

**GATESIDE MILLS: THE SCOTTISH BOBBIN AND SHUTTLE TRADE  
IN ITS BRITISH AND INTERNATIONAL SETTING, 1860-1960**

**A.G. Highland**

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THE SCOTTISH BOBBIN AND SHUTTLE TRADE  
IN ITS  
BRITISH AND INTERNATIONAL SETTING  
1860-1960

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Ph.D

October 1988




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ABSTRACT  
GATESIDE MILLS:  
THE SCOTTISH BOBBIN AND SHUTTLE TRADE  
IN ITS  
BRITISH AND INTERNATIONAL SETTING  
1860-1960

Within these 100 years, 1860-1960, in the east of Scotland, a highly specialised woodworking industry closely associated with flax and jute manufacturing, grew from modest beginnings to a position of some importance in the economy of this country. Eventually it declined to a point of virtual extinction leaving few traces of the unique skills and innovatory processes it once employed.

The principal products of this industry, bobbins and shuttles, have been fundamental to the crafts of spinning and weaving for thousands of years but the industrialisation of the textile trade in the 19th century stimulated a demand for very large quantities of these components manufactured to engineering standards of precision. Consequently there emerged in mid-century an industry which, in the early years, served the flax and jute mills of Scotland and later, the far larger operations in India which by 1914, had achieved the world leadership in jute manufacturing.

This research sought to examine the reasons for the growth and decline of this Scottish trade, its unusual methods and remarkable skills and the long-lasting connection with India it enjoyed. The investigations were centred on the Gateside Mills, a firm in Fife typical of those involved, whose records originated in the late 19th century. This material together with evidence from other sources provided not only an insight into the industry overall and the working conditions of those employed, but also an account of the conduct of a comparatively small company with extensive overseas trading interests, in times of peace and war.

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Gateside, Fife.

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NOTESLocation

The map overleaf, an extract from the Ordnance Survey of 1856, shows the location of Gateside and the roads, which still exist, to Perth, Kinross and Cupar. The position of the mill is also indicated.

The neighbouring mills on the River Eden are identified on the map as starch, flour or corn mills. The mill at Gateside is not designated but the deeds of adjoining properties make reference to the lintmill (Fife was one of the flax-producing counties in the 18th century) which was apparently in disuse in the 1860s, see Appendix 6.

The mill dam, still in good repair, is a substantial stone structure measuring 30 metres in width and 4 metres in height.

See also N.E.McClain, Scottish Lintmills 1729-70 in K.G.Ponting (ed.) Textile History Vol.1, (Newton Abbot, 1971)

Footnotes

At the end of each chapter.

Tables

In order to show clearly the trends in production, sales, prices etc., the amounts have been expressed in millions or thousands to one decimal place.

Terminology

Most of the colloquial terms used in the crafts of bobbin- and shuttle-making have been omitted as in many instances variations occur between those used in Fife and those in Angus, Aberdeen or England.







However, the following expressions are included:-

swarfing or reaming	enlarging the hole through the barrel to its final specified size.
squares	lengths of timber square in section.
roughing	removing the corners of a square to convert it to a tube.
spare ends or ends for repair	rough turned and bored hardwood discs used for the repair of bobbins.

#### Measurements

Bobbin sizes are expressed, in the traditional form, i.e. in inches, in order that they can be related to price lists.

#### Currency

Where Indian documents quote values in crores and lakhs of rupees, the rupee has been converted at 1/6d. each and thereafter to decimal currency.

Introduction

In the late 19th and early 20th centuries, in the East of Scotland, the age-old woodworking crafts of bobbin-and shuttle-making grew to become an important industry serving the flax and jute mills and maintaining a substantial export trade particularly with India. Over these decades it provided employment for several thousand Scots, men, women and boys, fostering a variety of skills and, due to its highly specialised nature, a flair for innovation. Now, however, virtually all trace of this considerable industry has disappeared, the manufacturing plants have closed, the machinery scrapped or sold abroad and the skills dispersed. This study attempts to bring to light this almost unknown and unrecorded Scottish enterprise which operated with mixed fortunes for nearly a hundred years.

Three factors were of special significance in this quest; first, the records of one firm in the industry - the Gateside Mills Company in Fife - provided an abundance of commercial detail from the closing years of the 19th century to 1960, secondly the firm was in broad terms, typical of those involved in the business and thirdly, the trade proved to be not only close-knit geographically but also in its operations as exemplified by the formation of an association in 1901. A major part of the thesis is therefore devoted to a detailed analysis of this rare set of records from which, in turn, emerges a picture of the Scottish trade.

As to the historical background, bobbins and shuttles had been for centuries fundamental to spinning and weaving, and with the industrialisation of the cloth-making processes in the 19th century, became

vital component parts of the new machinery developed for the textile trade. Due to the methods employed in the production of textiles these accessories required to be produced in very large quantities and manufactured to detailed specifications prepared by the machinery makers; these two issues stimulated the growth of a woodworking industry specialising in the mass production of these items.

By the 1850's the textile trade in the UK had tended to concentrate in the north of England with cotton in the west, silk in the centre and wool in the east. In Scotland, cotton goods were produced mainly in the west, Paisley and Glasgow being prominent centres, and flax and jute products in the east, in the area of Dundee; the woollen cloth makers on the mainland, were gathered in the Borders. Consequently bobbin and shuttle-makers became established in these areas, specialising in the requirements of the spinning and weaving operations in their own locality. There were, however, major differences between the types of bobbins and shuttles required by the jute manufacturers and linen producers in the east of Scotland and those by the cotton mills in the west of the country. Therefore the trade in the east, which is the subject of this study, tended to concentrate on the needs of the jute and flax mills and the cotton mills in the west looked to Lancashire for their bobbins and shuttles where there were long-established manufacturers of these items. Consequently the contact between these two industries was slight.

The Scottish bobbin and shuttle trade was, therefore, but one sector of a wide and fragmented industry, with a strong English presence. As to the latter, little now remains and only two or three dozen people are employed in these trades in England which formerly provided a livelihood for many thousands.

This study concentrates on the Scottish bobbin and shuttle manufacturers whose major sources of business were the flax and jute mills in the east of the country and later, towards the end of the 19th century, the jute industry in India. The reasons for this choice of subject stemmed from the fact that it was a wholly Scottish enterprise, which played a significant rôle in the story of jute manufacturing, another strongly Scottish theme. In addition, bobbin- and shuttle-making in Scotland had certain unusual, even unique features, in marked contrast with woodworking in general; it was for example, organised for mass production in a fashion characteristic of light engineering and employed highly specialised skills and machinery developed from a remarkable capacity for improvisation. The industry was in the main, comprised of small family firms each employing up to a hundred workers and therefore the information gathered also provided a valuable insight into the commercial and financial operations of enterprises of modest size, in contrast with the more common investigations into the giants of the Scottish industrial scene.

The thesis begins with a review of the functions of bobbins and shuttles in the processes of spinning and weaving and of the location, structure and methods of the manufacturers of these accessories. Thereafter, the markets in the UK and overseas are assessed, in particular India, which by 1914 had become the leading producer of jute goods in the world and which exercised a dominating influence over the bobbin- and shuttle-makers in the east of Scotland. There follows an investigation into working practices, conditions of employment and labour relations within the industry and an account of the commercial fortunes of the Gateside Mills Company traced through

a period which included two world wars and an inter-war, world-wide depression. These were times of great crisis for the firms involved as, by the outbreak of the First World War, they were heavily dependent on imported raw materials in order to cope with the massive demand from the Indian Mills. Also discussed are the trade associations, the trade unions and, in broader terms, the industry set against the background of the national and international scene. Finally, further questions are considered augmenting those examined in the preceding text, relating to, for example, the importance of the trade to the Scottish economy, the special relationship with India and the issues arising from the final disintegration of the industry.

In short, in addition to contributing to the story of jute manufacturing in Scotland and therefore to the history of the economy of the country in this period, this study sheds light on a little-known Scottish industry now extinct and identifies its many uncommon and even unique features. These singular characteristics set the Scottish bobbin and shuttle trades in a niche of their own far removed from general woodworking and from many of the other smaller industries.

It would appear therefore that the research accorded to it was fully merited and furthermore it ensured that a record of the considerable skills and innovative talents of those who worked in these crafts was preserved.

Chapter 1.BOBBINS AND SHUTTLES; THE PRODUCTS, THE MARKETS  
AND THE INDUSTRY(i). The rôle of the bobbin and shuttle.

As spinning techniques in the 19th century advanced more rapidly than those relating to weaving, the bobbin was the first of these two components to be affected by the mechanisation of textile production. In essence a bobbin, as used on a spinning frame was a tube, flanged on one or both ends and made of hardwood in a wide variety of designs and sizes, on which yarn was wound. Required to revolve at high speed on the spindle of a spinning frame or similar machinery it needed to be concentric in order to produce an evenly spun yarn and robust in its construction as, when filled, it often carried several times its own weight of material; it was also subjected to considerable pressure during the winding-on process. Finally, the bobbin had to be free from any blemish liable to snag and thus damage the yarn<sup>1</sup>.

The vital importance of the bobbin arose from its dual rôle first, as an essential part of the spinning process in the production of yarn and secondly, as a convenient method of moving the material from one process to another. Consequently every spindle on a spinning frame was serviced by several bobbins, one to replace the filled bobbin on the frame and others to convey yarn to another stage and thus maintain a continuity of production. Therefore the supply and use of these components were matters of continual concern to



mill managers as shown by William Brown's notes on his experiences at East Mill, Dundee in 1820<sup>2</sup>, in which he stresses the importance of a frequent inspection of bobbins to ensure that they were all in working condition<sup>3</sup> and that there were arrangements for their orderly removal when full from roving to spinning frames. He also warned of the necessity to maintain a stock of wood for the joiner to make and repair bobbins. Having completed a programme of improvements to the plant and the buildings he noted with regret that:-

still there is very poor apparatus for conveying the roving bobbins to and from the spinning room.<sup>4</sup>

and when a system of new shafting he had installed gave rise to a degree of vibration, he recorded that this caused:-

the bad effect of rendering irregular that delicate part of the operation - the drag of the bobbin and so wounding the spinning in its most tender part.<sup>5</sup>

Almost a hundred years later another manager wrote in his guide to the spinning of jute<sup>6</sup>:-

bobbins in large quantities should always be kept in hand  
..... there should on no account be a stoppage of the flow of full bobbins from preparing or spinning.

The wide variety of bobbins used by the spinning mills in the UK stemmed from the use of highly specialised machinery in each of the major divisions of the textile industry, i.e. cotton, wool, silk, flax and jute, to overcome the different technical problems posed by each of these fibres. The manufacturers of these machines designed bobbins to suit, which likewise became specialised; a further extension of the range arose from the bobbins used in

the processes preparatory to spinning, such as roving<sup>7</sup>. Consequently the types of component which could broadly be described as bobbins, were manifold and tended to acquire technical descriptions such as slubbing tubes, mule pirns, winding cones, ring doubling bobbins, cap spinning bobbins, etc.<sup>8</sup> From the catalogues and the price lists prepared by the leading bobbin-makers and trade associations during the inter-war years, it was apparent that the range of bobbins used in the cotton, wool and silk trades amounted to nearly 100 different types excluding certain highly specialised patterns. Even the price list of 1901 for jute bobbins only, included 7 different types produced in 82 standard sizes.

David Landes in 'The Unbound Prometheus' suggests that, in the period after 1870, the improvement in textile machinery consisted primarily in more revolutions or picks per minute<sup>9</sup>; certainly higher speeds influenced the design of bobbins in that a greater resistance to wear and an improved standard of precision was required. The problem of wear, a combination of use and abuse, was overcome to some degree by covering the vulnerable parts of the bobbin with a thin shield of metal (Fig. 1 overleaf); the necessary precision was achieved by manufacturing on bobbin-turning lathes equipped with moving carriages on which the cutting tools were set in a fixed position, thus ensuring a close and constant adherence to the specified dimensions (Fig. 2 overleaf). In view of the unique character of the methods of woodworking employed in bobbin-making the subject is examined in greater detail later in this study.<sup>10</sup>

Fig.1

Bobbins and spools.

The largest bobbin is fitted with a lifting knob on the top flange to assist the operator to remove the filled bobbin from the frame. The weight of the bobbin and the yarn would be approximately 7 kgs.

When a bobbin is identified by measurement e.g. 10 inches x 5 inches the first figure indicates the distance between the flanges and the second the diameter of the base. The tallest bobbin illustrated is about 300mm in height.

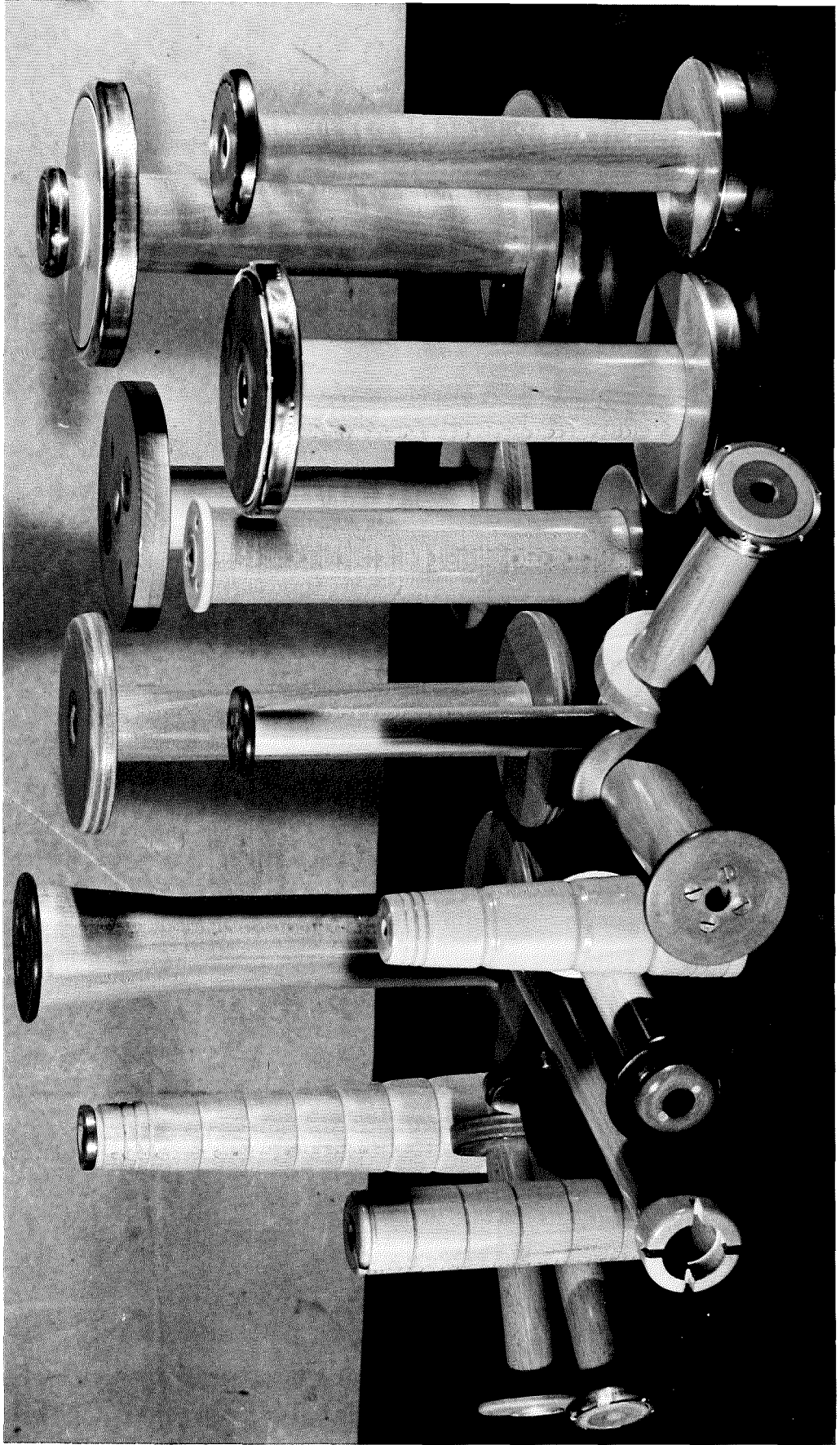
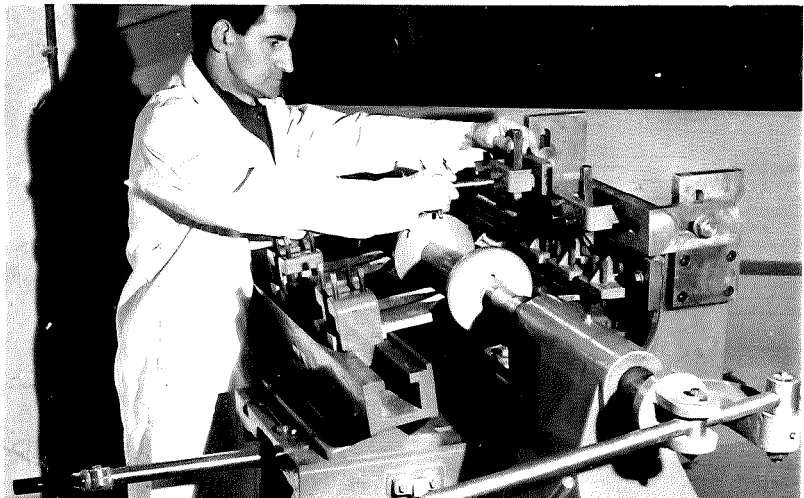
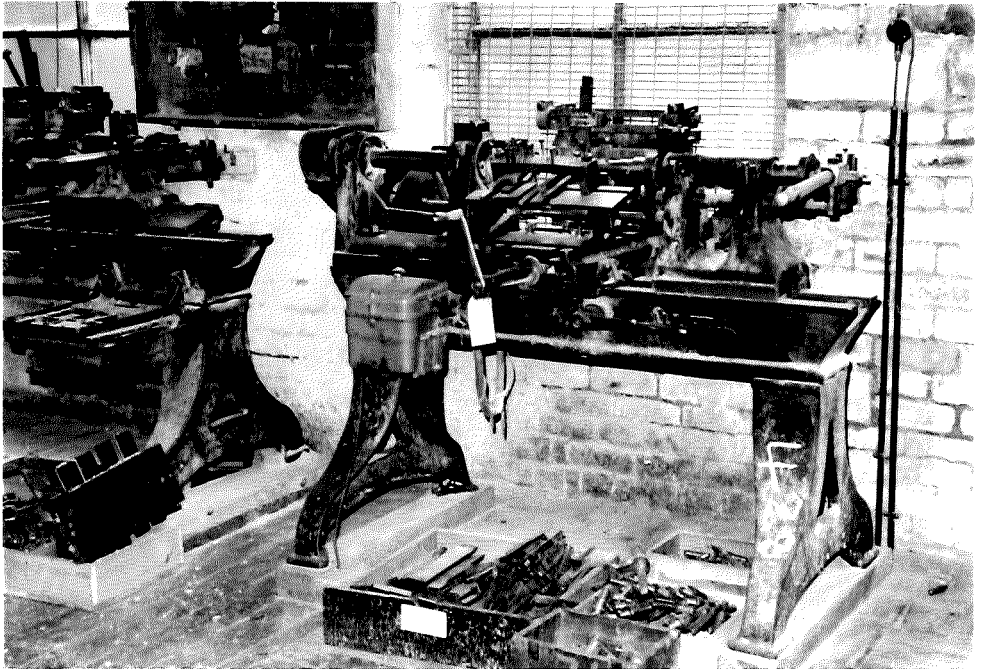
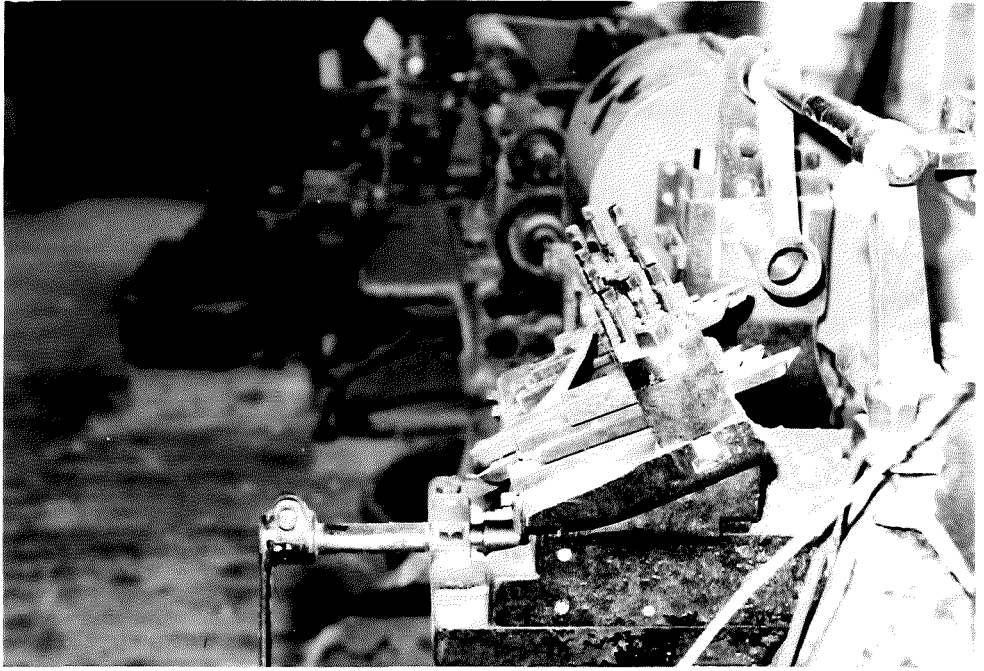


