left the area, a certificate which had been issued by the Mayor had to be presented. This often resulted in mix-ups, especially when they were sending lace to the bleachers in Guines.

1822-1823

When these requirements referred to above were introduced, those to whom it applied sent a petition to the Prefect of Pas-de -Calais. He replied that there could be no favourable exceptions given to this request. If the Mayor was absent, certificates could be provided by the Town Clerk. This petition was signed by the lacemakers of whom we have already mentioned and on top of these by Messrs. Dubout and Austin, John Maxton, Cliff and Storer, all lacemakers in Calais.

Mr Dubout went into partnership on 31 January 1822 with Mr William Austin, a mechanic. This partnership was dissolved on 14 May 1823. The partnership of Cliff and S. Storer was likewise terminated in September 1823. Mr Cliff went on to establish himself in Saint-Quentin where he founded a net (tulle) factory which still existed in 1900 under the name of his son but which had been transformed several years before under the same government requirements into an anonymous company. It was at the same time that Mr M. H. Black, one of the best-known manufacturers, arrived in Calais and set up a machine to make lace strips. A large number of changes took place in lace manufacturing and numerous refinements were made in the mechanical aspects of the machines. This provoked the setting up of groups of men who specialised in the building, construction and servicing of lace machines in both Saint-Pierre and Calais.

Mr Derbyshire from Calais and Samuel Dobbs, a former *maréchal de ferrant* (blacksmith) in Saint-Pierre set up in competition, building the inner workings destined for Circular-Bolt and Straight-Bolt machines. On 8 November 1822 a manufacturer by the name of La Clotte took out a patent for a process which gave to silk, wool and other fabrics the appearance of embossed lace. The machines using the Pusher system also started to compete against the Straight-Bolt and Warp machines. In Calais under the skilful guidance of Mr Dubout and his collaborators, Lievin Delhaye and Méhaut, the first truly French-made machine, was set up in a workshop on the Rue de l'Etoile (Star Street). It was also during this period that there appeared the respected names of Boot and Smith, untutored but intelligent practitioners, one

in Calais the other in Saint-Pierre, who together helped to establish our city as an industrial centre which at that time only numbered 4,017 inhabitants of whom 3,129 were urbanised. All of these elements combined led to an oversupply of production. On the other hand the rumblings of war with Spain were at the point of ending while they concentrated on developing their own burgeoning lace industry. On 24 September 1823 most of the Calais lacemakers lodged a petition asking for the establishment of a *Conseil Prud'hommes* (Industrial Tribunal). The following 17 November, the Boulogne Chamber of Commerce came back with a favourable response. On 25 August 1823 a new exhibition was opened in the courtyard of the Louvre. For the first time, cotton tulle made in Calais was exhibited. This cotton tulle, 4/4 and 6/4, cost from 20 to 40 francs a measure. Four years later these prices had dropped by 55% to 60%. In a note from this time it was said that in one week on one machine you could make three pieces of lace which were 7 measures long and 2½ measures wide. Also at this time there were 43 lacemakers in the departments of Pas-de-Calais, Seine-Inférieure, Nord and Calvados. The widow Oswin from Calais wanted to take part in the exhibition but the sorts of samples which she sent were adjudged to be too small to be exhibited.

The year of 1823 was almost hopeless for Calais and Saint-Pierre owing to a variety of reasons. The customs duty, with its unjust and overly large nature dealt a terrible blow to business. On the other hand the workers had become very demanding not only about the price of their labour but also on account of the freedoms they expected and demanded in relation to their hours of work. The bosses not wanting to be subject to these sorts of demands banded together and agreed on the conditions that they would apply. There were also the continual annoyances regarding flexible government administration, especially customs and local government, and rules concerning the quantities of cotton tulle which were being allowed into France from England. This also had a detrimental effect on business enterprise. These unfavourable conditions, added to the inherent difficulties of an industry in its infancy, naturally could only lead to results which were barely satisfying. It was, however, due to the cooperative spirit and solidarity of the manufacturers and to their tenacity and perseverance that the industry could get on its feet and leave behind these problems. Since 1819, the manufacturers of Calais, under a common agreement, made sales only under the control of delegates who were responsible for maintaining prices at steady and reasonable levels.

(Lyndall's translation of Hénon's book will continue in the next edition of Tulle). The current translation ends about halfway down page 45 of Hénon's book.

Nottingham Lace Trade.

The following has been extracted from a British Board of Trade (Labour Department) report into the standard piece rates of wages in the United Kingdom in 1900. The Nottingham lace trade was just one of many trades investigated. I have omitted the actual piece rates paid to workers in the industry because they are meaningless in terms of the situation faced by our own ancestors. However, the general principles applied in 1900 appear from the report to have applied for many years previously and therefore I have assumed that at least some of the report is relevant and worthy of a place in Tulle.

The principal piece lists in connection with the Nottingham lace trade govern the wages of lace makers working one of three machines, the plain net machine, the curtain machine, and the Leavers machine. Makers of lace on the warp lace machine who are principally employed in the outside districts also work according to a uniform list. Those employed on the Plaun machine, which has come into wider use of late years, and which is used to work patterns on a plain net foundation, are not at present paid according to a uniform list.

The majority of lace makers are employed in connection with Leavers machines. Thus, of about 3,500 persons employed in Nottingham, on the three principal lace machines, about 900 are employed on curtain machines, and 700 on plain net machines, the remainder being employed on Leavers machines. As, however, the plain net machine is in some respects the simplest, it is treated of first in the following pages.

The hours worked in the lace trade are somewhat unusual. In general the machines are started at 4.00 a.m., and run until midnight, except on Saturdays, when they stop at 2.00 p.m. Two men take charge of the same machine or pair of machines and work in alternate shifts of about five hours each. Allowing for small intervals, each man's working day thus amounts to about 9 hours on five days of the week, and five on Saturdays. The week's output of the machine or machines is divided between the two men.

A learner is definitely attached to a man who acts as teacher, and serves his apprenticeship for four years. The total wages earned by the machine are in the Leavers and curtain branches divided into two halves. One half goes to the

teacher and the learner gets a continually increasing fraction of the other half, the balance being divided equally between the teacher and the employer. In the plain net branch the whole balance goes to the teacher.

The following clauses with regard to alterations apply to all branches of the lace trade:

Alterations.

That all work when lace makers are not making racks shall be called day work (except tying in warps or re-entering instead of tying in), and shall be paid for at the rate of four shillings per day for the first six days, and four shillings and sixpence per day for all days beyond. All half-days worked after the first ten hours to be paid for at the above rate.

Short Alterations.

When seven consecutive hours are made in any alteration the time to be paid for as half a day.

The list in operation for the Leavers branch is dated 1894, that for the curtain branch, 1897, and that for the plain net branch, 1889.

