Reprinted from: Gloucestershire Society for Industrial Archaeology Journal for 1990 pages 32-42

HOSIERY MANUFACTURE AT DUNKIRK MILLS NAILSWORTH.

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1 Introduction

This is a brief history of what is believed to be Gloucestershire's only hosiery factory. It has been written because the buildings are now redundant for industrial use and are being converted into residential accommodation [1-3].

The knitting of hosiery using the stocking frame was a well-established cottage industry in Gloucestershire in the eighteenth century. Rudder states in 1779 that it was the chief occupation in Cirencester, Tewkesbury and Newent [4]. The industry remained a cottage industry and suffered a general decline throughout most of the nineteenth century. By 1891 the number employed in the hosiery industry had fallen to just 57 from 1500 in 1830 [5].

In 1891 the firm of W. Walker and Sons took over part of Dunkirk Mills, Nailsworth for the manufacture of woollen socks and stockings. The owners of Dunkirk Mills, the firm of P.& P.C. Playne & Co. Ltd., had recently ceased production of woollen cloth. A view of the mills at about that time is shown in Figure 1 which is taken from a sales leaflet of circa 1890.

Walkers already had a hosiery factory at East Kirkby Nottinghamshire and a large warehouse in Nottingham itself. The firm took the opportunity of the redundant mill to expand their manufacturing capacity [6].

Approximately half the main buildings at Dunkirk were occupied by Walkers (hosiery). They equipped it with modern machines. By 1901 there were 216 in the hosiery industry in Gloucestershire [5]. Walkers remained at Dunkirk until 1938 when they moved back to Nottinghamshire.

No records of production figures have been located for Walkers at either Dunkirk or in Nottinghamshire. However, it has been possible to trace a number of ladies who had worked in the "Stocking Mill" as it was known locally. Their recollections are remarkably clear and cover the period between the two World Wars. These form the basis of the present description of the layout and operations at the mill. Additional information has been obtained from short contemporary accounts of the business published in 1904, 1906 and 1923 [6-8].

W.Walkers and Sons was one of 100 businesses featured in Industrial Gloucestershire published by the Gloucester firm of Chance and Bland in 1904 [6].

Figure 1 Dunkirk Mills Nailsworth seen from the North West (From a sales notice of circa 1890)