Fig.2

Bobbin turning machines, ancient and modern.  
The lowest photograph clearly shows a prototype bobbin mounted in the lathe and the cutting tools in the process of being set in position on both sides of the carriage which is moved across the lathe by means of the handle below. The machine was purchased in the 1970's. In the two other photographs the machines are of a pre-First World War design later adapted from being belt-driven to electric motor drive.



Although, as already explained, bobbins on the spinning frame were expected to conform to engineering standards of concentricity, to provide a smooth surface for the yarn and to be strong enough to withstand the pressures generated by yarn wound under tension, generally, their handling by the operatives rarely took account of these objectives. The bobbins illustrated, particularly those fitted with protective shields would, if handled with care, give good service for many decades but it was the custom of the trade that empty bobbins in particular, received scant respect and were tossed and tumbled in transit or in storage in a way which took little account of their other function. However, for the bobbin manufacturers, these practices gave rise to a trade in bobbin repairs, much welcomed in times when business was at a low ebb.

With regard to shuttles an early version is described in an encyclopedia published in 1819<sup>11</sup> thus:-

Shuttle - a instrument used by the weavers which, with a thread it contains, either of woollen silk flax or other matter; serves to form the woofs of stuffs, cloths, linens, ribbands, etc by throwing the shuttle alternatively from left to right and from right to left, across between the threads of the warp, which are stretched out lengthways on the loom.

In the middle of the shuttle is a kind of cavity called the eye or chamber of the shuttle, in which is enclosed the poul, which is a part of the thread destined for the woof; and this would be on a little tube of paper, rush or other matter.

The advent of the power loom demanded a more robust and pre-

cisely made shuttle fit to be mechanically propelled at speed

across the loom and halted abruptly, within its own length, in the shuttle-box. The shuttle had two important functions, first to carry the maximum amount of weft yarn in order to minimise the time lost in re-loading and secondly, to be so designed that the weft yarn left the shuttle in flight at an even tension to ensure a firm weave. The weft yarn was packaged in readiness for the shuttle by being wound on a wooden pirn but, in the case of coarser and more bulky yarns such as jute, wound into a solid cylindrical form. The filled pirn was secured in the shuttle by means of a peg whereas the cop was tightly gripped by a series of grooves cut into the chamber of the shuttle and held fast by a metal cover (Figs. 3-9 overleaf).

Development of this component proceeded along predictable lines; a robust and hardwearing material was required for the body to withstand the rigours of mechanical 'picking' i.e. the projection of the shuttle across the loom, and the wear caused by the braking system; consequently, by the end of the 19th century hardwoods such as persimmon, cornel and boxwood noted for these characteristics, were being imported from the US.<sup>12</sup> The solution of the problems relating to (a) the replacing of the empty pirn in the shuttle by mechanical means and (b) controlling the tension of the weft and (c) developing a reliable self-threading device, led to the fully automatic loom and shuttle, figs. 5, 6 8(a). In the case of the solid cop - used in the weaving of jute - a satisfactory method of automatic loading was not evolved until the 1950's, when side-insertion was adopted and bristles used to retain the cop in the shuttle, thus dispensing with the metal cover. Fig. 9(a).



Fig.3

Hand-loading shuttles for cotton looms.  
These shuttles were generally about  
300mm in length overall. The steel peg  
was hinged at the base to allow a filled  
pirn to be loaded into the shuttle.

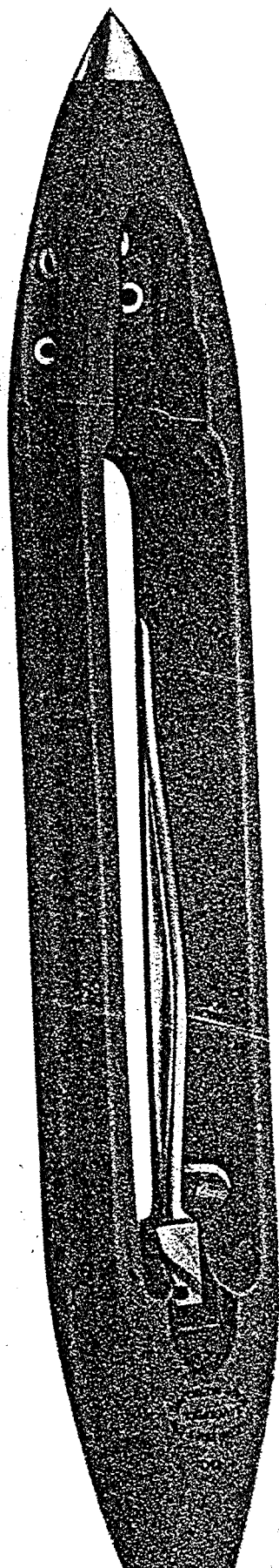
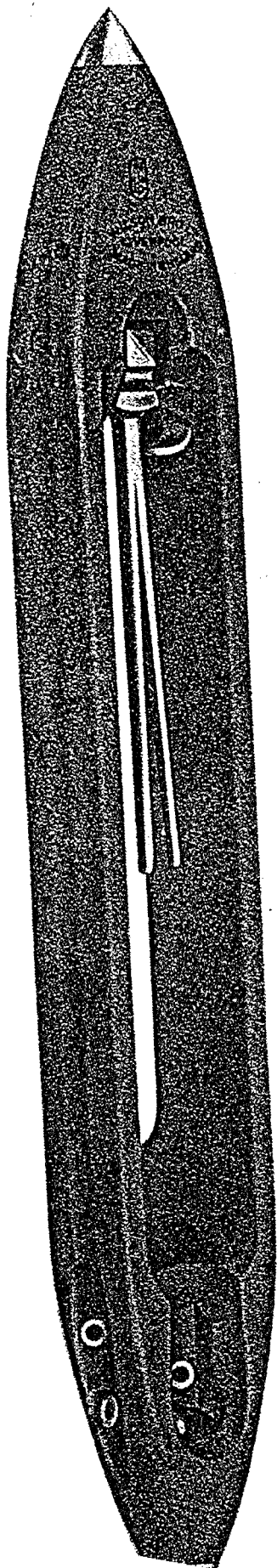


Fig.4

Types of pirns for hand-loading cotton shuttles.  
The base was protected by a metal ring to withstand the wear caused by the side clips which were fixed in the shuttle to hold the pirn firmly in position.

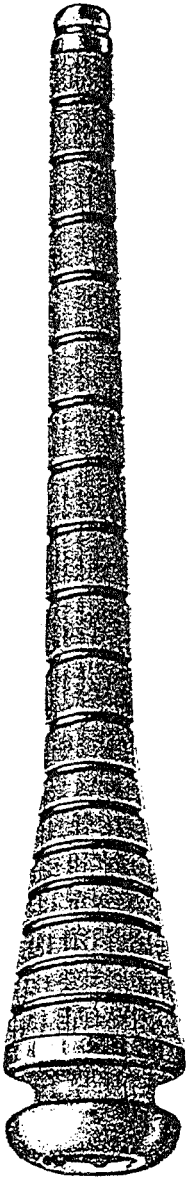
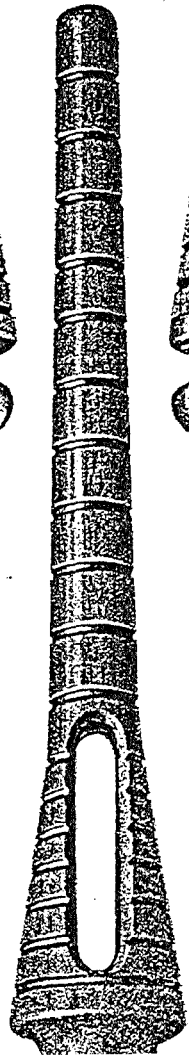
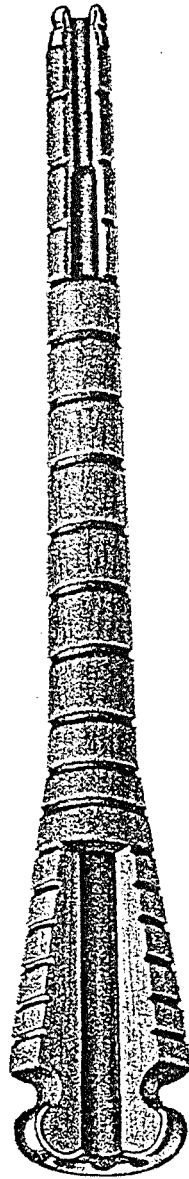
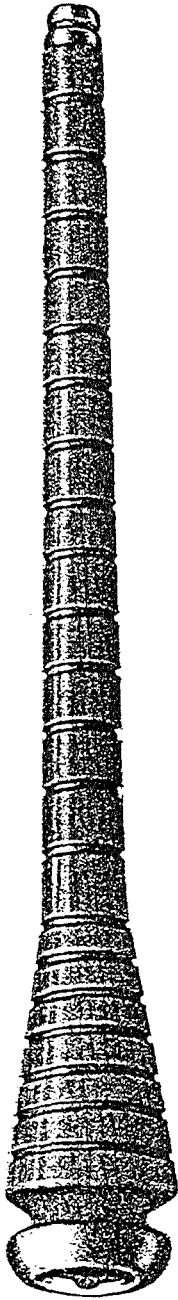
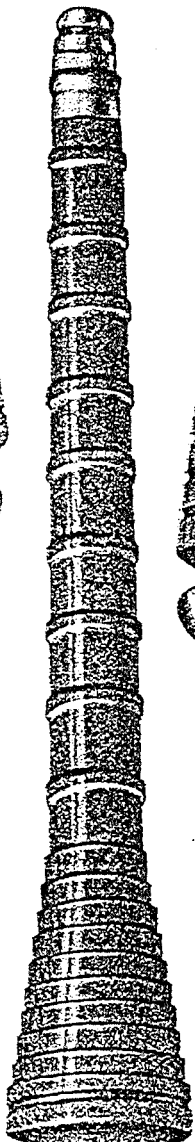
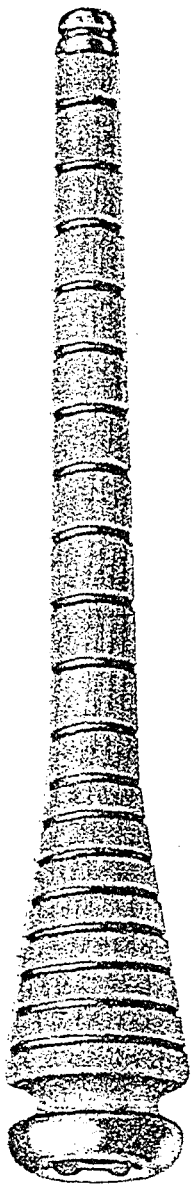


Fig.5

Automatic shuttles for cotton looms.  
The threading device in the nose of the shuttle was made of brass or alloy and the jaws, which held the pirns in position, of spring steel. The size of these shuttles varied according to the cloth being woven but a common type was 450mm overall.

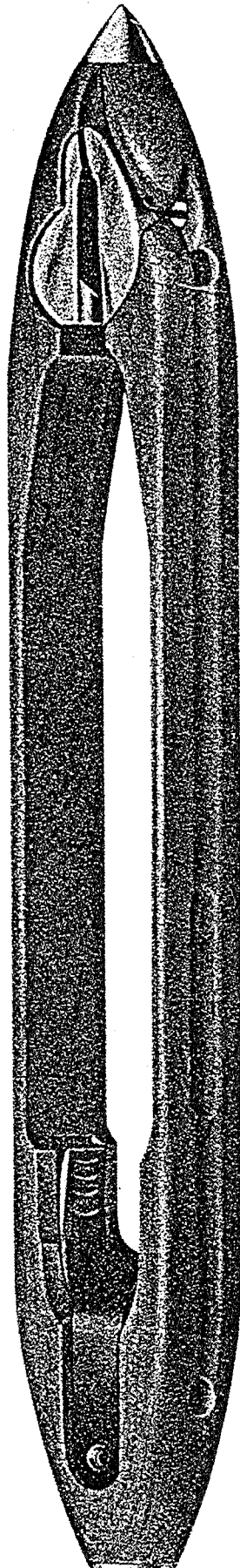
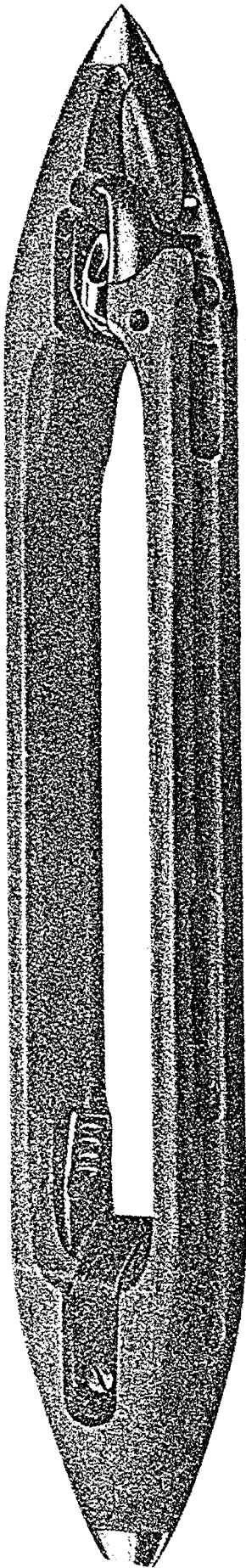


Fig.6

Pirns for automatic shuttles.

The metal rings on the base were designed  
to lock into the spring jaws fixed in the shuttle.

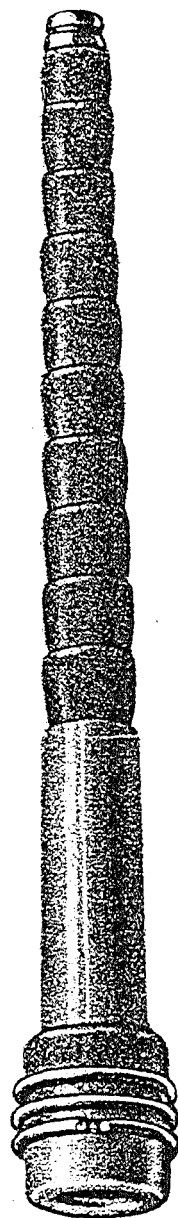
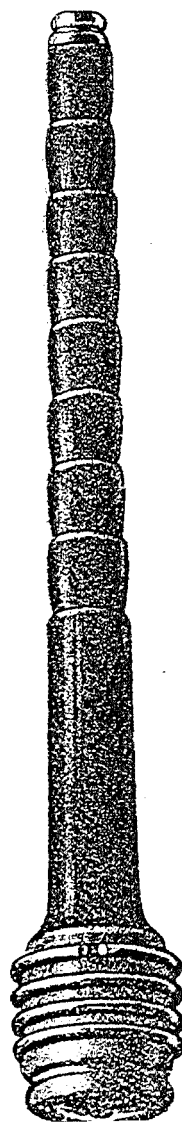
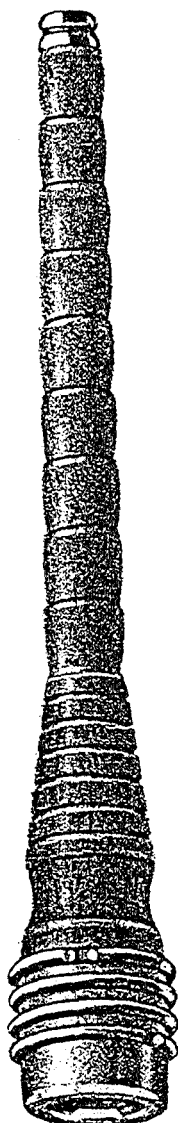
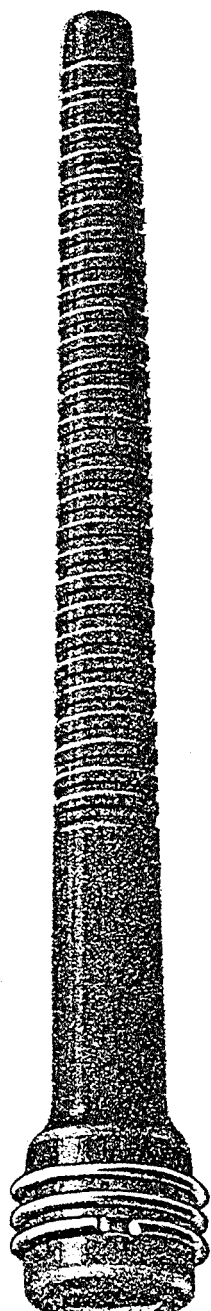
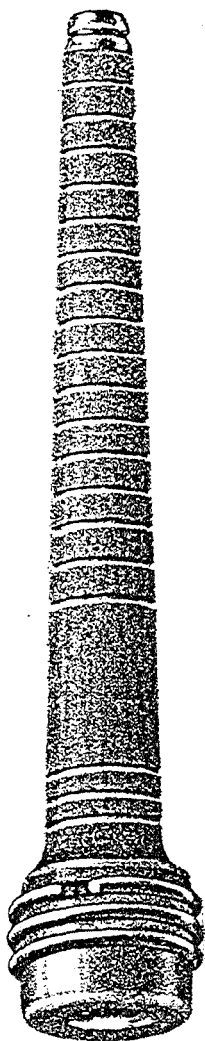




Fig.7

Standard jute cop shuttle with metal cover.