These lists, however, especially that for the Leavers branch, are continually being added to and amended by the Nottingham Lace Trade Board of Conciliation and Reference.

Plain Net Machines.

The warp in the plain net machine comes off a beam in much the same way as in cotton weaving, except that the threads occupy an upright instead of a horizontal position. A number of bobbins swing between these upright threads, passing on one side and, owing to a motion communicated to the warp, returning on the other, thus putting a simple twist round the warp thread. These bobbins are narrow metal rollers about two inches in diameter and of about the thickness of a penny. They are each carried in a metal carriage which slides in a special groove in the machine. A small spring in the carriage controls the tension of the bobbin thread. After a certain number of such motions the bobbins are carried by the

action of the machine to the right, and the twist is then put round the next warp thread. The twist is held up and the holes in the network created by a series of steel points which are inserted at each warp thread, and which may be considered as occupying much the position of the reed in an ordinary power loom. The bobbins in this traversing motion, which is peculiar to the plain net machine, pass the whole way across the breadth of the lace in front, and are then transferred to the back row. There are thus always two sets of bobbins in operation, front and back. The fineness of the lace is measured by the number of points to the inch.

It will be understood that this rough description applies only to the simplest form of net. In practice, machines coming under this head are of many varieties, and although never making patterns, in the strict sense of the word, make certain variations of the plain network, as, for instance, quillings, or lace in which at short intervals the threads are so arranged that the lace can be cut across at these points without giving a frayed edge; taping; spotting; and so on.

The method of payment in the plain net branch is by the "rack" which is defined as 240 holes along the length of the lace. For any particular class of machine the payment varies with the breadth of the lace made, which is always measured in "quarters" of nine inches, and with the closeness of the warp threads measured by the number of points to the inch.

There is an extra for working jacked-off silk or silk that has already been used on other bobbins and extras are also fixed for taping and craping.

Curtain Machines.

In this machine, in addition to the warp threads, there are a number of threads, each coming off a separate spool, which are used in making the pattern. The question of which thread or threads shall be brought into operation depends upon a series of steel points which are moved from above by a modification of the Jacquard system used in pattern weaving. In this system the movements of a number of rods or wires are controlled by a series of perforated cards, the positions of the holes stamped in these cards determining which of the rods or wires shall and which shall not move at any time. Any thread thus brought into operation is thrown by a "spool bar" over a certain fixed number of warp threads, the thread so thrown being held up by points and fastened in position by

the threads from the bobbins, which, as in the plain net machine, swing between the warp threads, but do not in this case have any traversing motion. In the more complicated varieties of the curtain machine there are also other arrangements for pinching together two warp threads, and so on, but in the simplest form of machine the pattern is produced entirely in the manner described.

The intervals between the warp threads are known as "gates," and a curtain in which the pattern consists of warp threads with spool threads thrown in places over three such intervals is a three gate curtain. Two fairly common varieties of this simple type are the double action four gate curtain, in which the Jacquard has twice as many motions as the lace machine itself, so that the threads can be thrown over two or four gates, and the machine with two or more spool bars, each throwing the threads over a different number of gates.

In the list -of prices for goods made upon the curtain machine, which was agreed to in 1897, these varieties are all provided for by standard lists, viz. :

Standard I.	For ordinary two, three, or four gate curtains.
Standard II.	For double-action four gate curtains.
Standard VII.	For curtains made with two-spool bars.

As regards the remaining standard lists, Standard VI., in which the prices are rather higher than in Standard I., is for goods made with additional bars or extras not provided for in other standards; Standards III., IV., and V. are for muslin goods, according as they are made with one bar not full threaded, one full threaded bar, or two bars not full threaded; Standard VIII. is for Combination and Swiss or Madras curtains made with two spool bars ; Standard IX. for purls and scallops, laces, and Hamburgh nets; and Standard X. for silk nets or other unfinished goods.

The other standard lists are generally similar in construction, and need not be here given in detail.

Payment in every case is made not for a definite length, but for a "rack", i.e., for a certain number of "motions" each swing of the bobbins to or fro constituting a motion. Thus a rack may vary considerably in length, according to the coarseness or fineness of the lace made. The standard rack is 1,440 motions. The price for a rack depends, as in the plain net machine, on the breadth measured in quarters

of a yard, and on the closeness of the warp measured by the number of points to the inch.

In the case of the curtain machine, as in the case of the first list quoted above for the plain net machine, the price is always per rack, independently of the length that goes to the rack.

Leavers Machines.

In this, the most important lace machine, a number of strips of lace of the same pattern are usually made at once in the breadth of a machine. Thus a number of the threads used in making the pattern will always be moving simultaneously. Consequently the threads do not all come off separate spools as in the curtain machine, but are divided into groups, each group coming off a roller, like a miniature weaver's beam. Each group passes through holes in a thin bar running along the whole breadth of the lace being made. The pattern is put in by these bars, which are directly controlled by a Jacquard, whose action determines which bar shall shift the threads it holds across the warp, and also how far (over how many gates) the bar shall move. As in the curtain machine, these threads are held up by points and fastened in their place by the bobbin threads swinging through the warp, but while in the curtain machine the Jacquard only controls the question of which threads shall be thrown across the warp, these threads being usually thrown across three, or at most four gates, in the Leavers machine the bars can be moved by the Jacquard across a varying number of gates, greater in many cases than in the curtain machine, before they return to their place.

The list for the Leavers section of the trade is more voluminous than either of the other two lists hitherto described. It takes account, first, of the classes of lace being made, each class having a separate card or subdivision of the list to itself; secondly, of the number of points to the inch; thirdly, of the number of bars; fourthly, of the length of the "rack". The "rack" is defined as a certain number of motions, generally, in the Leavers branch, 1,920, each swing of the bobbins to or fro constituting a motion. The fineness of the lace, shown by the number of points to the inch, the number of bars used, and the length of the rack made, indicates in some degree the difficulties experienced by the lace maker. The piece lists are all calculated for a 16 quarters machine, it being provided that for machines of other widths the prices shall be more or less in proportion to the full rack price.

Christmas in Nottingham

A report from the *Nottingham Guardian*, January 1856 on Christmas Day 1855. My thanks to Judy Gifford for this contribution.

The anniversary of the Nativity was this year observed as a strict holiday. The shops, with scarcely an exception, were all closed, and business universally suspended; in fact the appearance of the streets was as if the bulk of the population had taken advantage of the holiday and left home.

Figure 1: Prince Albert's Christmas tree at Windsor Castle in 1848 (from *The Illustrated London News*, Christmas supplement)

The churches were one and all, however, well attended, and of course, more or less well decorated with holly and evergreens. Christmas Eve had been ushered in with the usual éclat, many of our quiet streets being resonant with the discordant attempts of juveniles just let loose from school, each sounding his own instrument at the top of its pitch. Notwithstanding the inclemency of the weather, the waits (*Ed: street singers of Christmas carols*) went their usual rounds, and the choirs in the vicinity likewise visited and saluted their several patrons with the carol "Christians Awake".