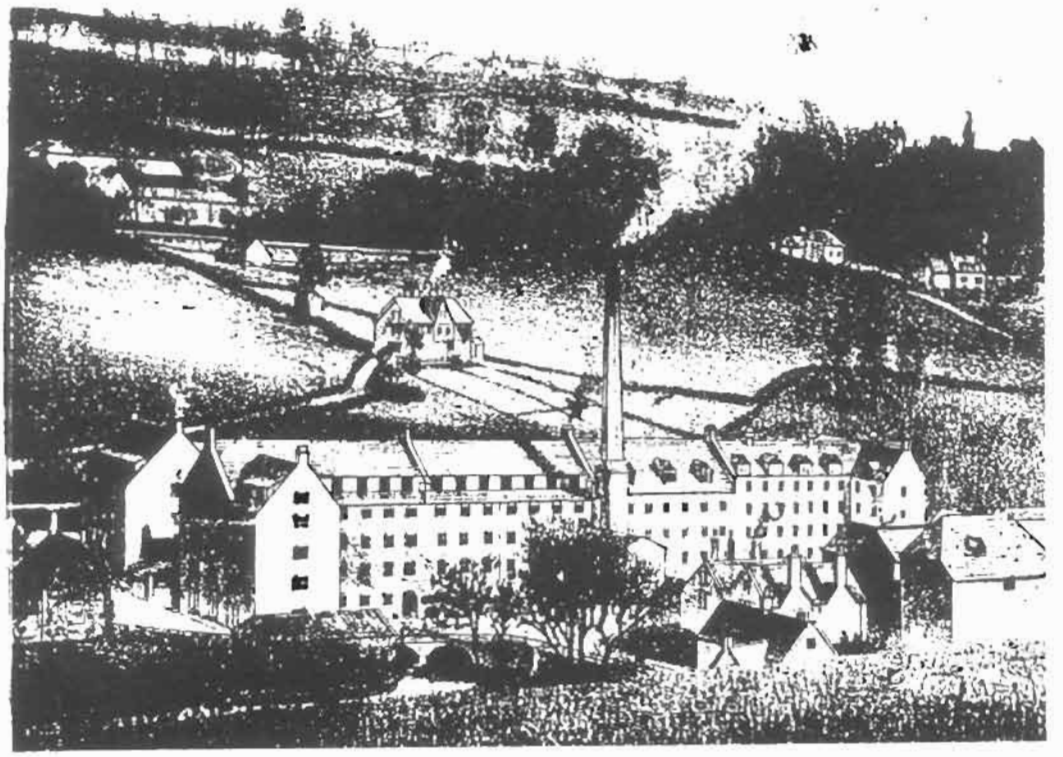
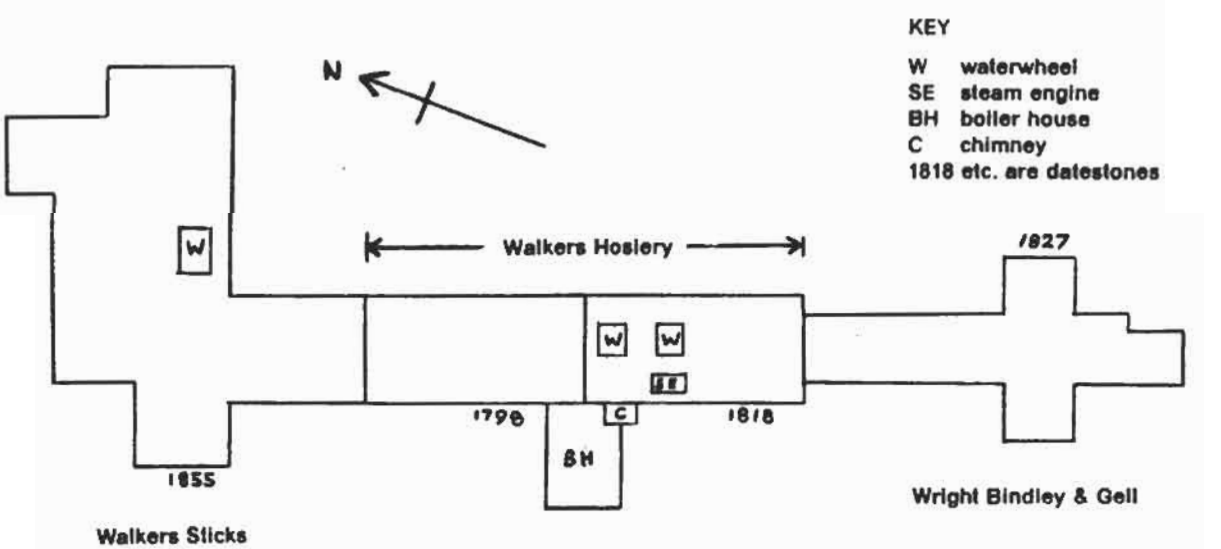


Figure 2 Occupiers of the Main Buildings at Dunkirk Mills in 1920



2 Walkers at Dunkirk.

It has not been possible to find out why Walkers came to Dunkirk. One suggestion is that the Walkers and the Playnes had had some previous business contact. Thus when the space (and presumably the labour) became available Walkers seized the opportunity.

Walkers (hosiery) occupied the two oldest blocks in the main range at Dunkirk. These are the two central blocks and have the datestones 1798 and 1818 respectively from the north as shown in Figure 2. The northern block in the range which includes the section with the 1855 datestone was used by the firm of J. Walker (sticks) for nearly 60 years. Their main business was the manufacture of walking sticks of all sorts. They also manufactured small wooden components of many different types such as tool handles and pieces for chairs. Joseph Walker was one of the family who came to set up the hosiery factory but he decided to develop an additional business. He made his home at the mill house at Dunkirk which by 1897 had become known as the Gables [9].

The other main occupier at Dunkirk during this period was the firm of Wright Bindley and Gell. They made umbrella furniture, that is, the metal work for umbrellas. Wright Bindley and Gell were located in the 1827 block at the southern end of the main mill and the isolated block now known as the Forge.

Walkers did not immediately purchase the site from the Playnes. It was not until 1901 that the whole of the buildings and over 22 acres of land were bought for £5150. At the same time a mortgage of £4850 was obtained from the Playnes, at 4% interest per annum. The mortgage was scheduled to be paid off in 1919 [10].

In 1904 the directors of the company were all Walkers. these were William and his four sons Samuel, William (the younger), Joseph and Henry [6].