The upper photograph shows the cover catch at the left hand end of the cover and the simple hinge at the opposite end.

The porcelain discharge eye is prominent in the lower photograph; it required to be large enough to allow the easy passage of coarse sacking yarn.

This type of shuttle is still used on hand-loading jute looms and has been changed only in detail since the late 19th century.

Overall length 535 mm.

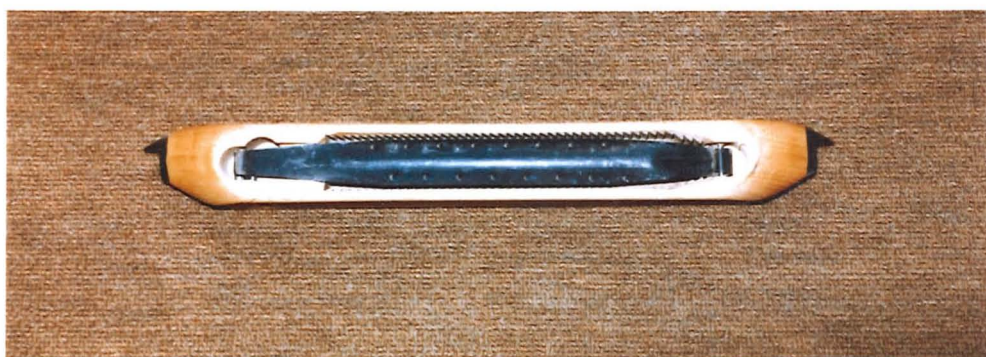


Fig.8

Cotton and woollen shuttles.

In the upper photograph a long feeler slot on the side of the shuttle allowed the automatic mechanism to signal the amount of yarn left on the pirn, and the wider slot provided an entry for the scissor device to cut the thread.

The lower photograph shows common types of woollen and cotton shuttles, both hand-loading, with the pegs raised to receive pirns carrying yarn.

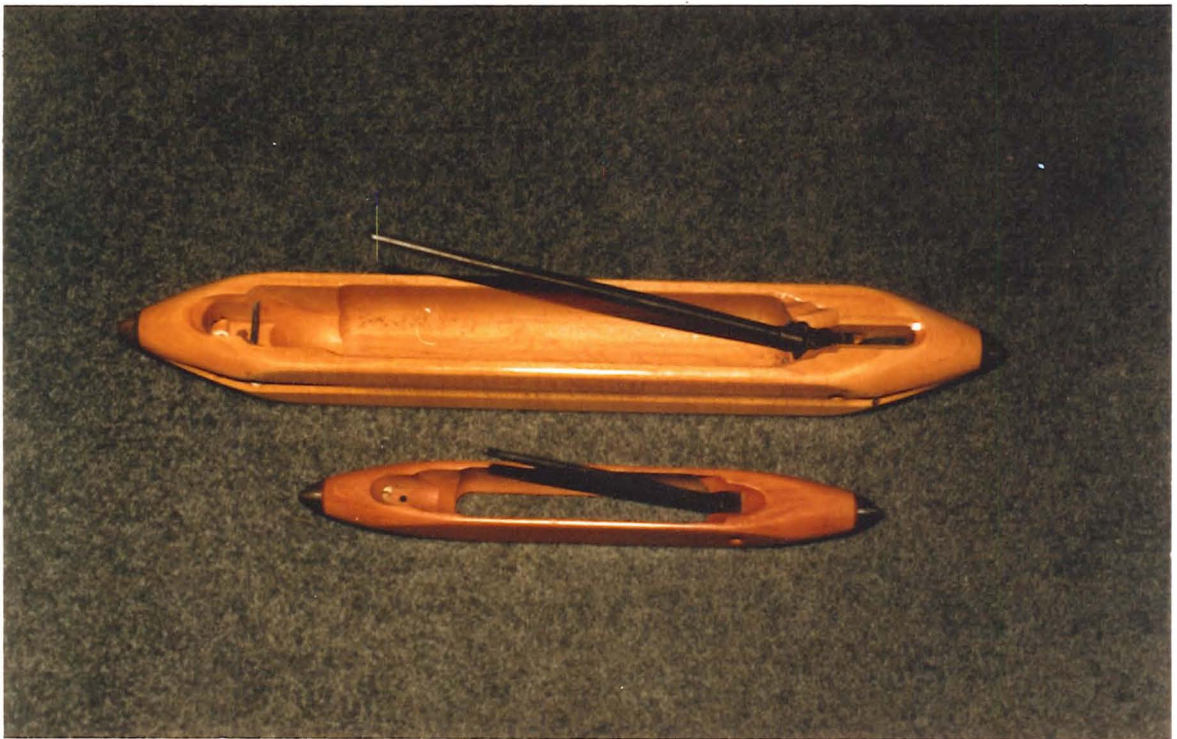
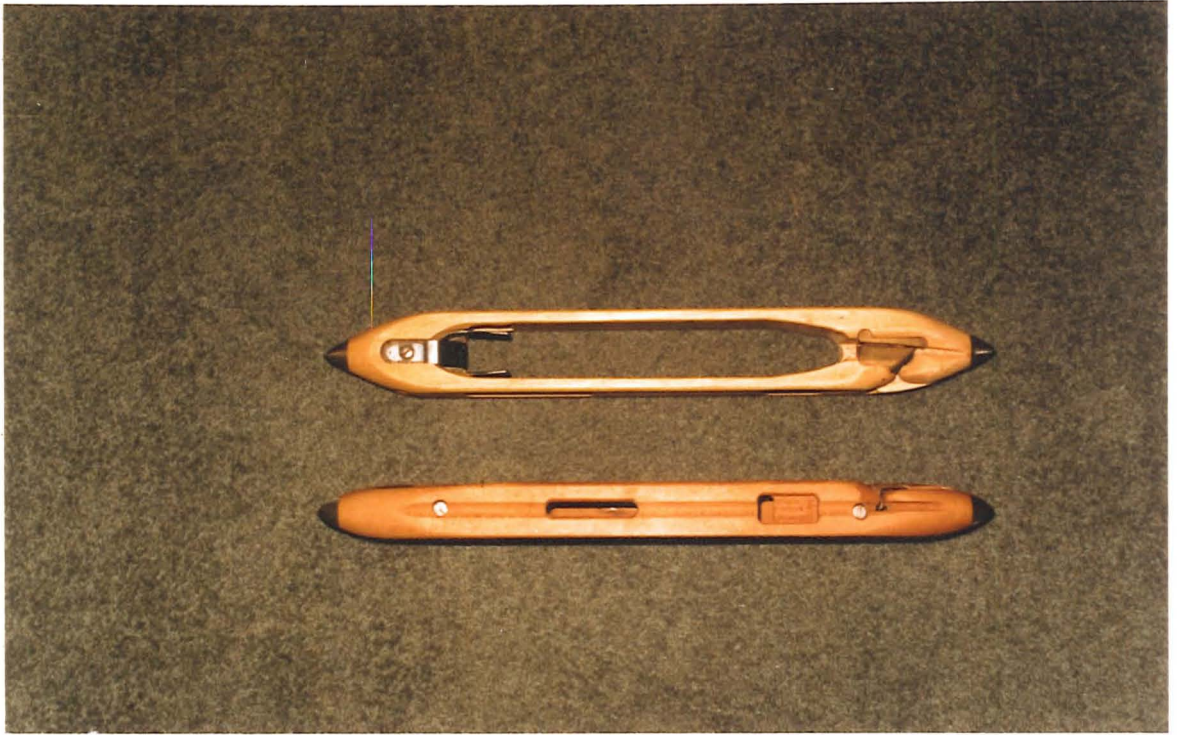


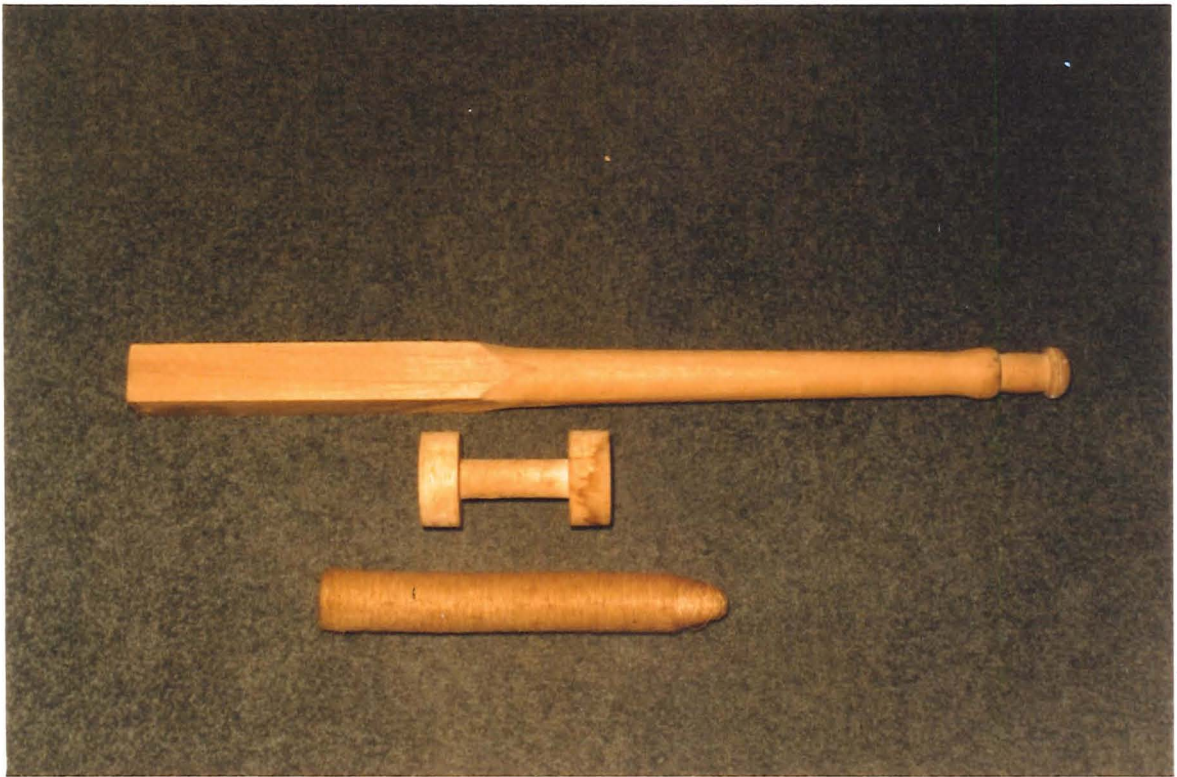
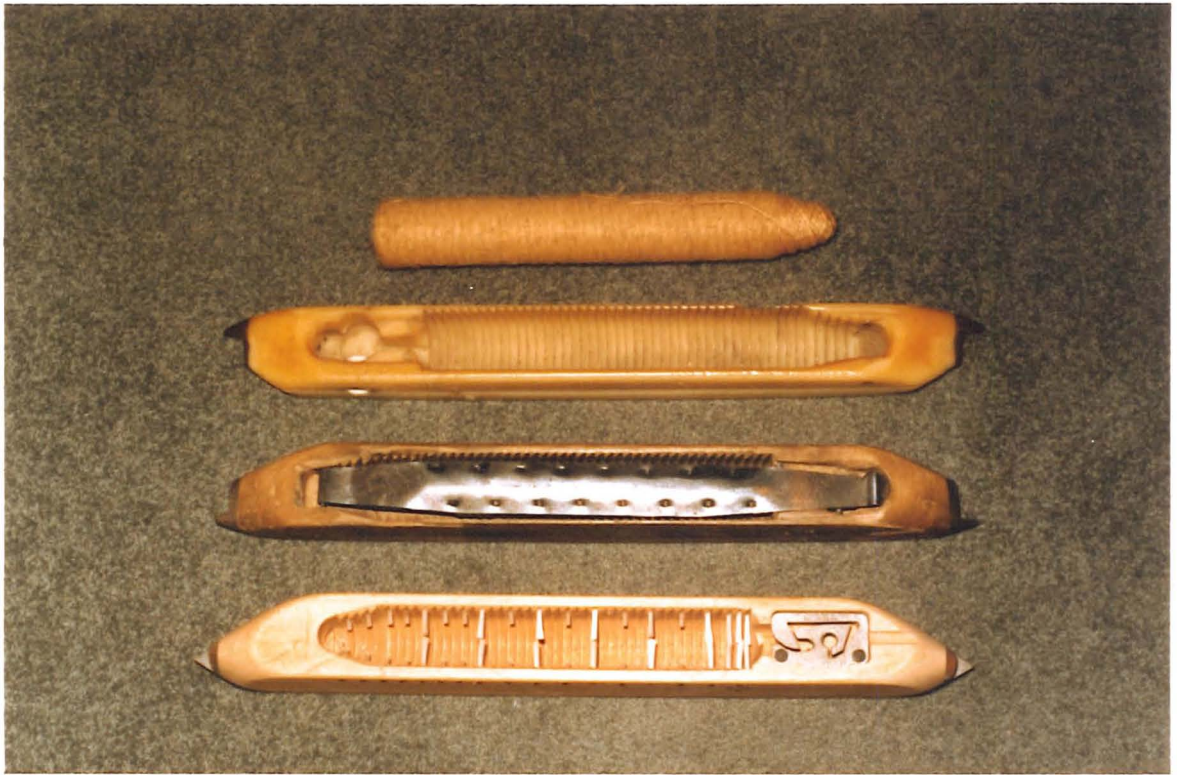
Fig.9

A jute cop (300mm long) was designed to fit firmly in the grooved cop space in the shuttle; the shuttle cover has been removed to allow the grooving to be seen.

The two shuttles one plastic and the other persimmon have had obviously many months of service in the loom as the back of each has been reduced to wafer thickness. The bottom shuttle was produced for automatic cop loading from the side, in contrast with the cotton automatics which were loaded from above. The threading device was patented by the Gateside Mills Co. Ltd. The solid jute cop was kept in position by means of the grooving and tufts of nylon bristles glued into the sides of the shuttle.

Also illustrated in the photograph below is a picking arm, 810mm long, used for propelling the shuttle across the loom, and a bobbin block as imported from Sweden, 153mm in length and 73mm in diameter.





In the version of the automatic cotton loom shuttle illustrated, the pirn when empty was ejected through a slot in the base of the shuttle whilst a full pirn was inserted from above. The original patent was taken out in the US in 1894 and automatic looms were first made in England by the British Northrop Loom Company in 1926. Its introduction meant that:-

The weaver did not now handle the shuttle, nor remove the spent weft package and replace it in the shuttle at this operation; instead he became a hopper filler and piecener.<sup>13</sup>

The development of the automatic loom did not wholly displace the traditional hand-loading type. New processes often encouraged efforts to improve old methods, particularly in the massive and complex industry of textile production, where the new looms did not satisfy all needs. Furthermore, the cost of replacement was another factor which kept in production the outdated but not outworn. Hence, for the shuttle manufacturers, the new inventions or improvements were not only a test of their ingenuity and skill but also demanded an extension to their catalogues, where the old still needed to be listed with the new, requiring larger stocks of raw material to be maintained to meet even more diverse demands.<sup>14</sup>

(ii) The markets for bobbins and shuttles in the UK and overseas

The United Kingdom

In the 19th century the rapid growth of the textile industry created an enormous demand for these components, which were fundamental to the spinning and weaving processes. Some indication of the quantities involved in the UK market, for example, can be gained from the number of spinning spindles and power looms employed. Each spindle would require at least three or four bobbins, as already explained, and the power looms three shuttles apiece.

However, a strong demand for bobbins and shuttles also arose overseas wherever nations industrialised or expanded their textile manufacturing operations. India was a prime example, and as explained later, of vital importance to the Scottish producers.



Table 1.1<sup>15</sup>The number of spinning spindles and power looms in theUK textile industry 1833-1950

	<u>Spindles</u>		<u>Power looms</u>
<u>Cotton</u>	<u>Millions</u>		<u>Thousands</u>
1833	10.0	1833	85.0
1852	20.0	1846	282.0
1880	42.0	1880	550.0
1913	55.7	1912	786.0
1930	55.2	1930	700.0
1939	36.3	1938	495.0
1950	29.6	1950	380.0
<u>Wool and Worsted</u>			
1850	2.5	1850	42.0
1885	5.6	1870	113.0
1918	8.0	1904	105.0
1938	7.0	1918	121.0
1943	7.0	1938	78.0
		1943	79.0
<u>Jute (Scotland)</u>			
		<u>Spindles</u>	<u>Power looms</u>
		<u>Thousands</u>	<u>Thousands</u>
1870		94.5	3.7
1890		268.1	14.1
1905		-	13.7
1913		267.0	13.5
1939		185.8	-
		166.0	12.0

India

The growth of cotton and jute manufacturing in the sub-continent was formidable, as shown in Tables 1.2 and 1.3 below, and by 1914 India had become, in world terms, the fourth or fifth largest cotton-cloth producer and her jute manufacturing operation, in productive capacity, led the world.