On that, and the succeeding evenings, Christmas parties abounded - those joyous reunions of innocent mirth and recreation - where the joys of home are so completely realised, and the stricter forms of restraint laid aside. These assemblages, with the list of good things doubtlessly submitted for discussion, according to the details in our last, may serve to convey an indication of our Nottingham Christmas, than which a heartier has never been spent in the town. Business is good and people generally give way to enjoyment.

The French Republican Calendar

Quite some time ago Stephen Black was researching his French connections with members of his family who were in Calais pre-1800. He began to notice interesting twists in the way the French clerks were recording dates in the files. September was being abbreviated to *7bre*; October to *8bre* and so on. He thought that September and October being the ninth and tenth months respectively would have been abbreviated to *9bre* and *10bre*. What was going on?

The French Republican Calendar *or calendrier républicain français* was a calendar devised and implemented during the French Revolution and which was used for about 12 years from late 1793 until 1805 and for a further 18 days by the Paris Commune in 1871, at a time when France was deeply divided between the large rural, Catholic, and conservative population of the French countryside and the more republican and radical population of Paris, Marseille, Lyon, and the few other large cities.

The new calendar was thus the culmination of revolutionary propaganda. The revolutionaries believed that "the existing calendar perpetuated the frauds of the Christian church"[2] . The new calendar was designed to remove all religious and royalist influences from the calendar and was also part of a larger shot at decimalization.

Under the calendar there were twelve months, each divided into three ten-day weeks called *décades*. Thus 360 days. However, the solar year is 365 or 366 days long so five or six days known as the *Sans-culottides* (a series of national holidays) were simply tacked on to the end of the year. The last day of each *décade* was a day of rest. But hang on, thought the French workers. Under the Gregorian calendar we had only six working days between each day of rest whereas under this new beaut calendar we have nine!

The *Sans-culottides* were dedicated, the first to Genius, the second to Labour, the third to Noble Actions, the fourth to Awards, and the fifth to Opinion. This last was to be a sort of intellectual saturnalia, an opportunity for all citizens to say

[2] Brinton, Crane., *A Decade of Revolution, 1789-1799*, Harper & Brothers, 1934

and write what they liked about any public man, without fear of the law of libel. The sixth Sans-culottide of leap years was dedicated to the Revolution, and was to be an especially solemn and grand affair. The republican era was to date from the declaration of the republic in September, 1792. When the calendar came into use, the year I had already elapsed.

The Republican calendar year began the day the autumnal equinox occurred in Paris. The twelve months were arranged in four rhyming groups by season and were given new names based on nature, principally having to do with the prevailing weather in and around the French capital.

- **AUTUMN**
  Vendémiaire (grape harvest). Starting 22, 23 or 24 Sept ("wheezy")
  Brumaire (fog). Starting 22, 23 or 24 October ("sneezy")
  Frimaire (frost). Starting 21, 22 or 23 November ("freezy")

- **WINTER**
  Nivôse (snowy). Starting 21, 22 or 23 December ("slippy")
  Pluviôse (rainy). Starting 20, 21 or 22 January ("drippy")
  Ventôse (windy). Starting 19,20 or 21 February ("nippy")

- **SPRING**
  Germinal (germination). Starting 20 or 21 March ("showery")
  Floréal (flower). Starting 20 or 21 April ("flowery")
  Prairial (pasture). Starting 20 or 21 May ("bowery")

- **SUMMER**
  Messidor (harvest). Starting 19 or 20 June ("hoppy")
  Thermidor or Fervidor (summery). Starting 19 or 20 July ("croppy")
  Fructidor (fruit). Starting 18 or 19 August ("poppy")

The ten days of the week (décade) were simply named:

- Primidi (first day)
- Duodi (second day)
- Tridi (third day)
- Quartidi (fourth day)
- Quintidi (fifth day)

- Sextidi (sixth day)
- Septidi (seventh day)
- Octidi (eighth day)
- Nonidi (ninth day)
- Décadi (tenth day)

The days of the month which were previously associated with a saint were now given a unique name which was associated with the rural economy (e.g. a grain, pasture, tree, root, plant or fruit. Every décadi (ending in 0) was named after an agricultural tool and each quintidi (ending in 5) was named after a common animal. For example, those for October/November were as follows:

- 1 22 October Pomme (apple)
- 2 23 October Céleri (celery)
- 3 24 October Poire (pear)
- 4 25 October Betterave (beetroot)
- 5 26 October Oie (goose)
- 6 27 October Héliotrope (heliotrope)
- 7 28 October Figue (common fig)
- 8 29 October Scorsonère (black salsify – sunflower family)
- 9 30 October Alisier (chequer tree)
- 10 31 October Charrue (plough)
- 11 1 November Salsifis (salsify) ..... and so on

Needless to say the French Republican Calendar had its problems and certainly its critics. Our November meeting in the FRC would have been held on 1 Frimaire CCXXIV.

Now getting back to Stephen's comment regarding 7bre and 8bre etc. This harks back to the Roman calendar in which the year commenced in March. March thus became month one, April became month two and so on. The French words for months ending in 'bre' are septembre (September), octobre (October), novembre (November) and décembre (December). As these were the seventh, eighth, ninth and tenth months in the Roman calendar, it was natural that they came to be abbreviated to 7bre, 8bre, 9bre and xbre respectively.

Richard Lander

The Development of Machine Lace

Lace has been variously described as the aristocrat of textiles. The fabric of romance. As light as a spider's web. More air than yarn. Delicate fingers and fifteen tonne machines weaving the fortunes of a city from a pattern of holes. Nottingham Lace is known and loved across the world and its success transformed its home town of Nottingham. Our Society has many relatively new members and thus it is timely that we review the development of the lace industry over the past quarter of a millennium or so.

This potted history uses a small but wonderful booklet titled *The Story of Nottingham Lace* as its base for the story. This was published by The Lace Hall (now defunct) in 1988. The Lace Hall (later known as the Nottingham Lace Museum) was located in what had been a chapel for Unitarian Presbyterians, built in 1876. After the Lace Museum proved to be financially unviable, the building was converted to its current use, viz., as a *Pitcher and Piano* public house. This is right next door to Nottingham Contemporary which I wrote about in *Tulle* in February 2014 in an article titled *Travelling to Nottingham?* The old chapel is a stunning and stylish place to have a meal if you are visiting Nottingham. The building is still listed as a striking Grade II English Heritage 'church', has been beautifully restored and retains its stained glass windows and splendid exposed brick archways.