The 1904 account also tells us that when Walkers took over Dunkirk they:

> "practically left nothing but the shell of the building, entirely remodelling the interior to adapt it to their purposes. Among other improvements was the substitution of a modern stream engine in place of the old beam engine..... It should also be mentioned that Dunkirk Mills have the great advantage of the finest waterpower in the Nailsworth Valley." [6]

The new steam engine may have been the one installed by the Excelsior Engineering Company of Stroud referred to in 1923 [8]. However that company was only in existence between 1900 and 1908. If the two references are to the same engine it would mean that Walkers got at least 9 years service from the beam

engine. It is most likely that the beam engine was one supplied in 1820 by the famous Birmingham firm of Boulton and Watt. Four such engines were supplied by them to W. & P. Playne, Minchinhampton between 1814 and 1827 [11].

During this period the two main mills operated by the partnership were Longfords Mill Minchinhampton and Dunkirk Mills. Copies of the engineering drawings and erection plans for three of the beam engines exist and suggest that the ones in 1814 and 1823 were installed at Longfords Mill. The one for 1820 shows a layout which is entirely consistent with the Dunkirk boiler house and engine house with the 1818 datestone [12].

The 1904 article only gives a very general account of the machinery as follows:

> "The mechanical equipment throughout may be sufficiently described by saying it is in keeping with the splendid buildings in which it is installed.the machines in use are similar to those adopted by leading hosiery manufactures everywhere, and it has been, and is, the policy of the company to discard an old machine and substitute a new one whenever by so doing an increased efficiency can be obtained. In the past twelve years the equipment has been frequently added to, the various department today representing the highest stage of development in this branch of manufacture."

The article then continues in a very optimistic manner:

> "Messrs. Walker and Sons confine themselves exclusively to the manufacture of ladies' and men's half-hose of every variety, not making to any extent underwear or other knitted articles. This specialisation, together with their fine equipment, has enabled them to successfully compete with the oldest and largest firms in the kingdom, and they find a steady and increasing sale for their manufactures.
>
> "The present number of employees at Dunkirk Mills is about 150, fully employed,and even with this staff it has been necessary to work overtime in different lines."

In 1906, however, there is a very different situation and Joseph Walker is quoted as saying:

> "In consequence of German competition we have machinery standing idle, and whereas when we first came we employed 150 hands, we can only find employment for 100. We used to do a big trade with America, but the McKinley tariff cut us out altogether, and we have had to find fresh markets. I should say 50 per cent of the hosiery sold in England today comes from Germany and other foreign countries.
> "If we get fair treatment we could employ at least 100 more hands." [7]

The third surviving account is a lengthy article on Walkers published in the Gloucester Chronicle in 1923 [8]. this seems to be based in part on the 1904 account [6]. It does give extra information on the power plant, machinery and knitting processes which is related in the following sections. Unfortunately it ignores matters such as the state of the market by now, number of employees and production rates.

After 1938 Walkers Hosiery do not appear in the Gloucestershire trade directories and it is about then that the ladies who were still with the firm remember it moving back to Nottingham. the local workforce were told that demand had fallen for the thick woollen stockings made at Dunkirk and it would be too expensive to re-equip the mill with modern machines.the latest entries found for the firm in the Nottingham directories are for 1941. It is presumed that the firm must have closed down about then.

3 Layout of the Factory

The Stocking Mill occupied all four levels of both the 1798 and 1818 blocks. The use they made of the different areas is shown schematically in Figure 3 will be described here. A brief description of the actual processes is given in the following section.

Ground Floors.

The ground floor or basement as it was called of the 1798 block was used to store the incoming yarn. Next door in the 1818 block power for the hosiery factory was provided by a 50 h.p. engine and two overshot waterwheels of about 10-15 h.p. each [8]. Mr Joseph Walker devised a system whereby the engine and wheels could be coupled together if required or the factory run by just the wheels if there was sufficient water available [6]. A speed governor made by H.J.H. King of Nailsworth was fitted to the system in 1891 [13]. A similar governor is illustrated in a recent history of Kings [14]. The governor and the gearing and clutches used to link the wheels with the engine were still in-situ in 1989.

The system was coupled to line shafting installed on the upper floors which drove the machinery. In 1989 there was evidence that a single main line shaft ran lengthwise across each room on the second and third floors.

The system was also coupled to a large dynamo which in 1904 supplied D.C. electrical current to 500 sixteen candle power lights [6]. It may be estimated that these alone would require 16-24 kW of electrical power. Steam was supplied for both the engine and for heating purposes by a Lancashire boiler in the adjoining boiler house.

First Floors.