Table 1.2<sup>16</sup>

The number of mills, spindles, looms and the daily employment in the Indian cotton industry 1875-6 to 1913-4

<u>Year</u>	<u>No. of</u>	<u>Thousands</u>		
	<u>Mills</u>	<u>Spindles</u>	<u>Looms</u>	<u>Average daily employment</u>
1875-6	47	1,100	9.1	N.A.
1883-4	79	2,002	16.3	60
1893-4	142	3,650	31.1	130
1903-4	191	5,118	45.3	185
1913-14	271	6,779	104.2	260

Further expansion in this sector is described in The Cambridge Economic History of India, (Cambridge, 1983) in these terms:-

During the quarter-century 1913-14 to 1938-9, the industry's capacity expanded substantially. The number of mills rose by 43.5 per cent, the number of spindles rose by 48.4 per cent, the number of looms rose by 94.3 per cent and the average daily employment by 70 per cent. Expansion was uneven from period to period but growth never entirely stopped.<sup>17</sup>

The number of mills, looms and daily employment in the  
Indian jute industry 1854-5 to 1938-9<sup>18</sup>

	No. of <u>Mills</u>	<u>Thousands</u>	
		<u>Looms</u>	<u>Daily employment</u>
1854-5	1	-	-
1868-9	5	1.0	-
1883-4	23	6.1	47.9
1893-4	28	9.6	69.2
1903-4	38	18.4	123.9
1913-4	64	36.1	216.3
1918-9	76	40.0	275.5
1923-4	89	49.1	330.4
1928-9	95	52.4	343.9
1933-4	99	59.5	257.2*
1938-9	107	67.9	295.2*

\* Calendar years 1933 and 1938.

In broad terms the textile sector of the Indian economy was based in two major cities, Calcutta (jute) and Bombay (cotton), in areas from which each drew its basic raw materials; but it was the jute industry which was of the greater importance to the Scottish economy due to two crucial developments. First, the success of the mills in Dundee, in the mid-nineteenth century, in overcoming the problems of spinning and weaving jute and secondly, the exporting of this knowledge and skill to India, thus laying the foundations of another jute manufacturing industry; in this case however, it had the advantage of being adjacent to the source of its raw materi-

Jute was at this time the world's cheapest textile fibre and was therefore used for bags, sacks and other packaging items; it quickly became the carrier of a major part of the goods produced in the international scene. The range of cloths required for this trade is described in the Dundee Chamber of Commerce Year Book for 1934:-

Cost and convenience are the prime factors governing the supply of such a commodity and our factories produce cloth appropriate for transporting sugar (as used in this country, in Cuba, and in Egypt), wool (as desired by the home, Colonial and foreign trades), wheat, corn, bran, grain, ore, salt, flour, cement, coffee, hops, cotton, potatoes, onions, nitrate, seed, coal, mail, etc. It will be readily apparent that what may be quite suitable to contain onions or chaff will not do for salt, cement or sugar.

19

These various forms of jute packaging also formed the greater part of the output of the Indian mills which, for example, included exports of 369 million bags in 1913-14.<sup>19 a</sup>

For the Scottish bobbin and shuttle manufacturers in the latter part of the 19th century, hitherto mainly concerned with the needs of the flax and jute industries in the East of Scotland, this new outlet in the Calcutta area was to become the dominating interest, stimulating the development of these firms whereby their joint output became of some significance to the national export trade with India. Similarly, the bobbin and shuttle makers in England who produced these components for the cotton mills, concentrated

The importance of the Indian jute manufacturing operations to Scotland and to the accessory makers, invites a closer examination of the structure and commercial procedures of this industry which, by 1914, had overtaken Dundee as world leaders in this field.

The jute industry in India in the 19th and  
20th centuries

It was from India that Dundee, in the mid-nineteenth century, obtained a cheap raw material - jute - for use as a substitute for flax, supplies of which had become scarce due to the Crimean War, Russia being a major source. A combination of favourable trading conditions and technical advances encouraged a rapid growth of jute manufacturing in the Dundee area where, between 1870 and 1874, the number of spindles increased from 94,520 to 185,419 and looms doubled in number to 9,599<sup>20</sup>. By this time, however, the industry in India, which had started with one mill in 1854, had grown to 5 mills by 1869 and already trading houses in Calcutta, with international connections, were seeking to gain a foothold in such markets as Australia, New Zealand and South Africa and, in due course, the US and Egypt. Dundee reached its zenith in 1890 but, by 1905, was in sore straits due to Indian competition; a particularly damaging blow followed in 1914 when the US market was lost to the Calcutta mills, the industry there exporting £7.2 millions of jute products to the US whereas the British share was reduced to £1.5 million.<sup>21</sup> The rapid growth of this formidable competitor is made clear in Table 1.3 which gives the number of

What were the circumstances which contributed to this successful venture? First, its location adjacent to the world's premier source of raw jute and the benefit of an abundant supply of cheap labour, for work which did not demand a high degree of skill. Furthermore, the industry was founded, managed and controlled by Europeans virtually every mill was promoted by the Scots or the English.<sup>22</sup>

The industry in Dundee supplied the staff for the managerial and technical posts in the mills in Calcutta, who continued to employ British personnel at this level, until the granting of independence to India in 1948. This policy, incidentally, differed from that of the cotton industry centred on Bombay, which was much concerned with the 'Indianisation' of the mills there, and obliged imported staff to take on and to train native apprentices for the more responsible jobs.<sup>23</sup>

As early as 1884, there were problems of over-production and excess capacity in the Calcutta jute trade, which led to the formation of the Indian Jute Mills Association with the object of exercising some control over these aspects, but it had little success. Nevertheless, the existence of such a body was a powerful influence over the suppliers to the industry with regard to price levels and trading practices in general.<sup>24</sup>

However, for the Scottish manufacturers of bobbin and shuttles the market offered many advantages as compared with other sectors of the textile industry. For example, the production of jute cloth involved a narrow range of bobbins and shuttles which simplified the processes of their mass production: the price list of 1900

Figs.10-12

The Bobbin and Shuttle Manufacturers Association, 1900.  
Extracts from the Constitution and Regulations  
and overleaf, bobbin and shuttle prices 1901.

Figs.10-12

The Bobbin and Shuttle Manufacturers Association, 1900.  
Extracts from the Constitution and Regulations  
and overleaf, bobbin and shuttle prices 1901.



# BOBBIN AND SHUTTLE MANUFACTURERS' ASSOCIATION.

INSTITUTED MARCH 1900.

## Chairman:

DAVID M'GREGOR (of Messrs M'GREGOR & BALFOUR, Ltd.)

## Committee:

JOHN IRELAND, Dundee.

P. M. G. LEBURN (of Gateside Mills Co.), Gateside.

THOMAS C. KEAY, Dundee.

JAMES STIVEN, Dundee.

ALEX. JOHNSTONE (of Messrs A. Johnstone & Son), Forfar.

PETER M'FARLANE, Strathord.

## Solicitor:

C. C. DUNCAN, 41 REFORM STREET, DUNDEE.

## Secretary and Treasurer:

GEO. S. GUILD, 17 BALTIC STREET, DUNDEE.

All Communications regarding the Association to be addressed  
to the Secretary.

## I.—CONSTITUTION AND REGULATIONS.

It having been considered advisable to form an Association for the fixing of prices, and the protecting and furthering of the interests of the members, they have agreed and do hereby agree that the following shall form the Constitution and Regulations and Rules of "THE BOBBIN AND SHUTTLE MANUFACTURERS' ASSOCIATION," viz.:

### I.—Name of Association.

The Association shall be named "THE BOBBIN AND SHUTTLE MANUFACTURERS' ASSOCIATION."

### II.—Membership.

All manufacturers of bobbins or shuttles shall be eligible as members of the Association. Members shall be admitted by the Committee of Management aftermentioned, or at any Special or Ordinary Meeting of the Association. Each person or firm on becoming a member, and annually thereafter, shall contribute towards the funds of the Association, as follows: Members employing fifteen workmen or under, £1 1s; Members employing over fifteen workmen, £2 2s. Annual contributions shall be payable on the first Friday of October in each year. Should the expenses in any year exceed the amount of the subscriptions, any deficiency shall be levied on and paid by the members in the same proportion as their annual subscription.

### III.—Object of Association.

The objects of the Association shall be to fix the prices for all bobbins, bobbin ends, spools, pirns, shuttles, shuttle covers, and tips, manufactured or dealt in by the members of the Association, and to do everything which in the opinion of the Committee of Management will protect and further the interests of the members.

## ROVING BOBBINS.

Size.	DESCRIPTION.	Price.	Packing in Cases.	Ry. Car. to G'gow or Leith.	Net Price.	TO ALLOW		
						2½%	3%	5% Dis.
10 × 5½	Steel Pins ... ..	38/-	5/9	2/3	46/-	47/2	47/5	48/5 Gr.
10 × 5	Diagonal and Steel Pins	34/-	3/6	1/9	39/3	40/3	40/6	41/4 "
10 × 5	Steel or Long Wood Pins	32/6	3/6	1/9	37/9	38/9	38/11	39/9 "
10 × 5	Diagonal Pins ... ..	30/-	3/6	1/9	35/3	36/2	36/4	37/1 "
9 × 4½	Steel " ... ..	28/6	3/-	1/6	33/-	33/10	34/-	34/9 "
9 × 4½	Diagonal " ... ..	26/6	3/-	1/6	31/-	31/10	32/-	32/8 "
8 × 4½	Steel " ... ..	25/-	2/8	1/4	29/-	29/9	30/-	30/6 "
8 × 4½	Diagonal " ... ..	23/-	2/8	1/4	27/-	27/9	27/10	28/5 "
8 × 4	Steel " ... ..	23/-	2/3	1/3	26/6	27/2	27/4	27/11 "
8 × 4	Diagonal " ... ..	21/-	2/3	1/3	24/6	25/2	25/3	25/10 "

Above prices are for Roving Bobbins with No. 6 W.G. Steel Pins. Thicker Pins must be charged  
1/6 per gross per W.G. extra.

### EXTRAS.

Grooving Rove Bobbins (without Colouring)	... ..	6d Gr. Gross.
Grooving and Colouring Rove Bobbins	... ..	1/6 "
Self Bushing Rove Bobbins	... ..	1/- "
All Tenons above 1½ in. on 10 in. Rove Bobbins	... ..	2/6 "
Painting all over Rove Bobbins	... ..	10% extra.

## WARPING BOBBINS.

Size.	DESCRIPTION.	Price.	Packing in Cases.	Ry. Car. to G'gow or Leith.	Net Price.	TO ALLOW		
						2½%	3%	5% Dis.
8 × 6½	Steel or Long Wood Pins	36/-	5/-	2/-	43/-	44/1	44/4	45/3 Gr.
8 × 6	Steel Pins ... ..	32/-	4/6	1/9	38/3	39/3	39/5	40/3 "
8 × 5½	" ... ..	30/-	4/-	1/8	35/8	36/7	36/9	37/7 "
7 × 5½	" ... ..	28/-	3/6	1/6	33/-	33/10	34/-	34/9 "
7 × 5	Diagonal & Long W'd Pins	27/-	3/-	1/3	31/3	32/1	32/3	32/11 "
7 × 5	Steel Pins ... ..	25/-	3/-	1/3	29/3	30/-	30/2	30/10 "
7 × 5	Diagonal " ... ..	23/-	3/-	1/3	27/3	28/-	28/2	28/9 "
7 × 4½	Steel " ... ..	22/-	2/6	1/3	25/9	26/5	26/7	27/1 "
7 × 4½	Diagonal " ... ..	20/-	2/6	1/3	23/9	24/5	24/6	25/- "
7 × 4½	Steel " ... ..	20/6	2/3	1/-	23/9	24/5	24/6	25/- "
7 × 4½	Diagonal " ... ..	18/6	2/3	1/-	21/9	22/4	22/5	23/- "
7 × 4½	Cross Ends ... ..	19/6	2/3	1/-	22/9	23/4	23/6	24/- "
7 × 4	Long Wood Pins ... ..	22/-	2/1	11d	25/-	25/8	25/9	26/4 "

Above prices are for Warping Bobbins with No. 6 W.G. Steel Pins. Thicker Pins must be charged.  
1/6 per gross per W.G. extra.

*But 2/5 = 4/10 = 2/5*

**SHUTTLES—For Jute.**

Size.	Net Price.	TO ALLOW		
		2½%.	3%.	5% Dis.
Beech Wood { Hessian ...	11½d	11¾d	11¾d	1/- each.
{ Sacking ...	1/-	1/0¼	1/0¼	1/0¼ "
Persimmon { Hessian ...	1/5	1/5¼	1/5¼	1/6 "
Wood { Sacking ...	1/6	1/6½	1/6½	1/7 "

Size.	Price.	Packing in Cases.	Ry. Car. to G'gow or Leith.	Net Price.	TO ALLOW		
					2½%.	3%.	5% Dis.
Beech Wood { Hessian ...	11½d	¼d	¼d	1/-	1/0¼	1/0¼	1/0¾ ea.
{ Sacking ...	1/-	¼d	¼d	1/0¼	1/0¾	1/1	1/1¼ "
Persimmon { Hessian ...	1/5	¼d	¼d	1/5¼	1/6	1/6	1/6½ "
Wood { Sacking ...	1/6	¼d	¼d	1/6½	1/7	1/7	1/7½ "

**EXTRAS.**

Spring Drags ... .. 1d each. <sup>20</sup>  
 Flap Drags, ... .. 1½d " ~~3½~~

( 26 )

**SHUTTLES—For Linen.**

PIRNS.					COPS.				
Size.	Net Price.	TO ALLOW			Net Price.	TO ALLOW			
		2½%.	3%.	5% Dis.		2½%.	3%.	5% Dis.	
Persimmon Wood {	For 1½ in. or 1¾ in.	1/1	1/1¼	1/1½	1/1¾ ea.	1/1	1/1¼	1/1½	1/1¾ ea.
	" 1½ in. ...	1/3	1/3¼	1/3½	1/3¾ "	1/2	1/2¼	1/2½	1/2¾ "
	" 1¾ in. ...	1/5	1/5¼	1/5½	1/6 "	1/3	1/3¼	1/3½	1/3¾ "

Shuttles for 1½ in. Cop and charged 1/3 shall mean a Shuttle not over 16 in. long. Any Shuttle over this length shall be understood to be a Hessian Shuttle, and charged 1/5.

Beech Wood { All Shuttles under Hessian Cop size to be charged at same price as Hessian Cop Shuttles, viz., 11½d each net.  
 If discounts have to be allowed, prices will be same as shown in Price List for Jute Hessian Shuttles.

**EXTRAS.**

Spring Drags ... .. 1d each.  
 Flap Drags ... .. 1½d "

*Not more than 1/2 per lb must be given for old Shuttle Mountings and Shuttles fitted with these must be charged Association list prices.*

( 27 )

use and the variety of bobbins was much smaller than that used in cotton and woollen mills. Furthermore, the very substantial quantity required by the mills was naturally an attractive feature of the trade. Payment of accounts was regular and reliable, as all the managing agents were of the highest financial standing, and therefore the risk of bad debts was negligible. Most managing agents maintained an office in London which provided a valuable link between supplier and consumer, nevertheless, many manufacturers in later years employed a firm of selling agents to further their interests in Calcutta and to operate there a stock of bobbins and shuttles to meet any urgent demand from customers. Merchanting firms, also known as mill furnishers and mostly based in Dundee, provided another connection between manufacturer and the mills in Calcutta; although these merchants manufactured nothing themselves they offered the mills a wide range of accessories acting as independent intermediaries between maker and consumer.

Reviewing these early years the Report of the Indian Commission on Industry 1916-1917<sup>25</sup> made the following comments regarding the management structure:-

The association of the Calcutta jute industry with the east coast of Scotland has remained throughout intimate. The majority of the European staffs are of Dundee extraction and most of the experts in the managing firms are Scottish . . .

It is noteworthy fact that the Bengali, or indeed Indian, capitalist have taken little part, otherwise than as mere investors, in the starting and none at all in the management

British capital and expert skill have been freely poured into the Calcutta jute industry owing to the advantages of its location, while for almost 40 years past, the industry in the United Kingdom has stood still, in point at least of the quantity of jute consumer . . .

The Report also referred to the managements in favourable terms, describing the plant at the mills as being of an up-to-date type and

maintained at a level of efficiency which is relatively high for India.

Mention has been made earlier of the managing agencies which were a characteristic feature of industry and commerce in India, in that they participated, not only in the import and export trades, but also financed and managed industrial projects all over the country, controlling the majority of the cotton, jute and other textile mills, as well as tea gardens and coal mines. The system originated, and has persisted, due to the ability of the agencies to furnish financial help to industries; it also solved, to some degree, the difficulty which companies, under European control, experienced in finding senior personnel, particularly managing directors, who would remain long enough in the country to ensure the continued supervision necessary for the success of the business.

Therefore, the agency firms comprised several partners, some of whom would take their turn of duty in India, while others attended to the firm's affairs in the UK.

The Report, quoted above, considered that the system was well adapted to "present conditions in India" and mentioned the high financial prestige of the better-class agency firms. Criticism was confined to a charge of undue conservatism in their methods of business and a reluctance to embark on new ventures or developments stemming from their own industries. In The Economic Development of India (London, 1952) however, Vera Anstey took a more critical stance:-

Consider, for instance, the position of the famous firm of Andrew Yule and Company, which acts as managing agents for a large number of industrial and commercial concerns, including at least ten jute mills, fifteen coal companies, two hydraulic companies, two oil mills, a flour mill, navigation, rubber, sugar, brick and pottery, and miscellaneous concerns of all descriptions. It is obvious that incidental earnings must be large and that it must be at times difficult to reconcile the various interests, and still more difficult for any one firm to control the destinies of such a vast and heterogeneous collections of businesses.<sup>26</sup>

The Cambridge Economic History of India contributed to the debate by considering the case of Begg, Dunlop and Company who managed four jute companies. In 1928, two of them refused to join the IJMA's restrictive scheme without specific concessions being granted to them.

We do not know why this was so but it is probable that individual mills, built at different times, varied in their equipment, costs of operation and efficiency. Thus, each mill faced different problems. Each company was a separate legal and financial entity and had its own body of shareholders whose interest had to be satisfied. Even if a Managing Agency held important blocks of stock in each of the units it managed, the differences in appropriate market policy had to be compromised. Unfortunately we do not know how conflicts of interests among units administered by the same agent were resolved.<sup>27</sup>

However, whatever the shortcomings of the Managing Agency system in the Indian jute industry, the arrangement had important advantages for the bobbin and shuttle makers in Scotland; the link with the London offices, the British supervisory staff overseas and the financial standing of the customers have been touched upon. One further benefit was the procedure whereby suppliers delivered their goods f.o.b., all shipping administration thereafter, being handled by the London office, thus relieving the consignors of much clerical work.

The First World War caused some initial disruption to the economy but, thereafter, India became the supply centre for all the Allied operations east of Suez. The excess capacity, which had been a continuing problem for several decades, was taken up by the demand for sand-bags and the like. A further boost was an official policy to manufacture jute goods in India rather than sending raw jute to Dundee, but the mills were constrained by the difficulty of importing

able to start production. The response of the jute mills was to work longer hours and to employ more labour.

The policy of increasing the manufacture of jute goods in India had a significant effect. In 1913-14 jute exports comprised 52.2% of raw jute and 47.8% of manufactured goods. By 1918-19 raw jute exports were reduced to 19.5% and manufactured goods were increased to 80.5% of the total jute exports.