The Nottingham Framework Knitting Industry – The stocking frame was invented by the Reverend William Lee[3], supposedly at Calverton, about 13km to the north-east of central Nottingham, in 1589. I say 'supposedly' because some historians say he was from Sussex[4] whereas another states he was from Woodborough in Wiltshire[5]. Others point out that the vicar of the Church of St Wilfred at Calverton at the time William Lee is credited with the invention was James Revell (vicar of Calverton 1571 until 1592). There seems little doubt, however, that a William Lee did invent the stocking frame. He took his frame to London and France to gain patronage and it was in London, close to the wealthy and fashion conscious Court that the hosiery industry first developed. However there was a large number of frames in

[3] Refer to Kelly.G., *Well Suited to the Colony*, ASLC, Queanbeyan, 1998 for a fuller story on Lee, pp13-14.
[4] Including John Aubrey in his *Brief Lives* which he wrote between 1669 and 1693
[5] Charles Deering in *Nottinghamia Vetus et Nova*, published in 1751

Nottinghamshire and by 1714 Nottinghamshire had overtaken London both in the number of frames in use and in the quantity of stockings produced. The stockings were knitted in either wool or silk. Cotton stockings, for which Nottingham later became famous, were not produced until Richard Arkwright's inventions[6] in the 1770s had enabled the production of strong cotton yarn.

Knitting hosiery on a frame was a family affair. The heavy, hand-operated frames were located in attics and back-sheds of private houses. Men and boys worked as knitters (FWKs). Women and girls sewed the seams and the youngest children wound bobbins. Special windows let in the maximum amount of light. I have located some videos of a framework knitting machine being operated. These give a good idea of the operation of the machine itself, the strength needed to work it and the noise associated with its operation. I recommend them both to you:-

- https://www.youtube.com/watch?v=oWfzzfiMa6k (Well shows the mechanics of framework knitting and making a lacy pattern on a FWK machine.)
- https://www.youtube.com/watch?v=rpZf7Tz_vXM (From Ruddington FWK Museum. A short but interesting "History of Framework Knitting" video follows the initial video).

The frames were very elaborate, some with more than 2000 parts. A body of skilled frame-makers grew up in Nottingham to supply the local industry. Their talents were to become essential in the experiments which led to the creation of lace-making machines.

The First "Lace" Machines – By the 1760s the Nottingham hosiery industry was over-manned. Framework knitters had to work increasingly long hours for lower and lower wages. Many looked for ways to improve their machines or to vary the fabric produced on them so as to earn more money. Handmade laces of this period had small areas of pattern in large areas of net and this encouraged Nottingham's framework knitters to adapt their machines to produce cheap knitted imitations of expensive hand made net.

[6] Especially the spinning frame, later the water-frame, which made cotton thread thin and strong enough for the warp or long threads.

Various attempts were made, based on the use of a continuous silk or cotton thread, to make rows of loops. Their drawback was that material so produced tended to unravel if the thread was broken and thus few examples of this type of work survive today.

The most successful net made on an adaption of the stocking frame was "point-net", which was finally perfected in 1786 by John Rogers of Mansfield. It had a six-sided mesh which resembled hand-made net very closely in appearance, if not in structure. It was immediately popular and was the first fabric to be known as "Nottingham Lace".

The makers aimed their wares at the upper classes, the traditional market for 'real lace'. The nets were all made of silk, in either black or blonde (creamy-white), and could be up to 762mm (30 inches) in width. They were worn as "long stoles or broad scarves drooped forward over the face and falling on either side almost to the floor". Machine-made "lace" quickly became acceptable in high society. In 1816, Princess Charlotte of Wales was married in a dress of white silk knitted net.

Figure 2: Princess Charlotte's wedding dress

By 1810 there were between 1500 and 1800 point-net machines in Nottingham, employing about 15,000 men, women and children. Their operators could earn between one and two pounds a week, compared with the seven or eight shillings earned by framework knitters.

John Heathcoat and the "twist net boom" – In 1808, aged just 25, John Heathcoat built the first machine capable of producing a hexagonal mesh net with twisted rather than looped threads. The product his machine manufactured was much closer than "point net" to the structure of the hand-made lace of the East Midlands. It also marked a complete break with the hosiery industry. Heathcoat's "twist net" was not knitted. Instead, vertical threads (the warp threads) were stretched tight while diagonal threads (the weft threads) were twisted around them using bobbins placed in flat carriages. Heathcoat patented an improved version of his machine in 1809 and set up a factory in Loughborough. The machine itself became known as the "Old Loughborough". He moved to Tiverton in Devon in 1816 after his Loughborough

factory was attacked by Luddites and fifty-five machines, worth about £10,000 at 1816 values, were destroyed on the night of 28 June 1816.

Twist net was stronger than point net, more regular in appearance and could be washed without shrinking or being damaged. In addition, Heathcoat used a new cotton thread developed by his friend, Samuel Cartledge[7]. This was a fraction of the cost of silk and Heathcoat's machine could make 1000 meshes per minute whereas a hand lace maker was hard pressed producing five meshes in the same time. Lace was no longer a fabric used exclusively by the aristocracy. Prices fell, though not dramatically, and lace became popular with the newly rich industrial middle class.

The machines still only produced plain or slightly patterned net. Thousands of women known as "lace runners" were employed to embroider patterns onto the net. These women were very poorly paid. "The earnings of the lace runners do not, on an average, much exceed a half-penny an hour; for the weekly earnings for long days' work are not much above three shillings and are frequently below it[8]." Demand for twist net, from small items such as collars to large items such as shawls and dresses, was immense. When Heathcoat's patent expired in 1823, coinciding with a period of economic prosperity, thousands poured into Nottingham and its surrounding villages to take up the trade. The industry boomed. A song[9] of this period put it as follows:

"With rum and gin and brandy we made the people stare,
And horse and gig so handy O, to take the morning air,
And then with single-breasted coats and spanking new top boots
And pockets lined with one pound notes we were the merry shoots

The bobbin and the carriage hands they scarcely would look down,
Or bend their portly bodies for to pick up half a crown;
And if it had but lasted long, I think they wouldn't stoop
To poor beef steaks and onions, but they'd dine on turtle soup.

The cobbler left his soles and heels and wouldn't be so mean
As to stick to wax and tatching ends, but bought a twist machine;

[7] Refer *Tulle*, Issue 120, August 2013, p.21 for further information on Cartledge.
[8] *Penny Magazine*, March 1843, Vol. XII, p.119.
[9] From *The Date Book of Remarkable and Memorable Events Connected with Nottingham*

The tailor left his board and goose, the miller left his grist,
Tag rag and bobtail all got loose, to get into the twist.

And servants left the mop and broom and wouldn't go to place,
But set their dainty hands to work to purl and mend the lace.
But to tell the long and short of it, and so to end my song
Amongst so many twisters, Sir, they've twisted it too strong."