The 1798 block side was used for the storage of the finished

Figure 3

Layout of W Walker & Sons Factory Dunkirk Mills Nailsworth

LEVEL	1798 BLOCK	1818 BLOCK
ATTIC	not used	not used
THIRD FLOOR	'Ribbed tops' knitting (socks) Welting Turning off Stocking knitting (Hose) (circular machines) Stocking seaming Winding Office (for giving out and recieiving work) Mr Glovers workshop Mending area for large holes	Stocking knitting (Hose) (circular machines) Sock knitting (Half-hose) (circular machines) Winding Measuring table
SECOND FLOOR	Stocking knitting (Hose) (flat machines operated by men)	Stocking knitting (Hose) (flat machines operated by men) Winding
FIRST FLOOR	MANAGERS OFFICE Storage area for finished Goods	Mending workshop Sorting of waste yarn
GROUND FLOOR	Storage area for incoming Yarn	WATERWHEELS STEAM ENGINE

stock prior to dispatch. In the north west corner was the manager's office. It was here that the employees collected their wages on Saturday mornings.

The 1818 side was used by the 'menders'. These were always ladies and their job was to make good the minor imperfections in the goods as they came off the machines.

Second Floors.
Both sides were mainly occupied by the men workers who made stockings on 'flat' knitting machines. The seams were put in on specialist machines upstairs. Much of the winding of bobbins for the men's machines was also done on this floor. Some manufacture of men's half-hose took place here.

Third Floors.
Many of the various manufacturing and finishing processes were carried out at this level. Here were machines for winding, leg knitting, footing, seamless stocking knitting, Hauge seaming, German seaming, circular rib knitting and rib top knitting.[8]

The 1798 and 1818 blocks were divided by another office. There was a counter here where the women could book out their yarn and hand in the knitted articles.

There were also two small specialist workshops on the western side of the 1798 building. The southern one was used by Mr Glover, the engineer who looked after all the knitting machines and the line shafting which powered them. the northern one was for special mending jobs such as very large holes in stockings.

Attics.
These were not used by Walkers. The ladies never went up there as they were considered to be haunted by the ghost of Peter Playne!

4 Manufacturing Processes.

Yarn.
This came from such places as Leicester and Bradford.[8] The yarn came to Nailsworth in large wooden boxes via the Midland Railway Station which was only half a mile distant. Dunkirk was served by a railway siding but the yarn was brought from the station by horse and dray. Similarly, the knitted articles were taken to the station by horse and dray prior to dispatch back to Nottingham for dying and any other finishing processes.

Yarn came on small bobbins and had to be wound on to larger bobbins or cops for the knitting machines.

The ladies can only remember woollen yarn being used and it came in various thicknesses depending on the application. Almost without exception the yarn was natural, that is undyed. One attempt at knitting dyed yarn brought great protests from

the workforce as it proved very difficult to handle in their machines.

Winders collected their yarn from the ground floor of the 1798 block and carried it upstairs in wicker baskets to their machines. A stronger thread was used for heels and toes.[8]

Socks (Half Hose).
These were always made on circular machines. Thus they were knitted as a seamless tube and then had toes closed by a process known as 'turning off'.

There were three main steps. First the ribbed tops were made on a special machine which knitted about 3 to 4 inches of top followed by a short length of plain knitting. This was to facilitate attaching the top to the needles of the next machine. The whole process was repeated continuously and a string of tops emerged from the machine. The individual tops were cut from the string with scissors. At the start of each top there was some special stitching around its circumference to prevent the top from unravelling after cutting. Thus great care was necessary to cut at just the correct place. The tops were put into batches of 5 dozen pairs and marked with the appropriate coloured chalk to indicate the size.

In the second step the tops were passed to a machine which could knit the leg, heel, foot and toe of the sock. The top was hooked on to the needles of the machine by the operator who then started the machine. When the leg was complete the machine halted automatically and the operator set the machine to knit the heel and restarted it. When the heel was finished the machine was set to do the foot and finally the toe. Naturally the machines could be set up to do various sizes and either plain and ribbed legs.

Each operator looked after two machines and while she was attaching a top to one the second machine was knitting a sock. The latter only required a little attention to adjust and restart for each part as described above. The attachment of a top required each stitch to be put on its correct needle. This was a much more demanding task.

In the third step the toe was closed. The top and bottom of the toe end of the sock was hooked on to the needles of the special 'turning off' machine. A knife removed the small amount of waste knitting. Great care was necessary when mounting the sock or a hole could result rather than a complete closure. Then the socks were put aside in batches of 5 dozen pairs ready for mending.