28

In 1921 and 1922 the first Indian-financed and controlled mills, Birla and Hukumchand, were opened. Although the profits were down from the high war-time levels, they were still averaging 27.4% net of paid-up capital in 1929-30; thereafter they stayed below 10% throughout the 1930's apart from the years 1934-6. Whereas labour and capital costs were reasonably stable, the price of the other element of production, raw jute, fluctuated severely and consequently the industry was much concerned with (a) the official jute crop forecasts and (b) the demand for jute manufactures, which was largely determined by the world harvests of agricultural products. In the inter-war years, a further influence on demand arose from the increased use of substitutes for jute in packaging applications and the development of mechanical elevators and bulk-handling machinery for grain which reduced the need for bags.

The depression between the two World Wars also took a severe toll of Indian exports of raw jute and jute goods. At its lowest level- 1932-33- the value of raw jute exported was less than a fifth of the peak in 1925-26 and that of jute manufactures only about one third.

29



Although these years between the wars saw increased competition from newly established factories in the US and Germany (the latter was the largest foreign producer with 11,000 looms as compared with India's 66,000) India's cheap and plentiful labour was an effective defence against any serious inroads. The industry also enjoyed the benefits of concentration in one area - beside the River Hooghly - which encouraged co-operation between managements. In 1927, eighty-four mills were organised into fifty-nine companies administered by twenty-three managing agents, (Appendix 2). As a consequence, 50% of the loom capacity was controlled by five managing agents. Such concentration fostered a willingness to work together in the competitive battle:-

"The cost advantage gave Indian mills some apparent scope for rigging market price before it paid foreign producers to expand or foreign consumers to seek substitutes."<sup>30</sup>

It cannot be assumed that agreements within the industry were easily reached; in these difficult trading years the Indian Jute Mills Association achieved only a modest success in their attempts to combat over-production by limiting working times, sealing looms and restricting new capacity; these measures gave rise to friction not only between non-members and members but also within the Association. An agreement was reached in 1938, following the threat of Government intervention, and was sustained by the exigencies of another world war.<sup>31</sup>

India, in the Second World War, was capable of producing a far wider range of goods than in 1914-1918, due to the expansion of the output of manufactured products in the years of peace. Consequently

the share of the national output contributed by the jute industry decreased from 15% in 1913-14 to 5.3% in 1939-45, but India's importance in terms of the war effort was much greater. Nevertheless there was still a heavy reliance on imported machinery and electrical equipment which were difficult to secure in war-time; the jute industry however, was not hampered to the same extent as other sectors as it was able, as in the First War, to increase its output by utilising the excess capacity which in peace-time had created so many problems.<sup>32</sup>

In 1948, after the Declaration of Independence, the Indian Government announced its intention of taking a leading part in the development of the industrial sector. One outcome of this Industrial Policy Resolution was to alter the basis of foreign enterprise. Under British rule foreign private interests were an important feature of Indian industry and as noted earlier, controlled directly or indirectly most of the jute manufacturing industry. After independence, the ownership of most of these established enterprises gradually passed to the Indians. New projects, on the other hand, were set up by Indians but with the aid of technical or financial support from overseas.<sup>33</sup>

Also in 1948 the moves by the Indian Government towards a total ban on the import of wooden jute bobbins and, in the following years, similar action in respect of jute shuttles, were severe setbacks for the Scottish bobbin and shuttle manufacturers. This year may be said to have marked the end of a remarkable trading relationship between Scotland and India and the beginning of the decline and virtual extinction of these crafts in Scotland.

British exports of textile machinery to India1905-6 - 1950-1

One particular aspect which favoured the bobbin and shuttle manufacturers in the U.K., arose from the success of the British textile machinery makers in overseas markets. In the case of India, shipping records show that virtually all the textile machinery imported from 1905-6 to 1950-1 was of U.K. origin (see Table 1.4). As it was customary for spinning frames and weaving looms to be shipped complete with an initial supply of bobbins and shuttles, the U.K. producers of these items were well-placed to meet this demand and to pursue the further business, which would accrue, when the plant became fully operational. Thus it was not uncommon for textile machinery makers and bobbin and shuttle manufacturers in the U.K. to work in close association for commercial and technical reasons.

Table 1.4<sup>34</sup>Value of imports by India of textile machineryfor cotton and juteU.K. input compared with total imported.1905-6 to 1950-1

£ millions

<u>Period to First World War</u>	<u>U.K.</u>	<u>Total imports, all sources</u>
1905-6	1.65	1.66
1907-8	1.72	1.72
1911-12	1.09	1.09
1913-14	2.16	2.19
<u>The inter-war years</u>		
1919-20	1.02	1.11
1924-25	2.27	2.35
1929-30	2.36	2.51
1934-35	1.78	1.93
1939-40	1.31	1.54
<u>Post Second War period</u>		
1945-46	2.19	2.34
1947-48	4.78	5.17
1949-50	6.78	9.32
1950-51	4.16	4.97

In the light of this impressive record, the question arises as to the performance of the bobbin and shuttle manufacturers in this market. The shipping records provide but a partial answer

Table 1.5Value of imports by India of bobbins for all textiles,U.K. input compared with total imported1919-20 to 1950-51£'000's

<u>The inter-war years</u>	<u>U.K.</u>	<u>Total imports, all sources</u>
1919-20	133.0	291.0
1924-25	277.4	321.9
1929-30	266.1	298.9
1934-35	133.8	215.1
1939-40	176.6	283.0
 <u>Post-Second War Period</u>		
1945-46	651.1	659.4
1948-49	797.0	964.2
1949-50	712.8	892.5
1950-51	201.2	255.7

Table 1.6Value of imports by India of shuttles, for all textiles.U.K. input compared with total imported1919-20 to 1950-51£'000's

<u>The inter-war years</u>	<u>U.K.</u>	<u>Total imports, all sources</u>
1919-20	57.2	69.1
1924-25	65.0	67.1
1929-30	61.0	66.2
1934-35	46.4	60.8
1939-40	64.1	71.3
 <u>Post Second War period</u>		
1945-46	205.2	208.6
1947-48	312.2	341.8
1949-50	324.6	459.4
1950-51	163.4	191.1

In the inter-war period the other sources, in respect of bobbins, included Japan, Sweden, Germany, Italy and Finland; Japan was the most active of the competitors, and, in 1919-20, exceeded, in terms of value, the British input. The market for shuttles again attracted Japan together with other competing nations particularly Germany and Italy. After the Second World War the countries showing a continuing interest in the bobbin and shuttle trade in India were Finland, Sweden, Belgium, Switzerland, Japan, the US and Italy.

Other markets overseas

Although the Indian jute manufacturing market was of prime importance to the Scottish bobbin and shuttle trade and the Bombay cotton market likewise crucial to the English makers, the latter were active in many other parts of the world, following in the wake of a buoyant and progressive British textile machinery industry. For example, Wilson Brothers Bobbin Co. Ltd. of Garston, Liverpool (despite their title they also made shuttles) in 1923 had selling agencies in the following countries:-

Australia, Austria, the Balkan Provinces, Belgium, China, Czecho-Slovakia, Finland, France, Germany, Holland, India, Italy, Japan, Mexico, Poland, Portugal, Spain, United States of America.

The firm of John Dixon, bobbin makers of Steeton in Yorkshire, was also active overseas and enjoyed an important relationship with British-run factories in Russia and a substantial trade with the US. Further reference to these companies is made later in this chapter in a review of the English bobbin and shuttle trade.<sup>35</sup>

The Scottish bobbin and shuttle manufacturers, in their close attachment to the flax and jute industries in the East of Scotland and Calcutta might, by contrast, appear unadventurous in a world which offered so many opportunities in the closing decades of the 19th century. Although progressive in their own narrow field, the skills and equipment they needed to make the bobbins and shuttles required for flax and jute machinery, were less sophisticated than those

employed by the English manufacturers, dealing with the multifarious needs of the cotton and woollen trades. Nevertheless, after the Second War when the Indian market was closed to the Scottish trade one manufacturer - the Gateside Mills Company - made a determined effort to close the gap and achieved some success in markets previously dominated by the English trade.

### The jute industry in Scotland

Until the 1890's the jute manufacturing industry in Scotland owed its growth and success to three factors (i) the considerable technical advances made in the mid-century in relation to the processing of jute (ii) the famine in 1860 followed by an international economic boom in 1870 and (iii) the willingness of mid-Victorians to plough back their profits into their businesses. Certainly the record of the industry was impressive - in 1839 it did not exist, by 1890 it employed 43,000, mainly women and boys, and exported 90% of its production.<sup>36</sup>

After 1890 to the outbreak of war in 1914, the industry suffered a period of stagnation. R.H. Campbell in The Rise and Fall of Scottish Industry (Edinburgh, 1980), examines the problems of Scottish industry in this period and distinguishes between the generalist and specialist industries. Jute manufacturing was essentially generalist, in that it produced for the less specialised and low-priced markets, in contrast to those industries which produced for more specialised and higher-priced markets: due to the nature of the industry there was very little opportunity for the jute manufacturer to embark



For the generalist the challenge was always one of cost competitiveness

Dependent on imported raw materials and faced with a competitor established adjacent to the principal growing area of raw jute and having the added benefit of an abundant supply of cheap labour, the outlook was indeed bleak for the jute trade in the UK. On the other hand, it might be argued that the industry made little effort to escape from this doom-laden position. No experiments were made with new fibres and innovation appeared to be limited to keeping costs down by adding tow and hemp which proved to be only a temporary expedient.<sup>37</sup>

For this exporting industry tariffs were also a major problem; a Royal Commission on the Depression of Trade and Industry was told in 1884 that the loss of its foreign trade was due to tariffs and the trade would only be restored to its former level if they were withdrawn by the countries concerned.<sup>38</sup> In the years to the First World War important markets were also lost to a fast-growing Indian industry.

After 1914, years of slow decline were interspersed with short-lived booms and depressions, due to the 1914-18 war and its aftermath, and occasionally, the UK trade received a boost when the Indian mills failed to fulfil their contracts. As noted earlier, in these inter-war years new threats to the industry appeared; other forms of packaging began to be marketed with some success and modern methods of handling grain reduced the need for bags. The effects of these developments bore heavily on the population of Dundee; the workers

faced a harsh world, particularly in 1931-2, when half of their number were unemployed and those in work earned only the lowest legal minimum wage operative in Britain. Even in 1939, after a slight recovery, 4,283 jute workers were unemployed out of a total of 26,172 and wages were still the lowest paid to textile workers in the UK.<sup>39</sup>

Events in India were another cause for anxiety; in 1931 in an effort to combat the effects of the worldwide depression, the Indian Jute Mills Association renewed their attempts to control production by sealing looms and reducing the working week to 40 hours. However, the non-associated mills ignored these arrangements and continued to expand their production; in 1934 therefore, the Association having achieved little success began to unseal looms and relax the restrictions on working hours, gradually moving to the granting of complete freedom to members in 1937. This policy was designed to discourage the non-associated mills from further expansion, but, in fact, led to a volume of production far in excess of the global demand. The bulk of the surplus production was shipped to the UK as the only free market, and prices fell to an uneconomic level even by Indian standards.<sup>40</sup>

The effect on the home industry was calamitous; the export of jute goods from Calcutta to the UK rising from 28 million yards in 1928 to 159 million yards in 1937 and jute bags from 45 million to 65 million in the same period, whereas Indian exports of jute goods to other countries increased only marginally, jute cloth by .1% and jute bags by 9%. Exports from the UK of jute products also

1937 to £515,000 in 1938. Action by the British Government, to alleviate the situation, was limited to the placing of large orders for sandbags and providing for the use of Dundee sacks by the British sugar beet industry; although welcome, these moves scarcely touched even the fringe of Dundee's problems.<sup>41</sup>

The Report of the Scottish Economic Committee published in 1939 investigating the jute industry in Scotland recommended the negotiation of a revived Trade Agreement with India to protect the home industry and Government help to establish new industries in the city and concluded:-

Unless steps can be taken to remedy the situation, there is a real possibility that Dundee will become a distressed area in a more difficult position than any comparable city in the United Kingdom.<sup>42</sup>

At the beginning of the Second World War the Scottish industry continued to suffer from severe unemployment, but, by 1943, labour had become in short supply due to the pressure of a strong demand from the Forces for jute goods. This shortage persisted to the end of the war when the number employed in the trade was only 41 per cent of the 1939 level. When the war ended a Working Party, set up by the Government to investigate the condition of the industry, found that in respect of Indian competition,

no amount of re-organisation and re-equipment on the part of the home industry will bridge the gap between the costs of production in the two countries

Consequently the Working Party recommended protective measures. The Government, therefore, decided to maintain its wartime controls which were exercised until 1954, when private trading was resumed for raw jute but not jute goods, protection in this respect continuing until 1963.

In these circumstances employment in the jute industry reached 14,290 in 1949 and 17,224 by 1954 (which proved to be a peak) and thereafter declined to 13,905 by 1962. In the postwar decades the jute manufacturers re-equipped and for some years maintained a lead in technical terms, over the Indian rivals by their success in the production of the high quality jute cloth required by the new tufted carpet trade.

However, once all protection was removed in 1968, foreign competition and the use of other materials for packaging and sheetings etc., reduced the numbers employed which by 1981 were down to a mere 4300 and continuing to decline.

43

Although the orders for bobbins and shuttles from the home mills were generally smaller in quantity and more varied in pattern as compared with those obtained from the Indian mills nevertheless they often provided a welcome boost when the trade overseas was depressed. The mills in Dundee were also of importance to the bobbin and shuttle manufacturers as they were the proving ground for the British jute machinery makers and were therefore a useful source of technical information. Likewise they attracted visits from the jute mill managers home on leave from Calcutta, particularly after

the Second World War when, as mentioned above, Dundee mills were re-equipping and enjoying a lead in matters of quality over their Indian rivals.

(iii) The location and structure of the bobbin and shuttle manufacturing industry

Having examined the function of the bobbin and shuttle in the textile world and the markets at home and abroad which generated the massive demand for these accessories, there remains the question of the location and the structure of the industry which developed and responded to the challenge and, in particular, the Scottish involvement.

The bobbin and shuttle industry in Scotland

The second half of the 19th century saw the emergence of, at least, fifteen firms in the east of Scotland specialising in the manufacture of bobbins and shuttles and similar items and originally serving the flax, jute and woollen mills north of the Border, but as explained in the Introduction having little contact with the textile industry in the West of Scotland. The birth and rapid growth of the jute industry in India, already described, opened a new and far larger market for these machinery accessories and in 1900 after, presumably, a period of fierce and damaging competition, the firms listed overleaf deemed it prudent to form a Scottish <sup>bobbin-</sup> and shuttle-makers association to:-

fix the prices for all bobbins, bobbin ends, spools, pirns shuttles, shuttle covers, and tips, manufactured or dealt in by the members of the Association, and to do everything which in the opinion of the Committee of Management will protect and further the interests of the members.

The founder members were:-

<u>Name</u>	<u>Product</u>	<u>Location</u>
Macgregor and Balfour, Ltd.	Bobbins and shuttles	Dundee
The Gateside Mills Co.	" " "	Gateside, Fife
John Ireland,	Shuttles etc.	Dundee
T.C. Keay,	"	Dundee
Peter M'Farlane,	"	Strathord, Perthshire
James Stiven	Bobbins	Dundee
A. Johnstone and Son	"	"

Another seven firms were in existence at this time but, apparently, were not inclined to join the Association and thereby surrender their freedom to under-cut prices, if they so wished. Five of these firms were primarily bobbin-makers and were located in Dundee (2), Aberdeen, Falkland and Tayport in Fife; the other two were shuttle makers in Angus. With regard to bobbin-making, the true size of the industry is difficult to define as those firms classed as woodturners would certainly offer bobbins as part of their wares. The Dundee Trades Directory listed six names under this heading in 1869-70 and in 1900, 32 firms of 'mill furnishers'

... supplying the suppliers of a wide variety of mill stores

including bobbins and shuttles and similar items; many of these firms were merchants depending on supplies from manufacturers.

One of the most important influences regarding the location of the industry would appear, from the foregoing, to be proximity to the textile industry centred in Dundee, but also of consequence was the availability of beech, the most suitable of the indigenous hardwoods. Fortunately the area was well-endowed in this respect and also yielded sycamore and birch, both suitable materials for turning certain types of specialist bobbins. By the turn of the century, however, the increasing demand for bobbins necessitated the importing of birch blocks from Sweden, and in the case of shuttles, the preference for persimmon required the importing of shuttle blocks of this material from the US. Obviously, in the early days, a source of waterpower was also a major consideration but the advances in power supply, transport and communications coupled with the growth of the export trade with India tended to diminish the advantages which might have accrued to any particular location.

Most of the firms in the industry were of modest size, employing less than a hundred workers even at their peak, and family-controlled; apart from bobbins or shuttles, or both, they manufactured spools, rollers and spare ends for bobbin repairs for the spinners and picking arms, box backs and swells, and lay races for the weavers.

Moving from the industry as a whole to a brief description of a few firms of prominence within it - the largest bobbin and shuttle-maker in Scotland from the turn of the century was McGregor and Balfour of Dundee. After the sequestration in 1870 at Gateside

in Fife, the business was re-started in Dundee and by 1887 D. McGregor and Co. were advertising as shuttle makers and turners promising to give 'special attention to foreign orders'.<sup>44</sup> A limited company was formed in 1897 in North Tay Works, Loons Road, Dundee; already closely involved with the Indian market an office was opened later in Calcutta managed by staff from Dundee. Apart from promoting the interests of the parent company, this branch was also able to offer agency facilities to firms in the U K trading with India but not represented there. Further reference to this company, its growth and finances etc. is made in Chapters 3-5.

The Gateside Mills Company in Fife, was the only other manufacturer of bobbins and shuttles. Originally the business was much concerned with the flax and jute industries in Scotland and a breakdown of the 54 principal customers in the Sales book of 1893 reveals a geographical distribution of:-

Fife and Dundee	21
Central Scotland	12
Angus and Perthshire	7
Borders and North England	9
Ireland	1
Calcutta	1
Elsewhere overseas	3

but by 1900 17 mills in Calcutta were being supplied directly and others indirectly, through merchants. Thereafter, the trade with India seldom fell below 70% of the value of total sales and occasionally exceeded 90%



J.J.L. Brebner of Aberdeen advertised in a Spinners Handbook in 1882<sup>45</sup> that they <sup>were</sup> makers of 'Rove, Winding, Twisting and Spinning Bobbins; Weft pirns, Jenny pirns and all classes of bobbins required in the manufacture of Flax, Jute and Wool - machine-made and guaranteed correct'. This firm did not join the Scottish Bobbin and Shuttle Manufacturers in 1900, perhaps in an effort to defend its local market from intruders from the Dundee area, but was certainly a staunch member after the Second World War.