Farmers, bakers, butchers, bankers and publicans, in fact almost everyone who could raise money to buy or rent a machine, raced to share in the general mania. The terms on which the machines were rented varied of course depending on the machines capabilities. From £12.10s to £20 per quarter[10] per annum were rates readily realised. Others purchased their machines by instalments. These were commonly 10 shillings per quarter, or £3 a week for a six quarter machine, until the purchase cost and interest were both fully paid off.

However, the song clearly implies that many lace makers, elated by their elevation in the social scale, rather than making provision for the inevitable day of adversity, instead recklessly squandered their earnings.

The effects on Nottingham itself were also horrific. Because of the hosiery and lace trades, the town's population grew from about 10,000 to about 50,000 between 1750 and 1830 while its boundaries stayed the same. Gradually the gardens of 18th century Nottingham disappeared to be replaced by some of the worst slums in England. Between 1821 and 1831 about 3,000 "back-to-backs"[11] were built to house the workers attracted by the spectacular growth of the lace trade with at least one unwanted consequence: "There is no want of public nuisance in Nottingham; the entire quarters occupied by the labouring classes form but one great nuisance."[12]

The Triumph of the Machine – As early as 1813, John Leavers of Nottingham modified Heathcoat's machine by creating carriages, bobbins and combs of such delicacy that they could all be fitted into a single tier whereas the "Old Loughborough" had two tiers. The bobbins moved through the vertical warp threads and a sideways

[10] There is some mention of "quarters" as it relates to lace machines in *Tulle* No. 118, February 2013, p.12.
[11] See illustrations in "Well Suited..." (op cit) on pages 29 and 43.
[12] UK Royal Commission into Framework Knitters, 1844-45

movement twisted the weft threads around the warp threads. This produced a regular net which could then be hand-embroidered.

Leavers' first machine was only 457mm (18 inches) wide. However, the same basic principle is still in use today. Some of the machines which now bear his name have more than 40,000 moving parts and weigh about 14,000kg.

The early machines made plain net (tulle) which was then ornamented by hand. This was partly because of the technical problem of creating a machine which could produce intricate patterns. When large patterns became fashionable in the 1830s, the machine lace industry sought ways to create them. The first machine capable of producing patterned "twist" lace was the "Pusher" machine, made by Samuel Clark[13] and James Mart of Nottingham in 1812. In it, each carriage with its bobbin was moved by a long "pusher". By pushing, or not pushing, as required an open pattern could be produced. This gave one of the closest imitations of hand-made bobbin lace that has ever been invented. Even so the outlining threads (the gimp) had to be run in by hand.

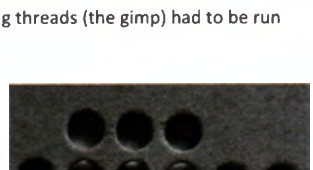


Figure 3: A small section of a Jacquard card

However, the great breakthrough came with the application of the Jacquard apparatus to lace machines. This had been developed for textile weaving in 1801 by Joseph Marie Jacquard in France. It consists of a series of cards perforated with holes which relate to a pattern and sewn together in an endless chain on a continuously moving cylinder. Vertical wires mounted above the cylinder would fall into the holes in the cards as each differently punched card presented itself to them. Whether a wire fell into a hole or was blocked by a blank surface of card affected the movement of the threads and therefore influenced the pattern.

Samuel Draper of Whitemoor, Nottingham, took out the first patents for using Jacquards on a lace machine in 1834 and 1835. However it was Hooton Deverill in 1841 who achieved the first really successful marriage of Jacquard cards and Leavers

[13] A Samuel Clark was the partner of Robert Webster. This pair was the first to dismantle a loom and to smuggle it into France in pieces. This may or may not be the same Samuel Clark.

machine. By his invention the Jacquard needles caused the warp threads to be pushed sideways to form the holes in the lace while the bobbins were moved around them to them together. This made it possible to reproduce most of the traditional patterns of handmade lace in both narrow and wide pieces. Lace made on these machines became cheap enough for most people to be able to hang it in their windows as curtains, or to use it for trimming clothing. Now at last patterns of great versatility could be produced on one machine simply by changing the cards. The industry could not only react quickly to changes in public taste but could also, through the activities of the merchants, help to stimulate the fashions itself. The invention also ended the role of the thousands of women who until then had earned their living as "lace runners".

The Rise of the Factory - When Joseph Wragg[14], a framesmith of Lenton, invented in 1841 a system which enabled the machine to introduce thicker threads into the fabric, thus outlining the patterns, the Leavers lace machines of Nottingham were able to imitate the fancy hand-made European laces completely. Chantilly, Valenciennes, Mechlin and, later, Maltese lace could all be produced mechanically at prices which the Victorian middle classes and their servants could afford.

In 1846, John Livesy completed his giant curtain lace machine, developed from a combination of already existing mechanical devices. This finally took lace the full journey from the collars and cuffs of the high and mighty into the middle-class parlour, producing affordable lace curtains and furnishing fabrics. At the Great Exhibition in 1851, curtains five metres long and nearly two metres wide were displayed, with elaborate patterns requiring between 12,000 and 15,000 Jacquard cards to produce them. These would retail at a mere £1.10s a pair. Such were the effects of mechanisation.

From the beginning of the lace industry, some lace-makers had worked alone in their own homes, in the same way as framework knitters. However, the small workshop was more common. These were often located in the upper storeys of substantial houses near the city centre. There was economic sense in remaining small-scale as operators could specialise in particular areas of the trade.

[14] A Matilda Wragg, wife of William Bown, come to Australia in 1848 aboard *Harpley*. She was from a very well-established Calais lace family and possibly connected in some way with this Joseph Wragg.

When Hooton Deverill successfully applied the Jacquard system to the Leavers machine, he also eliminated the effects of vibration in the machine. This prepared the way for operation by steam power. In 1841, the year of Deverill's patent, half of Nottingham's lace machines were still worked by hand in private houses. Competition from steam power forced the independent machine holders from their attics into the factories. By 1865 there were more than 130 large lace factories in Nottingham, with more than 90 percent of the machines steam driven.

A year later William Haynes of Nottingham overcame the final problem of reproducing the lace pattern into a system of holes on the Jacquard card. He devised the first method of of recording the position of every thread at every movement on the machine and this developed into a universal system used by generations of draughtsmen. Their blueprints enabled the correct sequence of holes to be punched into the Jacquard cards. Then using Deverill's invention to attach the Jacquard machine and its cards to the Leavers machines meant that at last mechanised lace was truly possible.

While the plain net branch of the industry was controlled by large firms, the fancy branch continued to consist of small independent operators who specialised in one area. This led to the the development of the "stall system". Space and steam power in factories would be rented to individual machine holders or small companies. In 1842, Taylor's factory at Broad Marsh housed the machines of twenty-three owners.

In 1841, the year of Deverill's patent, half of Nottingham's lace machines were still worked by hand in private houses.