Stockings.
Ladies stockings were mainly made by the men on flat machines. The knitted pieces were then sent up to the third floor where special machines inserted seams. One of these processes was

known as German seaming. Some seamless stockings were made in the manner described for half hose.

Mending.
All the products were inspected and more than half needed some form of 'invisible' mending. The menders were paid piecework rates. They used to share out each bundle of work that came in so that no one was at a disadvantage as they might be if they got a full batch from one of the notoriously bad knitters.

5 Working conditions.

Compared with today the working week was much longer and discipline was strict. However, looking back all the ladies felt it was a happy place to work and had enjoyed their time there.

The average working week was about 50 hours. They started at 7 am and worked until 1 pm with a half hour for breakfast. The afternoon work started at 2 pm and finished at between 5 and 6 pm. On Saturdays they only worked in the morning, after which they queued to collect their pay.

Some of the workforce were paid hourly and some were paid piecework rates depending partly on the nature of their job. They were all paid hourly during their first month of employment when they were learning. In the 1920s their weekly wage was about 8 to 9 shillings (40p - 50p). Later on they could earn considerably more on piecework. One of the ladies who worked on the winding machines earned over £2.00 one week. When the manager learnt this she was promptly sent home for a time. No doubt she was earning more than he was. The same lady was also sent home on several occasions for a different reason. She was told that the knots she had been tying were not good enough. Poor knots caused the knitting machines to jam if they were too large or caused loose ends if they came undone. However, she remembered that she did not have to stay away from the factory for too long each time.

The workforce was drawn from all the neighbouring parishes besides Nailsworth. Most of them walked but some had bicycles. If they were late in the morning they could be fined a halfpenny (0.2p). If they had not arrived by 8.30 am they would be locked out for the day.

Good lighting was essential to perform the intricate work of attaching items to the needles on the machines. However, the ladies who worked at the mill recollect that the lighting and heating were used very sparingly by the man who operated the steam engine, waterwheels and boiler. Except, that is, when Mr William Walker was known to be coming down from Nottingham to ensure that all was well at Dunkirk. Then all the lighting and heating was turned up. However, as soon as Mr Walker had left it was quickly restored to its usual level. When the workers

got very cold they sometimes sent their message down to the boiler room in a very effective way. They banged in unison on the steam heating pipes which used to upset the engine man to put it mildly.

Despite all the different types of machine, the factory was not particularly noisy. Sometimes the ladies would sing together. Their choice ranging from the popular songs of the day to hymns.

Inevitably there was some horseplay amongst the younger workers. One of the ladies recalled being bundled into one of the large wooden boxes the yarn was delivered in. She said it was all she could do to keep quiet. This had happened right under the manager's office and discovery of these antics could have meant instant dismissal for both youngsters.

A large party used to be held at the factory on the last working day before Christmas. The workforce looked forward to the event and organised a 'club' to pay for it. Unfortunately, one year, some of them had rather too much to drink and incurred the wrath of the Manager and that put an end to the annual Christmas party.

In those days a two minutes silence was actually observed on November 11th each year whichever day of the week it fell on. At 11 am the factory came to a complete standstill. The silence was ended by the steam hooter being sounded along with the hooters from all the other mills.

There were other times when the hooters were sounded at length. When the factory shut down for each holiday there was no use for the remaining steam so the hooter was sounded to celebrate the break. At election time the engine man at Dunkirk would sound his hooter repeatedly if his favoured candidate had been successful.

6 Concluding Remarks.

Whilst we have been very fortunate to find so many ladies with such clear recollections of their working life nearly 70 years ago many questions remain unanswered. As yet we know little about the Nottinghamshire side of the business other than from trade directories. More importantly it has not been possible to make an accurate estimate of the production rates. Thus this account must be considered as only an interim one. It is intended that this study will be continued and it is hoped that some of these questions will receive answers.

Acknowledgements.

The author gratefully acknowledges information provided by many people including the following:

Mrs Veronica Wynn, Mrs Phyllis Nicholls, Mrs Elizabeth Harvey, Mrs Ivy Chandler, Mrs Kathleen Peachey, Mrs Sybil Fletcher, Miss Joyce Lewis and the late Mrs May King (former employees).
Mrs Eileen Walker (former owner of Dunkirk Mills), Mr David Playne and Mrs Betty Mills.
Mr Howard Rees and Mr Don Morley of the Nottinghamshire Industrial Archaeology Society.

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Gloucester Library (Gloucestershire Collection)
Birmingham City Archives Office
Nottinghamshire Record Office
Leicester Museums Service
Science Museum, Birmingham

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