In Dundee, John Howe and Son, an old established firm of wood-turners, became a leading producer of bobbins by the end of the 19th century, with strong Indian connections which lasted until 1948, also a non-member of the Association at its inception, it eventually joined and remained in membership until the 1960's.

The firm with the deepest roots in the industry in Scotland was John Ireland, Shuttle-makers of Dundee, established several decades before the introduction of the power loom and whose early records include the sales, in 1815-16, of shuttles to handloom weavers. With the advent of the power loom and the opportunities offered by the Indian market the firm grew to become the largest shuttle manufacturers in Scotland employing at its peak over 50 operatives, mainly engaged upon jute shuttles for Calcutta.

All the businesses mentioned by name, survived two World Wars and periods of depressed trading, due in part, no doubt, to their ability to co-operate within the framework of the Association, of which they were all eventually members. However, the Indian ban on the import of bobbins for jute spinning from the UK, applied

and by the 1980's all had closed except the Gateside Mills Company which, however, was no longer making wooden bobbins or shuttles.

### The bobbin and shuttle industry in the north of England

Although the principal subject of this study is the bobbin and shuttle manufacturing industry in Scotland, a brief description of the English sector of the trade is perhaps appropriate at this stage, in view of the references made in later chapters.

Most firms in the industry in England were either bobbin or shuttle manufacturers but the largest enterprise, the Wilson Brothers Bobbin Co. Ltd., produced both items despite its title.<sup>46</sup> The business was started in a cottage in Todmorden in 1823 for the purpose of making bobbins for the textile manufacturers, power for the machines being obtained from an adjoining brook by means of a waterwheel. The project prospered and was moved to a larger mill in the town in 1831; this plant was steam-driven and the boiler provided a supply of hot dry air for seasoning purposes. Lawrence Wilson, the proprietor at this time, was a deeply religious man and, characteristically, provided in his next mill extension in 1835, a meeting<sup>place</sup> for a congregation of Methodists and a Sunday School.

In 1881 two sons, continuing the business, patented an invention:-

to strengthen end or each end of the tubes or bobbin by means of a ring made of tinplate sheet or brass or other thin metal which is stamped, pressed or spun into form.

Fig.13

A delivery of timber for Wilson Brothers Bobbin Company at Garston near Liverpool. The photograph is undated but was probably taken early in the 1900's before the First World War.

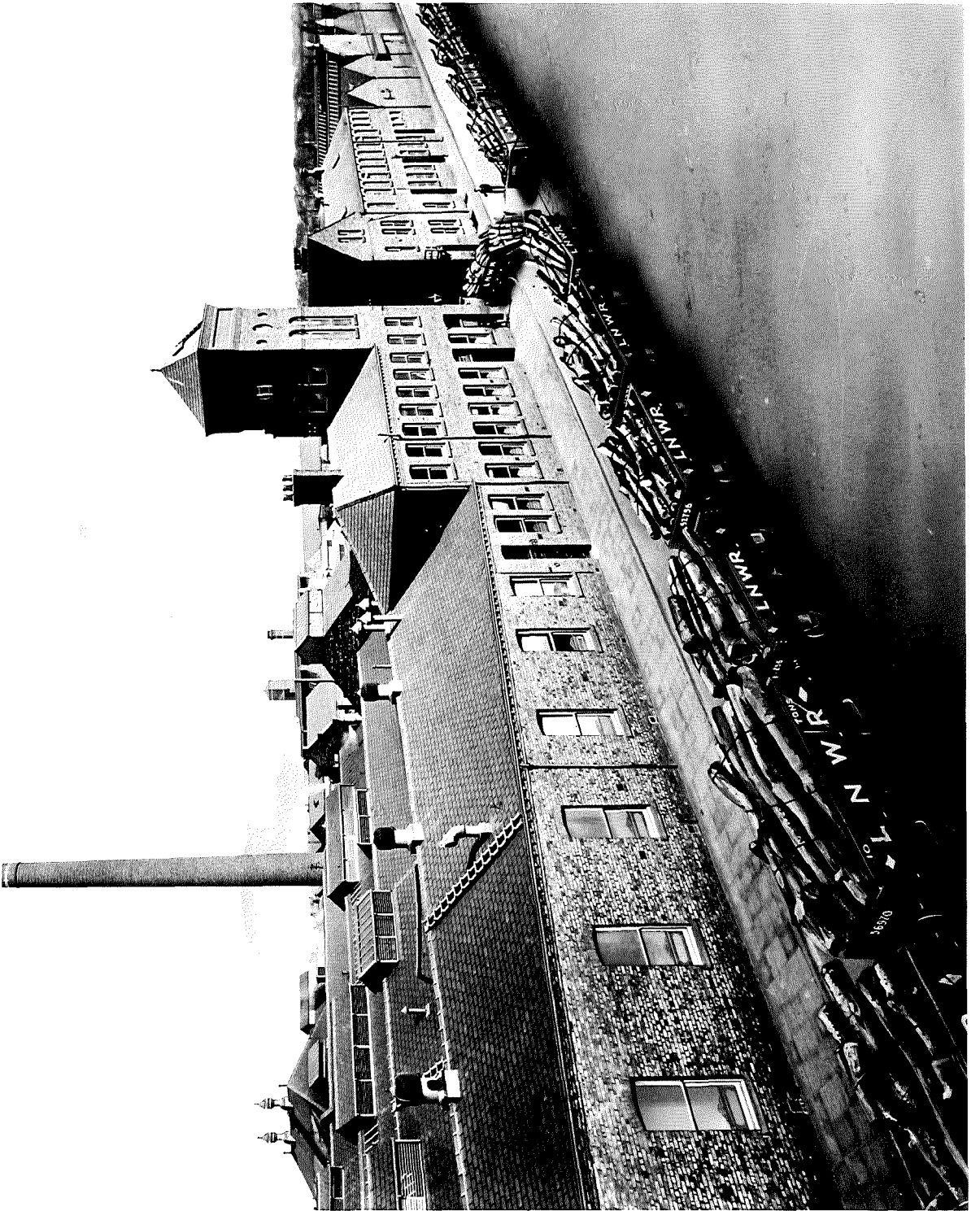


Fig.14

The sawmill at Garston.

The dress of the woman in the middle of the photograph (partially obscured) would suggest that the scene depicted was of the period before the First World War.

The bobbin and shuttle trade involved the sawing of small pieces of timber as made clear in this illustration; as a consequence the hands of the sawyer were constantly in close proximity to the saw. The danger of this operation is demonstrated by the sawyer in the foreground whose fingers appear to be ill-placed.

The noise and dust generated by this close concentration of circular saws with rim speeds of 10,000 feet per minute, can only be left to the imagination.



Fig.15

The machine shop at Garston.

The women in the foreground are reaming tubes, i.e. enlarging the bore to its final size by forcing the tube over a fast revolving spindle cutter in readiness for the turning machines on the right.

The working position of the women is due to the necessity of keeping their lathes in parallel with the main overhead driving shafts and thus achieving a straight belt drive in each case.

Cloth caps or other forms of headgear were worn to prevent long hair becoming entangled with the lathes or belts when in motion; serious injuries could result including scalping.

Doubtless there were very special measures taken in preparation for this photograph, certainly the floor appears remarkably free from the sawdust and woodchips normally found in bobbin machining departments.

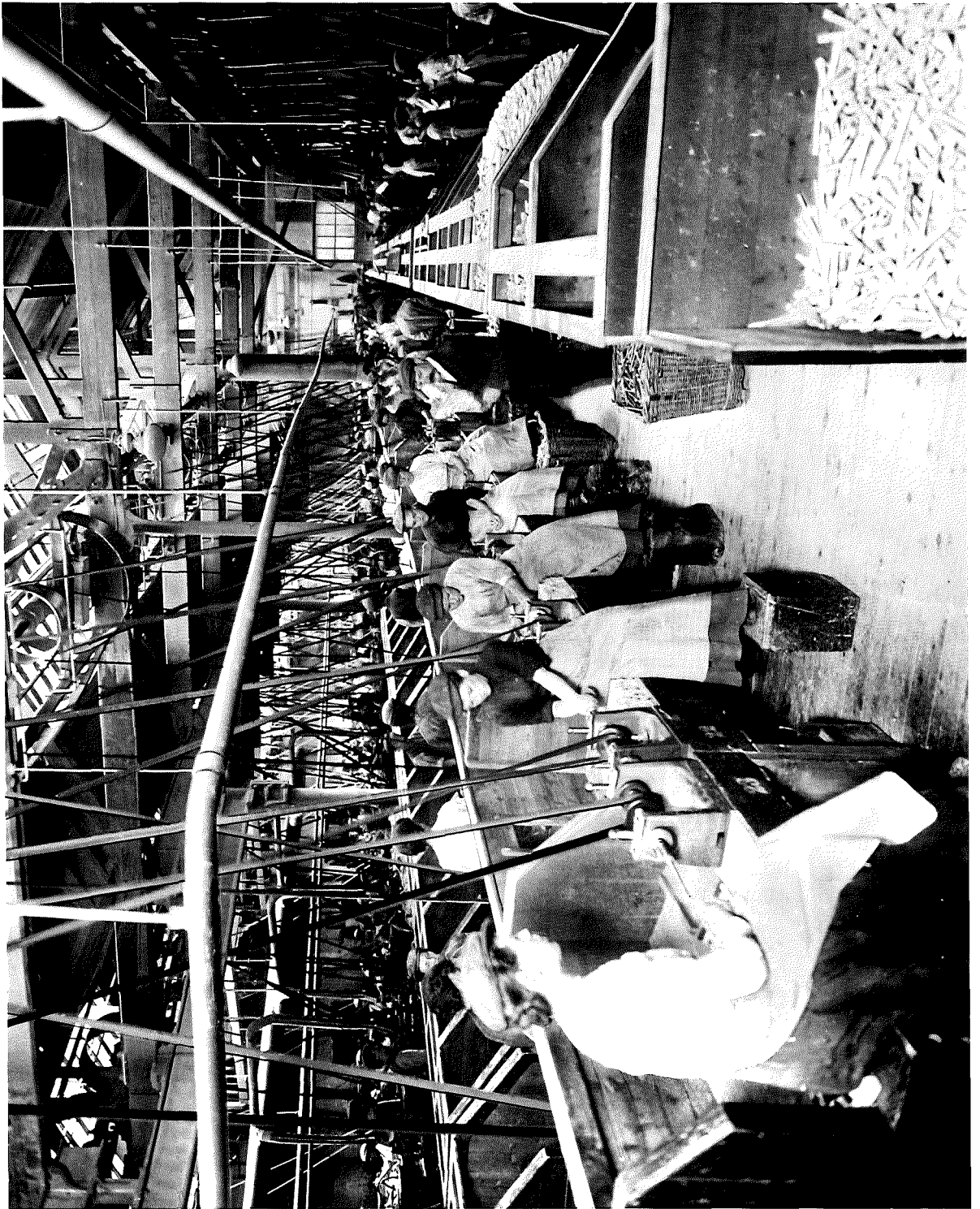




Fig.16

Garston, the machining and finishing shops.

In the upper photograph the woman in the centre is operating a turning lathe, opening and closing the tailstock with the handle in her right hand and removing the workpiece with her left hand.

The lower photograph includes a view of the revolving drums on the right, used to obtain a fine polish on small components and thus minimise the time spent on sandpapering. The articles were put in the drums with a quantity of woodchips, sawdust and other secret ingredients, in sufficient numbers to generate a constant friction when the drums were revolved for a set time.

These photographs and others of the Garston mill give an indication of the labour intensive nature of the industry and in contrast with the Scottish trade at this time, the large proportion of female workers.



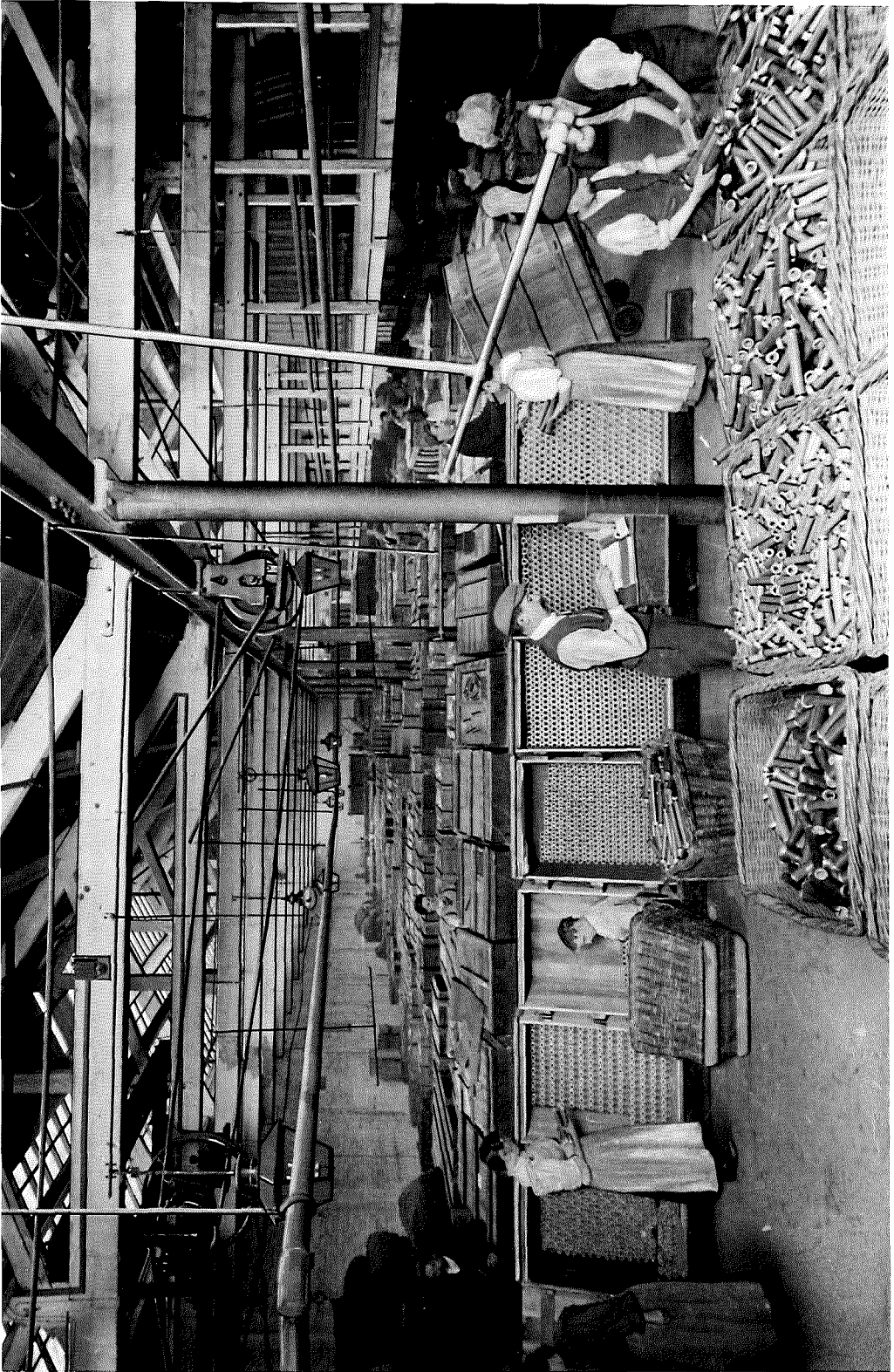
Fig.17

Packing for export at Garston.

Goods for shipment were packed in wooden cases made to hold a precise quantity and were packed, as illustrated, in a meticulous fashion in order to save shipping space and therefore freight charges. Orders for local delivery were packed in bags or returnable containers.

Understandably, the women in this clean, well-lit and heated department appear more neatly dressed than their counterparts in the machining shops.

The wicker-work containers were light to handle when empty and had the advantage of presenting a surface unlikely to damage wooden goods.



The innovation was so successful that the demand caused Wilsons to grant licences to other makers of bobbins. At this time, the firm had branch works at the Shannon Saw Mills, Athlone, and Beevor Works at Barnsley, with the main mill and headquarters at Todmorden. In 1888 this mill was entirely gutted by fire but, as generally happened in the trade, a destructive fire was a spur to improve buildings and manufacturing processes; such was the case at Todmorden:-

The restoration after each of the previous fires had been made the occasion for developments by the experience gained. After the 1888 conflagration a considerably larger mill was built on improved and much more ambitious plans.

In 1890 a private limited company was formed and a new works established at Garston, near Liverpool three years later. The site was selected because it was near this port which handled the imports of timber from Ireland; a sawmill was erected, a fleet of schooners purchased to carry timber from the Irish ports, and the Athlone sawmill closed. Following the transfer of some departments from Todmorden to better accommodation at Garston, the latter, in 1902, was adopted as the headquarters of the Company. At a function, held in 1923, to mark the centenary seven current employees were specially commended for their long service; the periods of employment were 70, 68, 63, 62, 57, 51, 51 years. Three of these operatives were hand turners and four employed on tasks which were scarcely of a semi-skilled nature, giving some credence to the claim that the labour force was strictly and narrowly departmentalised to avoid the possibility of any worker gaining enough experience and skill to set up on his own account. Notwithstanding this constraint on ambition, at this time

probably 1000-1500 and more than half of these for thirty or forty years.

In 1923 the Company claimed to be the largest in the world, with agencies established in 20 countries of which India was important enough to warrant a British resident director in Bombay. Apparently the Company placed much importance on displaying their products at exhibitions, in Britain and abroad, as part of their marketing strategy and achieved many successes winning 5 Grand Prix and 32 medallions. In the early 1960's Wilson Brothers bobbin Co. Ltd. closed down their operations due, in part, to the loss of their very substantial trade with the cotton mills in India, following the Tariff Board inquiry of 1948.

The largest firm of bobbin manufacturers in Yorkshire was John Dixon and Sons; an account of their origins, growth and decline is contained in Appendix 4 in which is also recorded the number employed in the bobbin-making industry after the Second World War. In 1953, despite the Indian ban on imports the figure was 3000 which in 10 years fell to 600 and by 1973 to 150; piecing together the little evidence which is available, an estimate of the workforce, in this industry in England, would amount to 6000 at peak periods of trading.

Of the other bobbin-making firms which can be traced, three were located in Lancashire (Rochdale, Blackburn and Heysham) and five in Yorkshire (Barnsley, Keighley, 2, Bradford and Halifax) and two outwith these counties, one in Macclesfield and the other near Keswick. Five of the firms were established before 1875, including two in 1789 and 1795 and four by the beginning of the First War.

Fig.18

Substantial orders for John Dixon and Sons,  
Steeton, Yorkshire.

These orders were followed by another for  
750,000 bobbins for delivery in 1882.