The Golden Age of Nottingham Lace – By the time of the Great Exhibition at Crystal Palace in 1851, the first stage in the development of the Nottingham lace industry had been completed. The machines now existed to produce massive quantities of lace. In 1847 the "*Ladies Cabinet*"[15] had assured its readers:

> *"Our imitation lace is now carried out to such a degree of perfection that it is only a connoisseur in lace that can distinguish the imitation from the real".*

[15] The periodical press flourished in the 19th century. This referred to the *Ladies Cabinet of Fashion, Music and Romance* which was published monthly between 1832 and 1870.

Creation of the machinery was only one element. Nottingham Lace, like the local hosiery trade, depended on exports. Good communications within England, and worldwide, were essential. The construction in the 1840s of a railway link from Nottingham to London, and the introduction of the penny post[16] in 1840, were vital developments.

By 1850, lace was an exclusively female adornment (men had given up wearing lace during the French Revoluition of the 1790s). As a purely decorative fabric, lace was entirely dependent on fashion. For the next fifteen years, however, fashion decreed lace trimmings, especially on evening dresses, lace shawls, lace bonnets and wedding veils, lace caps, lace parasol covers. Wide crinoline skirts were trimmed with up to eighty yards of lace, and deep berthes hung down over evening bodices. To a greater extent than ever before underwear and nightwear were also lace trimmed.

The late 1860s saw the beginning of a severe slump which was to last for almost twenty years. The American Civil War of the 1860s and the Franco-Prussian War of 1870-71 dealt serious blows to the export market. However, the real problem was a change in fashion, with the rejection of the crinoline skirt and its successor, the bustle. In the mid-1870s, *Harper's Bazaar* announced the new feminine ideal: "the greatest possible flatness and straitness – a woman is a pencil covered with raiment."[17]

Clearly this was not good news for Nottingham Lace! In such an uncertain market, to produce goods too late for a seasonal fad could mean bankruptcy. Only the largest firms could afford to have expensive machines sitting idle in a slump. The Nottingham industry was not helped by its tendency to produce cheap laces in large quantities rather than smaller amounts of more expensive laces. The local manufacturers of fashion lace refused to invest adequately in good designers. The Nottingham School of Design was opened in 1846 with the support of a few lace merchants, including Lewis Heymann.[18] For a time it produced top-quality designers who fully understood the problems of designing for a Jacquard controlled machine. However, local manufacturers were either too conservative to use new designs, preferring to copy

[16] For more information on postage and mail deliveries prior to the 1850s, read member John Saywell's excellent article in *Tulle* #120, August 2013, p29ff.
[17] *Harper's Bazaar*, 23 October 1875
[18] Refer *Tulle* issue 120, August 2013 and issue 123, May 2014 for further information on Lewis Heymann.

old European patterns, or too cautious to risk the outlay, copying French designs instead.

Fortunately, the change ion fashion was not all-embracing and, by the mid-1880s, lace trimmings had returned to favour. In the next twenty years sales of lace more than doubled, peaking around 1900. Bustle dresses of the 1880s were trimmed with flounces of lace, while metres and metres of insertions and edgings were to be found in Edwardian blouses and lingerie dresses. Underclothes were lavishly trimmed with lace, as were accessories such as parasols, fans, gloves and hats.

At this time Nottingham had to face pressure from cheap foreign laces often made on exported Nottingham made machines, from the French and American industries and from the machine-embroiderd laces from Germany and Switzerland. These were either embroidered on net or in a fabric which was dissolved away to leave the lace. They imitated the crochet and heavier dress laces which fashion favoured. Nottingham did not start to produce this type of lace herself until past the turn of the century. Here energies were concentrated on producing lace for the export market. By 1900 about 70% of Nottingham lace was exported but, unfortunately, quality was often sacrificed to quantity. Local manufacturers continued to fail to invest in good design.

One area where this was not the case was in machine-lace curtains and fabrics and it was this branch of the industry which formed the most flourishing and steady section of the machine lace trade throughout the period. Lace had become an essential element in the increasingly cluttered interiors of the day. Domestic life took place behind elaborately patterned lace curtains which protected the household from the gaze of the outside world whilst conspicuously demonstrating its wealth. Tablecloths, antimacassars, counterpanes and covers for all sorts of objects helped to over-furnish town-houses and suburban villas.

Lace curtain manufacturers such as Heymann and Alexander, or Simon, May & Company, had always been concerned about the quality of design. It was they who supported the Nottingham College of Design and their originality meant they could stimulate trends rather than simply follow them. Simon May was a prize-winner at the Vienna Exhibition in 1873 and during that decade they produced a series of

curtains depicting characters from world literature, including Faust, Don Quixote and Hamlet.

How lace was made - Some forty stages were involved in converting the yarn into a finished product ready for sale. Even when large-scale factories had developed, much of the work apart from plain net production, was carried out by small operators. This was particularly the case with fancy lace, where each maker would specialise in his own designs. As a result, the Nottingham Lace industry consisted of a large number of small firms scattered in and around Nottingham.

In the background were those who built and maintained the lace machines, who made the bobbins and carriages, or designed and punched the Jacquard cards.

The small independent machine holders, usually working in rented space in large factories, were often dependent on commission agents. The agents would supply them with yarn, arrange orders and negotiate the extremely complex credit systems applying to the trade. The machine holders would also employ others, usually women and children, to thread the machines and to take off the completed fabric.

The "brown lace" off the machine was bought by lace entrepreneurs who carried out the finishing operations, such as mending, bleaching, dyeing and dressing, and prepared it for sale. Many of these finishing processes again involved female labour, sometimes on the merchants' premises but often in the workers' homes.

The skilled twist hands, who operated the machines, were always well paid. Althought the work was dirty and the machines lubricated with black lead, there were few occupational dangers, apart from eye strain which necessarily resulted from the close supervision of a machine containing up to 4,000 bobbins.

The hours of work were long, determined by the steam engine which ran, in most factories, from 4am until midnight. The usual system was that each twist hand with an apprentice, would work two five-hour shifts per day with five hours rest between them. The machines would stop running on Saturday evenings and Sundays were free. As one observer remarked, however, "when they can sell, the men work the machines night and day".

It was the women and children who were subject to real abuse. In the factories, children were employed as "winders" and "threaders", replenishing the bobbins with yarn. Although not treated harshly, the 24-hour shift system meant that their working conditions were intolerable: "They are obliged to sleep on the floor or under the table or on carriage boxes or on old jackets belonging to the men... it is no exageration to affirm that these boys... treated as if they were mere brute animals".[19]

Although various attempts were made through Factory Acts[20], after 1860, to ease childrens' working conditions, it was not until the Education Act of 1880, which made education compulsory up to the age of 13, that the lace industry ceased to depend upon child labour.

The women and girls employed on the finishing processes worked equally long hours, often at home or in small workshops.