Accrington, July 21<sup>st</sup> 1887

Messrs Dixon & Co

Please let us have

500,000 Rabbith Ring frame bobbins to fit our  
spindles. All to be made of best quality  
Canadian wood similar to the bobbins we  
have been receiving from America, well seasoned &  
to be to our entire satisfaction and all  
that do not pass our test to be returned to you and  
to replace them with perfect bobbins free of cost to  
be painted in say 4 equal quantities of Green, Blue  
Black Red and Blue Delivery to be made at about 1/6 the rate  
you per week

The above Goods to be delivered free at this place, and an Invoice, marked with the No. of this Order  
on the same date as the Goods.

Goods delivered without an Order similar to the above, will not be taken into account.

We particularly request that OUTSIDE EACH PACKAGE, into which you make the Goods of this Order, be  
marked thus:—

Order No. U 460

HOWARD AND BULLOUGH.

Accrington, Dec 31<sup>st</sup> 1887

Messrs John Dixon & Co

Please let us have

500,000 Rabbith ring frame bobbins to fit our 5/8  
spindles, all to be made of best quality, white Canadian  
wood similar to the bobbins we have been receiving  
from America well seasoned and all the bobbins  
to be to our entire satisfaction and all bobbins  
that do not pass our test to be returned to you  
and you to replace them with perfect bobbins  
free of cost to us to be painted in say 4 equal  
quantities of Green, Black Red and Blue  
Delivery to be made at about 30,000 per week  
under an agreement

The above Goods to be delivered free at this place, and an Invoice, marked with the No. of this Order  
forwarded on the same date as the Goods.

Goods delivered without an Order similar to the above, will not be taken into account.

We particularly request that OUTSIDE EACH PACKAGE, into which you make the Goods of this Order, be  
marked thus:—



In 1969 eight bobbin manufacturers remained but also sharing the market were sixteen companies offering plastic bobbins;<sup>47</sup> by the 1980's all production of the traditional wooden articles had ceased in England and the plants and equipments had been sold, much of it, due to its specialist nature, for scrap.

As to the shuttle manufacturers in the north of England a minute of a meeting of the Master Shuttle Makers Association, dated September 28 1872, listed thirty-eight member firms, thirty-five in Lancashire and three in Yorkshire, Fig. 19 overleaf. It is most probable that there were more firms in the industry, but some would prefer to maintain their freedom as to the prices they charged and this meeting was called for the purpose of fixing prices. The members in Lancashire were located within an area bounded by Clitheroe in the north and by Stockport in the south. Blackburn supported eight firms, Bury three and the other cotton towns one or two. In Yorkshire, three manufacturers in Todmorden, Hebden Bridge and Leeds, members of the Association, represented only a part of the industry as six more firms incorporated as companies between 1879 and 1900 would almost certainly have operated as family partnerships or the like in previous years.

By the inter-war period the number of shuttle manufacturers in Lancashire was sixteen and in Yorkshire, nine; by 1969 there were eight in the west and nine still in the east. All that remains now of the industry are three firms but only one in Yorkshire has been equipped with the most modern computerised machinery.

..... according to the size of the workforce, most of the shuttle-making

Figs. 19 and 20

Minute of the Master Shuttle Makers Association  
1872.

Minute of a meeting to agree prices for cotton  
shuttles and overleaf a specimen page of the  
Association's price list for 1891.

Figs. 19 and 20

Minute of the Master Shuttle Makers Association  
1872.

Minute of a meeting to agree prices for cotton  
shuttles and overleaf a specimen page of the  
Association's price list for 1891.

# "Master Shuttle Makers Association."

September 28th, 1872.

At a General Meeting held at the "Merchants" Hotel, Manchester, the following resolution was adopted "That on and after the first October 1872, the following list of prices for Shuttles &c., had to be charged by all Members of the Association.

	Boxwood Shuttles, common calico size, made from Blocks, including discoloured wood.. Per Dozen.	
	not exceeding $11\frac{1}{2} \times 1\frac{1}{2} \times 1\frac{1}{4}$ .....	14/-
	Boxwood Shuttles, made from Blocks including discoloured wood not exceeding	
If any Shuttles are made with- out Pegs not more than 1/6 Per Dozen to be allowed	$10\frac{1}{2} - 1\frac{1}{2} - 1\frac{1}{4}$ .....	13/-
	Boxwood Shuttles made from Blocks $1\frac{5}{8}$ broad, (any length or depth) .....	15/-
	do. do. do. do. do. ....	16/-
	do. do. do. do. do. ....	17/6
	do. do. do. do. do. ....	20/-
	Fruit Tree Shuttles, common calico size, made from Blocks, not exceeding	
	$1\frac{3}{8}$ broad, (any length or depth) .....	11/-
	do. do. $1\frac{3}{8}$ and 2 do. ....	12/6
	If wired either 1 2 3 or 4 wires .....	1/- Per Dozen Extra.
	.. Patent Pegs, steel, or open, .....	1/- " "
	.. Ordinary Worsted Pegs .....	1/- " "
	.. Any extra Eyes over and above two .....	6d. " "
	.. With Clips .....	1/- " "
	.. Shouldered or Eccentric .....	1/- " "
	.. Brass or screws for drop box shoulder .....	1/- " "
	.. LEAD for weight or balancing .....	1/6 " "

For Goods sold separately.

Common Pegs .....	3/- Per Dozen.
Steel, Patent, or open Pegs .....	4/- " "
Shuttle Tips, polished .....	8/6 Per Gross.
Pot Eyes .....	1/- " "
Shuttle Springs .....	1/- " "
Repaired pegs, (common) .....	1/3 Per Dozen.

NO DISCOUNT MORE THAN  $2\frac{1}{2}\%$  Monthly account, or  $1\frac{1}{2}\%$  Quarterly account, to be allowed to USERS.

NO DISCOUNT MORE THAN  $5\%$  to Agents or Merchants Monthly account.

## Members of the Association, (38)

Messrs. IRVIN & SELLERS, (Chairman) .....	Preston.	Mr. FRANK HOLDEN, .....	Clitheroe.
Mr. JOHN GREEN, .....	"	Messrs. J. & A. WILKINSON, (Executive Committee) .....	Manchester.
Messrs. HILL & BRADSHAW, .....	Radcliffe.	Messrs. JOHN TETLOW & Co. (Treasurer) .....	"
Messrs. W. H. PLATT & Co. (Executive Committee) .....	Ashton.	Mr. JAMES WOODS, (Vice Chairman) .....	Stockport.
Mr. ROWLAND BAGLEY, do. .....	Blackburn.	Mr. ISAAC WHITEHEAD, .....	Failsworth.
Mr. T. T. MERCER, .....	"	Mr. ROBERT CROSSLEY, (Executive Committee) .....	Bacup.
Mr. JOHN SHARPLES, .....	"	Mr. JAMES DAWSON, .....	Shuttleworth.
Mr. THOMAS DAWSON, .....	"	Mr. JOHN WOODCOCK, (Executive Committee) .....	Oldham.
Messrs. THOMAS & J. R. BURY, .....	"	Messrs. HAWORTH & Co. .....	"
Mr. HENRY LIVESY, (Secretary) .....	"	Messrs. O. OLDHAM & Co. (Executive Committee) .....	Geo-Cross.
Mr. JAMES HOIT, .....	"	Messrs. CARR & HORROCKS, .....	Bury.
Mr. WALKER WHITEHEAD (Executive Committee) .....	Farnworth.	Messrs. ROTHWELL & SON, .....	"
Mr. THOMAS HOLDEN, .....	Chorley.	Mr. ISAAC WOODS, (Executive Committee) .....	"
Mr. WILLIAM HILTON, .....	Bolton.	Messrs. FLETCHER & KAY, .....	Ramsbottom.
Messrs. J. & A. MORTIMER, (Executive Committee) .....	Leeds.	Mr. WILLIAM HOIT, .....	Todmorden.
Mr. THOMAS CUMSTINE, do. .....	Burnley.	Messrs. HANDEL HALSTEAD & SON, .....	Hebden Bridge.
Mr. JOHN RILEY, .....	"	Mr. JOHN BOOTH, .....	Helywood.
Mr. RICHARD LEEMING, .....	Ribchester.	Messrs. JOHNSON & FITTON .....	"
Mr. ROBERT BRADLEY, .....	Houghton Nr. Blackburn.	Mr. JAMES ARUNDALL, .....	Hollingworth, Nr. Radcliffe.

PRIVATE and CONFIDENTIAL—For use of Members only.

**EXPORT LIST.**

Corrected July 9, 1891.

Not to exceed on the wood, Inches.	Baxwood.	Cornelwood.	Crabwood and Persimmon.	W.I. Boxwood.
	Per Doz.	Per Doz.	Per Doz.	Per Doz.
11×1 $\frac{1}{2}$ ×1 $\frac{1}{2}$ ...	11/6	7/6	7/6	8/6
11 $\frac{1}{2}$ " " ..	12/0	7/6	7/6	8/6
11 $\frac{1}{4}$ " " ..	12/0	7/6	7/6	8/6
12 " " ..	12/6	7/6	7/6	8/6
11×1 $\frac{1}{4}$ ×1 $\frac{1}{2}$ ..	12/0	7/6	7/6	8/6
11 $\frac{1}{2}$ " " ..	12/6	7/6	7/6	8/6
11 $\frac{1}{4}$ " " ..	12/6	7/6	7/6	8/6
11 $\frac{3}{4}$ " " ..	13/0	7/6	7/6	8/6
12 " " ..	13/0	7/6	7/6	8/6
12 $\frac{1}{2}$ " " ..	13/6	7/6	7/6	8/6
11×1 $\frac{1}{2}$ ×1 $\frac{1}{2}$ ...	12/6	7/6	7/6	8/6
11 $\frac{1}{2}$ " " ..	12/6	7/6	7/6	8/6
11 $\frac{1}{4}$ " " ..	13/0	7/6	7/6	8/6
11 $\frac{3}{4}$ " " ..	13/0	7/6	7/6	8/6
12 " " ..	13/0	7/6	7/6	8/6
12 $\frac{1}{2}$ " " ..	13/6	7/9	7/6	8/9
12 $\frac{1}{4}$ " " ..	13/6	7/9	7/6	8/9
11×1 $\frac{1}{4}$ ×1 $\frac{1}{2}$ ..	13/0	7/9	7/6	8/9
11 $\frac{1}{2}$ " " ..	13/0	7/9	7/6	8/9
11 $\frac{1}{4}$ " " ..	13/6	7/9	7/6	8/9
11 $\frac{3}{4}$ " " ..	13/6	8/0	7/9	9/0
12 " " ..	13/6	8/0	7/9	9/0
12 $\frac{1}{2}$ " " ..	14/0	8/0	7/9	9/0
12 $\frac{1}{4}$ " " ..	14/0	8/0	7/9	9/0

Special arrangements can be made for all shuttles shorter than 11 inches on the wood.

Discount not to exceed 5 per cent. Wood cases free. Tin lined cases extra. Carriage free to port.

**EXPORT LIST (Continued).**

Not to exceed on the wood, Inches.	Baxwood.	Cornelwood.	Crabwood and Persimmon.	W.I. Boxwood.
	Per Doz.	Per Doz.	Per Doz.	Per Doz.
11×1 $\frac{1}{2}$ ×1 $\frac{1}{2}$ ...	13/0	8/0	7/6	9/0
11 $\frac{1}{2}$ " " ..	13/6	8/0	7/9	9/0
11 $\frac{1}{4}$ " " ..	14/0	8/0	7/9	9/0
11 $\frac{3}{4}$ " " ..	14/0	8/0	7/9	9/0
12 " " ..	14/0	8/0	7/9	9/0
12 $\frac{1}{2}$ " " ..	14/6	8/3	8/0	9/3
12 $\frac{1}{4}$ " " ..	14/6	8/6	8/3	9/6
13 " " ..	15/0	8/6	8/3	9/6
11×1 $\frac{1}{4}$ ×1 $\frac{1}{2}$ ..	14/0	8/3	8/0	9/3
11 $\frac{1}{2}$ " " ..	14/6	8/3	8/0	9/3
11 $\frac{1}{4}$ " " ..	14/6	8/3	8/0	9/3
11 $\frac{3}{4}$ " " ..	14/6	8/3	8/0	9/3
12 " " ..	15/0	8/3	8/0	9/3
12 $\frac{1}{2}$ " " ..	15/0	8/6	8/3	9/6
12 $\frac{1}{4}$ " " ..	15/6	8/6	8/3	9/6
13 " " ..	15/6	8/9	8/6	9/9
11 $\frac{1}{2}$ ×1 $\frac{1}{4}$ ×1 $\frac{1}{2}$ ..	15/0	8/9	8/6	9/9
11 $\frac{1}{4}$ " " ..	15/0	8/9	8/6	9/9
11 $\frac{3}{4}$ " " ..	15/6	8/9	8/6	9/9
12 " " ..	15/6	8/9	8/6	9/9
12 $\frac{1}{2}$ " " ..	15/6	8/9	8/6	9/9
12 $\frac{1}{4}$ " " ..	15/6	8/9	8/6	9/9
13 " " ..	16/0	9/3	8/9	10/3
13 $\frac{1}{2}$ " " ..	16/6	9/6	9/0	10/6

Broad Iron Clips	1/0	per doz. extra.
Narrow " "	6d.	" "
Wire Clips	6d.	" "
Double Box (shouldered)	6d.	" "
Wood Cotters (if in two holes)	6d.	" "
Wire Shoes (per wire)	3d.	" "

(iv) Methods of production

There were many hundreds of different types and sizes of bobbins and shuttles in the price lists of the trade; therefore to simplify and clarify the description of the methods of production which follows, it has been mainly confined to the basic bobbins and shuttles used in the jute mills in Scotland and in India. (Figs. 21, 22 overleaf) and Figs. 7 and 9 between pp. 5 and 6.

The raw materials

Beech (Fagus sylvatica) was one of the indigeneous hardwoods in the UK for the making of bobbins and, in the early days, shuttles; due to its superior quality and strength as compared with that grown in more southerly latitudes, Scottish beech was particularly favoured; usually straight-grained with a fine texture it was one of the most suitable timbers for this turnery work and, <sup>48</sup> furthermore, the greater part of the tree could be used as the limbs were suitable for some of the smaller products.

In Scotland, the sycamore (Acer pseudoplatanus) is often known as plane; also finely textured and its clean smooth surface when machined, was particularly valuable for rollers on spinning frames.

It was also suitable for the flanges of bobbins used in wet spinning, a feature of the linen industry in Ireland; the warm and humid conditions in these mills were particularly harsh for most types of woodware but sycamore responded reasonably well. <sup>49</sup>

Birch (Betula pubescens and Betula verrocosa) is also native to Britain, but the percentage of mature trees yielding timber free

blocks as required by the Scottish bobbin makers. The output was small, as compared with the demand, and the possibility of expanding uninviting, due to the limited availability of high quality birch and the competitive prices and quality offered by the Swedes. The total output of Drumnadrochit was always accepted by the trade to ensure that production continued and a reserve source, albeit slender, was preserved in Scotland. Therefore to meet the huge demands for spinning bobbins from the jute industry, particularly from India, the Scottish bobbin manufacturers were obliged to import large quantities of rough-turned blanks - known as bobbin blocks - from Sweden.

Here birch of a very high standard was available and the Swedish timber merchants set up plants to cut bore and shape these blanks (Fig. 9(b) which after seasoning were ready to be turned down into bobbins in Scotland. Hence the costly shipment of logs - a large part of which would be cut off as waste - was avoided; moreover the raw material was converted into a quantifiable form and more easily handled. These bobbin blocks were produced solely for one type of jute mill bobbin generally 4" x 2 3/4" or 4" x 2 5/8".

For shuttles, the manufacturers reserved the highest quality of beech, but in the closing decades of the 19th century the virtues of persimmon were recognised. This timber (Diospyros virginiana) is found mainly in the deep rich bottom lands of the Mississippi basin. The special properties, which resulted in it replacing beech, were described in the US Department Bulletin of Agriculture No. 1436 dated September 1926<sup>50</sup> as an unusual combination of hardness, toughness, fineness of texture and smoothness when subjected to wear, unmatched by other woods. It was, therefore, of special value for

shuttles; it has also been used, for many decades, for golf club heads. The use of persimmon for shuttles possibly dates from 1865, when the first shipment of logs was sent to England but it has not been established beyond doubt, that they were used for shuttle-making.

Certainly a firm in Lowell, Mass. in 1875 made shuttles from this material and in Scotland, John Ireland the shuttle-makers of Dundee, claim to have been the first to produce persimmon shuttles in the 1880's.

Hickory, another hardwood imported from the US by Scottish shuttle manufacturers was used for the production of picking arms, which, in the jute loom, propelled the shuttle across the loom.<sup>51</sup>

In the north of England cornel (Cornus florida) was used for shuttles for the cotton and silk trades in view of the fineness of the yarns and the smooth finish which could be produced on this wood. However, the tree (sometimes called dogwood) when mature, only provided a log 1 - 3 metres long and about 20 cms in diameter, limiting the size of shuttle block which could be cut from it. Consequently, the smaller cotton and silk shuttles were made from cornel and the larger woollen and jute shuttles from persimmon. The principal source of supply was the US where, by the early 1920's, 3 1/2 to 4 1/2 million cornel blocks and 2 1/2 million persimmon blocks were cut annually. Sixty per cent of this production was exported to the UK, France and Germany and lesser quantities to Italy and Switzerland.<sup>52</sup>

Since the turn of the century shuttle-makers in the UK had become increasingly dependent on the US for their basic raw materials; an added complication was the necessity to hold large stocks of a wide



concern too, was the question of the continuity of supply of these valuable hardwoods; even by 1926 the US Department Agriculture warned that:-

Textile and shuttle manufacturers at present display undue confidence in the sufficiency of the supply of raw material for shuttles. Although it is true that curtailment may not be imminent, some organised action and research on the part of those especially interested will not only go far toward postponing future curtailment of the woods at present used but may also make available certain native or foreign species not now used, and thus increased the supply of woods suitable for shuttles.<sup>53</sup>

In the event supplies were maintained but little progress was made to find substitute materials until after the Second World War.

### Seasoning

Timber in its green state contains a large amount of moisture. For most uses it is necessary to remove the greater part of the initial moisture in green timber to enable the wood to give satisfactory service. This process is called seasoning and helps to make the timber lighter, stronger, harder and less susceptible to discoloration and deterioration less likely to split or distort in use and a better material for painting or polishing.<sup>54</sup>

This general definition opens a fuller account of the techniques of seasoning in Appendix 5. All the timbers used in bobbin and shuttle making required to be seasoned with some care, i.e. reduced in moisture content to match the humidity conditions in which the finished articles were expected to work. In a warm dry mill, for example, a moisture content of 8 per cent would be appropriate whereas in more humid conditions a level of 12 per cent might be necessary.