Although there were various attempts to form trade unions in the early days of the industry, it was only in the years of prosperity after 1850 that trade associations strengthened. Eventually, in 1874, the Amalgamated Society of Operative Lace Makers[21] was founded. By 1883 the Society could claim that Nottingham was "unionist to a man", but an attempt to obtain Nottingham pay and conditions in the surrounding districts failed. Much of Nottingham's Leavers lace production moved out of town to Long Eaton where cheaper land and labour were available. So, at a time when Nottingham Lace was known throughout the world, most of it was being made ouside Nottingham with the town as the commercial and marketing centre.

The Lace Market – the need for a local lace market in Nottingham arose from the scattered nature of the trade. Each lace entrepreneur, who bough the unfinished "brown lace" and prepared it for sale, required a base from which to operate: "...a

[19] Parliamentary Commission Report (1843)

[20] The Factory Acts were a series of Acts passed by the Parliament of the United Kingdom to regulate the conditions of industrial employment. The early Acts concentrated on regulating the hours of work and moral welfare of young children employed in cotton mills but were effectively unenforced until the Act of 1833 established a professional Factory Inspectorate. The regulation of working hours was then extended to women by an Act of 1844. An Act in 1847 (the Ten Hour Act) (together with Acts in 1850 and 1853 remedying defects in the 1847 Act) met a long- standing (and by 1847 well-organised) demand by the millworkers for a ten-hour day. [Wikipedia, "Factory Acts"]

[21] This was an amalgamation of the Curtain Lace Trade Society, the Le(a)vers Lace Trade Society and the Plain Net Society.

lace warehouse was not merely a depot for storing lace. It was partly a factory where some of the finishing processes took place but, more importantly, the commercial premises with the counting-house or book-keeping office and the sales centre. It was from the warehouse that the merchant or his representative would go with his samples to sell and the place where buyers would come to inspect samples".[22]

It made sense for merchants to group their warehouses together, both because of the close relationships between the different branches of the lace trade and so that customers could easily visit different houses. In the early years companies were concentrated in two areas: around Hounds Gate and around St Mary's Gate. By 1850, however, the St Mary's Gate area was dominant and was already being called the "Lace Market".

The area retains that name today. It still contains a remarkable amount of high quality Victorian architecture, reflecting the confidence of the two boom periods of 1850-1865 and 1885-1905.

The Lace Market's most distinctive warehouses were designed by one of Nottingham's great Victorian architects, Mr. T. C. Hine[23]. In 1853-1855 he laid out Broadway and designed Richard Birkin's new lace warehouse. Broadway remains an impressive sight. "Though less than a hundred metres long, the tall facades and the elegant curve in the centre create a towering enclosed effect, a "unique serpentine plasticity... free from inhibitions of style".

At the same time, Hine designed the magnificent warehouse for Messrs. Adams, Page and Co. on Stoney Street. Hine, answered local critics who considered that the building was too grandiose for a mere lace warehouse, "that it might be taken more for a town hall or an exchange", by deeming it "a noble symbol of the community and its important trade".

[22] Geoffrey Oldfield

[23] Thomas Chambers Hine was himself the eldest son of a hosiery manufacturer.

Warehouses built during the second boom include work by Nottingham's other well-known Victorian architect, Watson Fothergill[24].

Nottingham Lace today – the lace industry went into dramatic declining during and after the First World War. Conspicuous external display and extravagant garments seemed less than appropriate in a world reeling from the shock of modern war. The pre-war trend towards slimmer, less fussy dresses was underlined by the practical needs of working women during the war. The simple, severe lines worn by newly enfranchised womanhood at the end of the war were very different from the overly elaborate concoctions of ten years before. Lace was noticeably absent.

As in previous slumps the decline was not all embracing. High quality lace continued to be used, but with a change of emphasis. When the machine lace industry began to recover in the mid-1920s it was to provide all-over patterns, to be treated as fabrics rather than trimmings. Dresses made entirely of lace, in black or colours, were popular for afternoon and evening wear. Women's new-found freedom also brought major changes in attitudes to under-fashion items. In the 1920s and 1930s the cinema introduced Hollywood ideas of glamour and seductiveness, achieved by the luxury of satins, artifical silk and eventually the revolution of nylon.

Miraculously the Leavers machine, developed nearly a century before, proved up to the challenge of working these new fibres. Lace became "easy-care", even machine-washable and minimum iron, making it the perfect product to add a touch of luxury and to bring about the subtle change from "underwear" to "lingerie".

The adaptation of the Leavers machine to use modern fibres is only one example of the continuing technological advance in the industry. Leavers machines, through modification, now have upwards of 15,000 threads with a speed of 140 motions per minute.

Interestingly much of the curtain lace now manufactured in the region is made on machines which have returned to the earlier principle of knitting rather than twisting the threads. However, the loops, instead of running across, run up and down in zigzags. This is the principle of the warp knitting machine, invented in England in

[24] Watson Fothergill (born Fothergill Watson), architect, was the son of a wealthy Nottingham lace merchant, Robert Watson. Watson Fothergill designed more than 100 unique buildings in Nottingham. His designs drew heavily on the Gothic Revival and Old English vernacular styles of architecture.

about 1775. Though chiefly used to make fabrics, it could also make nets and, later on, laces.

In 1859, a German inventor Wilhelm Barfuss built a double rip warp machine which moved on a notched guiderail. He named it the "Raschel", reputedly after Elizabeth Raschel, a star actress of the period. At first these machines were not popular in Nottingham. However, their 'descendants', which produce knitted lace at very high speeds using man-made fibres or blends, have been making laces of increasing fineness and intricacy since the early 1960s. The drawback is the patterning device, a metal chain which, for a complex pattern, can be huge and heavy. It can contain many thousands of links, all to be assembled by hand before a new patterned lace can be manufactured.

Finally the revolutionary new Jacquardtronic lace machine, developed in Germany and first introduced into manufacture in 1983, has brought lacemaking into the computer age. Instead of a complex and lengthy process transferring the design from paper onto the Jacquard, pattern changes are controlled by magnetic tape. A pattern can be composed using the computer screen and the machine can make a simple pattern change in a couple of minutes. So the speed of the Raschel machine is combined with the sophistication of Jacquard patterning, producing beautiful laces of high quality at affordable prices.

While the Jacquardtronic Raschell machine represents present technological advance, the Leavers lace machine continues to represent quality and tradition. Both enable millions of women all over the world to enjoy the luxury of one of the world's most beautiful textiles – Nottingham Lace.

HAVE YOUR CONTACT DETAILS CHANGED?

Please let our Honorary Secretary, Carolyn Broadhead, know if any of your details change.

Name? Address? Phone number? Email address changed?

Contact Carolyn Broadhead

beachous279@gmail.com

Clarifications Richard Goldfinch and Richard Dixon

I offer my apologies to one of our newer members, Cheryl Williss, whose ancestor was incorrectly shown by me in August *Tulle* (page 23) as Richard Goldsmith. Cheryl's ancestor was, of course, Richard GOLDFINCH.

Cheryl has written to me stating: "I was very interested to read the article on young John Ingham's sad death by drowning (*Tulle*, August 2015, p.25). George Goldfinch, who at the age of six arrived in Adelaide with his parents and brothers aboard the *Harpley*, unfortunately met a similar fate. I have attached for your interest an article which appeared in the *South Australian Register* on Tuesday, 15 April 1851, page 2. The article states: Coroner's Inquest — There was an inquest on Monday- the 14th instant, at Walkerville, before Charles Bonney, Esq., on the body of George Goldfinch, a child under 10 years of age. Thomas Birch stated that on Saturday evening some children came to him and told him that a boy was in the river. Witness ran to the place indicated and jumped in, but being in a bad state of health, he could not remain long in the water, and had to leave it without recovering the body. The hole where the boy was drowned was about six or seven feet deep, with very steep sides. The children who gave the alarm were all young, the oldest being about 11 years of age. Alfred Ward stated that he went to the river to look for the body, which he found after ten minutes' search in a place where the water was about four feet deep. When the body was taken out of the water it was stripped and friction applied, but to no effect — life was quite extinct. The jury returned a verdict of Accidental death".

Another member, Jean Dixon politely points out that on page 5 of the August edition of *Tulle* I have stated that Richard Dixon of the *Harpley* was born in 1794. Jean has kindly let me know that her research has found that the parish records for St Leonard's Church show his birth as 7 April 1799. Jean adds some important additional information. Richard Dixon married Mary Anne Petty in 1818. She, like Richard, was also born in 1799. Richard died in Adelaide aged 65 years and was buried on 22 January 1865 in the Alberton Cemetery.

My sincere thanks to both Cheryl Williss and Jean Dixon for putting this Richard straight on their two Richards. I am also grateful to them for supplying the additional interesting information on their respective ancestors.

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Office Bearers 2015-2016

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The Kings and Queens of England

Cerdic (519 – 534), King of Wessex
Cynric (534 – 560), King of Wessex
Ceawlin (560 – 591), King of Wessex
Ceol (591 – 597), King of Wessex
Ceolwulf (597 – 611), King of Wessex
Cynegils (611 – 643), King of Wessex
Coenwalh (643 – 645), King of Wessex
Penda (645 – 648), King of Wessex
Cenwalh (648 – 674), King of Wessex
Æscwine (674 – 676), King of Wessex
Centwine (676 – 685), King of Wessex
Caedwalla (685 -688), King of Wessex
Ine (688 – 726), King of Wessex
Æthelheard (726 – 740), King of Wessex
Cuthred (740 – 756), King of Wessex
Sigeberht (756 – 757), King of Wessex
Cynewulf (757 – 786), King of Wessex
Beorhtric (786 – 802), King of Wessex
Egbert (802-839), King of Wessex
Ethelwulf (839 – 856), King of Wessex
Æthelbald (856 – 860), King of Wessex
Æthelbert (860 - 865), King of Wessex
Æthelred (865 – 871), King of Wessex
Alfred the Great (871 – 899), King of Wessex
Edward the Elder (899 – 924), King of Wessex
Æthelstan (924 – 939), King of Wessex
Edmund I (939 – 946)
Eadred (946 – 955)
Eadwig (955 – 959)
Edgar the Peaceful (959 – 975)
Edward the Martyr (975 – 978)
Ethelred II the Unready (978 – 1013)
Sweyn Forkbeard (1013 – 1014), Hse of Denmark
Ethelred II the Unready (1014 - 1016)
Edmund II Ironside (Apr 1016 – Nov 1016)
Cnut (1016 – 1035), House of Denmark
Harold Harefoot (1035 – 1040), Hse of Denmark
Harthacnut (1040 – 1042), House of Denmark
Edward the Confessor (1042 – 1066)
Harold Godwinson (Jan 1066 – Oct 1066)
Edgar the Aetheling (Oct 1066 – Dec 1066)
William the Conqueror (Dec 1066 – 1087)
William II (William Rufus)(1087 – 1100)
Henry I (1100 – 1135)
Stephen of Blois (1135 – 1154)
Henry II (1154 – 1189), House of Anjou
Richard the Lionheart (1189-1199), Hse of Anjou
John Lackland (1199 – 1216), House of Anjou
Henry III (1216 – 1272), House of Plantagenet
Edward I (1272 – 1307), House of Plantagenet
Edward II (1307 – 1327), House of Plantagenet
Edward III (1327 – 1377), House of Plantagenet
Richard II (1377 – 1399), House of Plantagenet
Henry IV (1399 – 1413), House of Lancaster
Henry V (1413 – 1422), House of Lancaster
Henry VI (1422 – 1461), House of Lancaster
Edward IV (1461 – 1470), House of York
Henry VI (1470 – 1471), House of Lancaster (rest.)
Edward IV (1471 – 1483), House of York (rest.)
Edward V (Apr 1483 – Jun 1483), House of York
Richard III (1483 – 1485), House of York
Henry VII (1485 – 1509), House of Tudor
Henry VIII (1509 – 1547), House of Tudor
Edward VI (1547 – 1553), House of Tudor
Lady Jane Grey (10 Jul 1553 – 19 July 1553) Tudor
Mary I (19 Jul 1553 – 1558), House of Tudor
Philip (25 Jul 1554 – 17 Nov 1558), Tudor
Elizabeth I (17 Nov 1558 – 1603), House of Tudor
James I (1603 – 1625), House of Stuart
Charles I (1625 – 1649), House of Stuart
No monarchs 1649 – 1653 (Rump Parliament)
The Protectorate (1653 - 1659)
Lord Protectors were...

- Oliver Cromwell (1653 - 1658)
- Richard Cromwell (1658 – 1659)

Charles II (1660 – 1685), House of Stuart (rest.)
James II (1685 – 1688), House of Stuart
Mary II (1689 – 1694), House of Stuart
William III (of Orange)(1689 – 1702), Stuart
Anne (1702 – 1714), House of Stuart
George I (1714 – 1727), House of Hanover
George II (1727 – 1760), House of Hanover
George III (1760 – 1820), House of Hanover
George IV (1820 – 1830), House of Hanover
William IV (1830 – 1837), House of Hanover
Victoria (20 Jun 1837 – 22 Jan 1901), Hanover
Edward VII (1901 – 1910), Saxe-Coburg & Gotha
George V (1910 – 1936), House of Windsor
Edward VIII (20 Jan 1936 – 11 Dec 1936), Windsor
George VI (1936 – 6 Feb 1952), House of Windsor
Elizabeth II (6 Feb 1952 –Present), Windsor

*Various sources have been used in the preparation of this compilation