This scientific approach to seasoning was however, quite unknown to the majority of woodworkers in the UK until modern kilns became more common in the 1950's and 60's. A battery of four kilns of the

most modern design, installed at Gateside in 1949, remained unique in the bobbin- and shuttle-making industry in England and Scotland and similar installations were rare at that time in any branch of woodworking. Before this time the normal method of seasoning was a combination of air-drying followed by storage in a warm chamber and a reliance on the lessons of long experience. In the case of bobbin-making, planks of beech were built in tiers with space between each piece to allow the passage of air; in good summer conditions the timber would dry sufficiently in 4-6 months to allow its transfer to a heated chamber without the risk of it cracking. After four weeks in a temperature of about 80 degrees Fahrenheit the wood might be ready for use. The time necessary at each stage would, of course depend upon the thickness and quality of the material. As the measurement of moisture content was then unknown to the trade, the final test of readiness involved the machining of a sample and judging the quality of the cut and the dryness of the shavings and sawdust produced. The barrels of the bobbins underwent a different process; blocks of hardwood were cut to size, in the case of rove bobbins, 325 x 50 x 50 mm and then bored longitudinally in the green condition to a diameter smaller than that finally required. The blocks were then roughly turned to a tubular form and steamed in a large metal tank for two or three hours. This treatment was intended to drive some of the moisture out of the wood and to bring it to a condition where it could be transferred to a slatted floor in a warm store.

Here, the barrels were spread to a depth of a foot or so and left to dry for a fortnight. The pitfalls in these methods were manifold as compared with a systematic measurement of moisture content, neverthe-

Manufacturing wooden bobbins

The basic principles of design and construction of bobbins for the jute and flax trades changed only in detail until the late 1930's when high speed and self-doffing bobbins were introduced. Two flanges cut from seasoned planking and the rough-turned barrel, also seasoned, were assembled to form a bobbin blank i.e. an unfinished and oversized version of the finished article, which was then turned down on a bobbin-makers lathe to the precise dimensions required. The flanges for the bobbin blank were discs cut from the planking by means of a tubular saw combined with a boring bit which simultaneously drilled a centre hole through the disc; the barrels were reamed<sup>55</sup> and machined to fit the hole in the flanges. By means of a mechanical press the flanges were then forced on to the barrel together with an application of hot animal glue; two hardwood dowels were thereafter driven at an angle through each flange into the barrel to re-inforce the construction. After the machining operation on the lathe and when sundry minor cuts had been made the bobbin was finished to the customers requirements i.e. sandpapered, varnished or oiled; occasionally the top flanges were painted for identification purposes in the spinning mill.

It will be seen from the price list of 1901 reproduced on Fig.11 that rove bobbins were offered with an alternative type of construction; two long steel pins, replacing the wooden dowels, were driven horizontally into opposite sides of the flange until they were firmly lodged in the side of the barrel. This method not only provided a more secure fixture but also re-inforced the flange which was liable

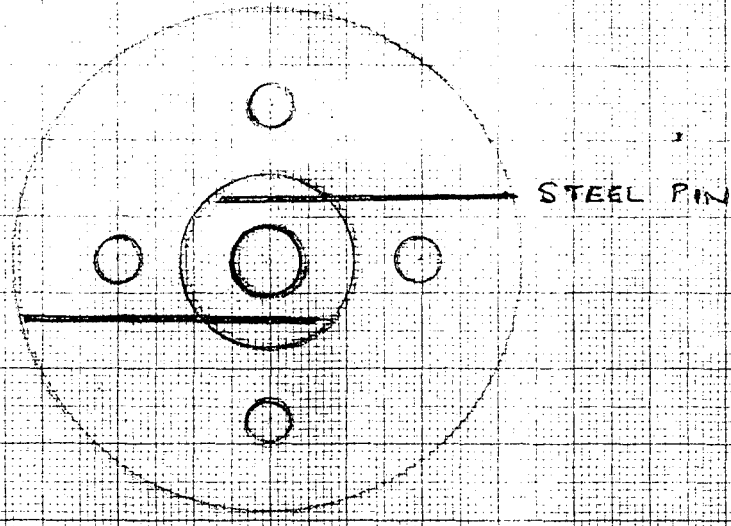
Fig.21

Sketch of a rove bobbin for jute machinery.

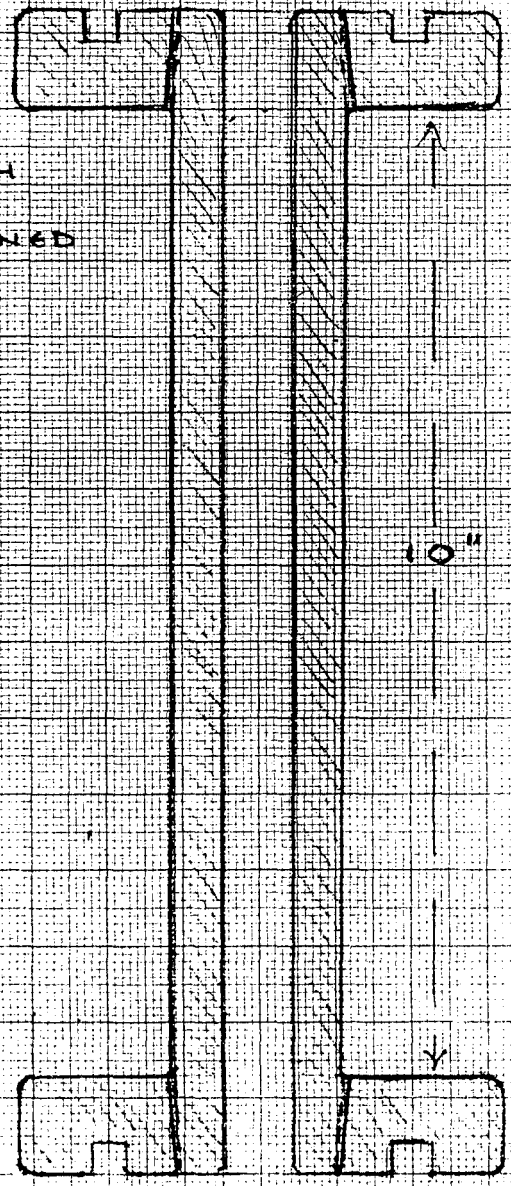
JOTS BOBBINS

10 x 5 Rove

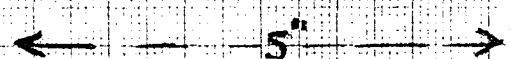
BOBBIN



ENDS PRESSED ON  
CLUED AND FINNED



DRIVING HOLES  
IN BASE



The  
Gateside Mills  
Co. Ltd.

Fig.22

Sketches of spinning bobbins for jute machinery.

FINE BOBBINS

SPINNING

BOBBIN

6" x 3 1/2"

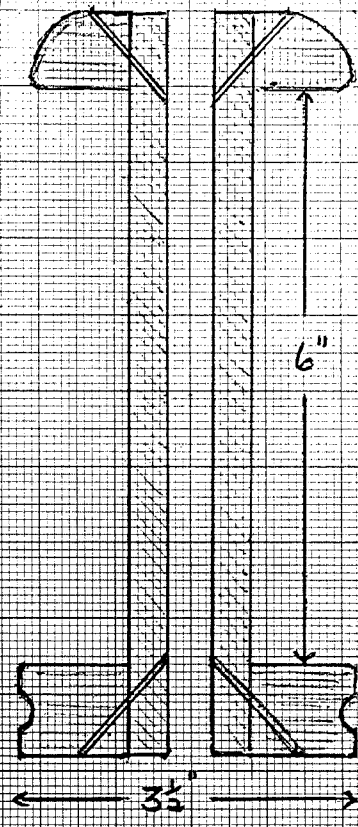
ENDS PRESSED

DN AND GLUED.

BEECH DOWELS

HAMMERED AND

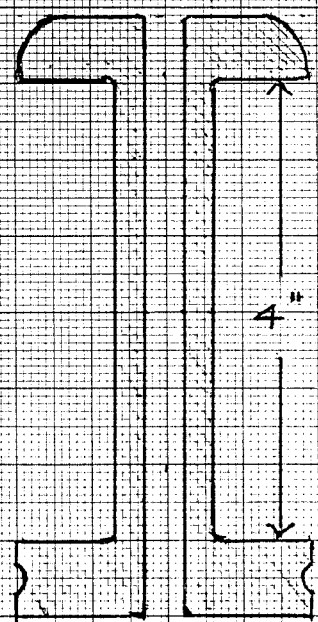
GLUED.



SOLID SPINNING

BOBBIN

4 x 2 3/4"





Small bobbins were turned twice from the solid block of wood, once when freshly cut from the log, as then the surplus material could be removed more easily; this operation reduced the block to an oversized blank. The second turning was carried out after seasoning when the blank was turned down on a bobbin lathe to the final dimensions and profile. The semi-processed blocks imported from Sweden required only to be reamed out in the bore and turned down once on the lathe.

The bobbins illustrated in Fig. 1, between pp. 3 and 4 show the more sophisticated designs commonly used in England and devised for the wool, cotton and silk spinners; details of their construction are shown in the two illustrations which follow. In Fig. 23 the flanges and barrel are threaded, glued and screwed together and locked with a dowel. Another method, as depicted in Fig. 24(b) uses wooden bushes to secure the flanges to the barrel and in Fig. 24(a) the construction is designed to reduce weight. Other features include flanges made from two or three plies of wood with the grain of each ply at 90 degrees to its neighbour thus providing far greater strength than a solid flange. The rim of the flanges when fitted with a metal ring ensures a snag-free surface and metal plates or inserts protect driving slots and driving holes which otherwise are likely to become worn or deformed by the spindle lugs or feathers. When man-made fibres were introduced it became necessary to fit a brass tube in the bore of the barrel to withstand the pressure of the wound yarn which otherwise would distort the spindle hole cause problems on the spinning frame when the bobbins ready for removal.

Fig.23

Bobbin construction.

In this bobbin the flanges have been machined with an internal thread and the barrel with an external thread to match. The components have then been glued and screwed together and the assembly reinforced with diagonal pegs hammered and glued into position. This work was carried out before the built bobbin was finally turned down to its specified dimensions.

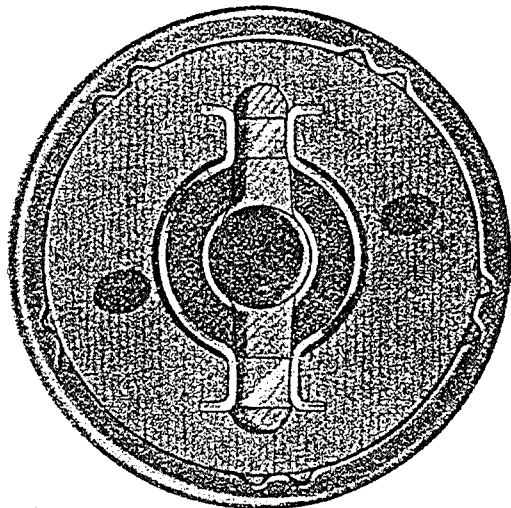
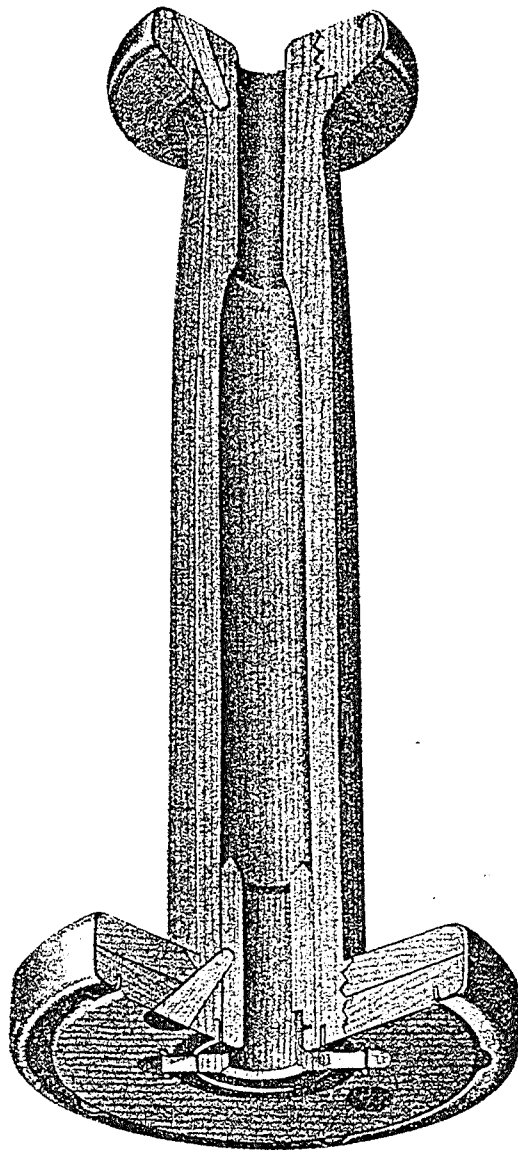
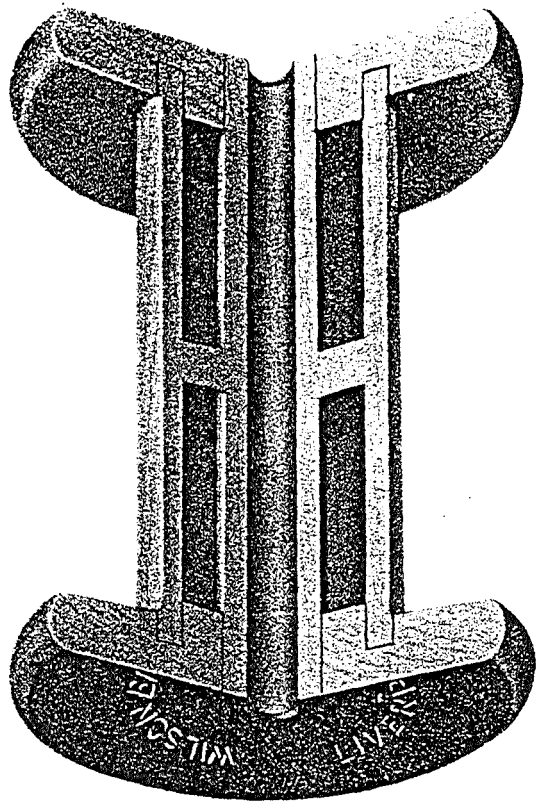


Fig.24

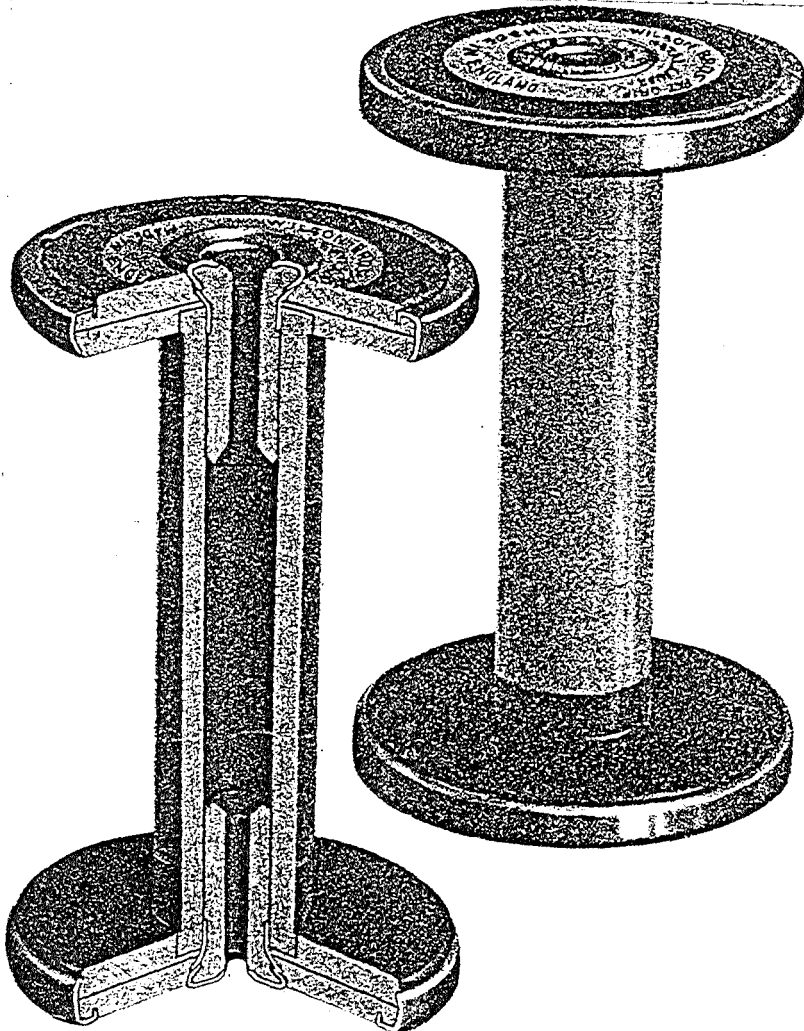
Bobbin construction.

The illustration (a) shows a construction designed to minimise the extra weight due to the large diameter bobbin. The weight of a bobbin could have a significant effect on the power consumption of a spinning frame.

Bobbin (b) has its flanges secured to the barrel by plugs hammered and glued into the bore.



(a)



(b)

Many of these developments were due to the initiative of the bobbin-makers endeavouring to offer a superior bobbin to the mills, specially designed perhaps to overcome some difficulty experienced by the spinners. Moreover, whilst the machine-makers specified the dimensions and profile of the bobbin, it was left to the bobbin makers to decide upon a suitable material and construction to provide the strength, robustness and true-running to cope with the spinners demands.

Throughout these hundred years of the mass production of bobbins hardwoods remained the basic raw material in the UK being displaced gradually after the Second War by plastics, aluminium and various laminated products, for example, vulcanised fibre. With the advent of artificial fibres and more advanced spinning methods, the wooden bobbin was forced to give way to other forms offering superior strength, precision, reliability and design.

The content of this section has been mainly devoted to the principles of manufacture and the variety of design, whereas conditions and methods on the shop floor are examined in greater detail in Chapter 2.

Making shuttles

Shuttle manufacture traditionally commenced with the careful selection and seasoning of the rough sawn block of either persimmon, cornel or beech. When deemed to be in a fit condition, the block was sawn, planed and machined to conform with the specified outside sizes. After the metal tips had been inserted in the ends of the block a series of machining operations were carried out by (a) presenting the hand-held shuttle-block to the appropriate cutting tool revolving at high speed in a headstock, or (b) by clamping the material, in the case of the heavier cuts, in a horizontal routing or boring machine and moving the block to the cutting tools by mechanical means.

The latter method was slower and therefore only employed when the former was impractical. The only turning operation involved was that concerned with the shaping of the rounded ends of the shuttle.

Jute or flax cop shuttles required 35-40 operations in their making, a woollen shuttle about 50 operations and an automatic at least 75, depending on the complexity of the self-threading device.

The work was, therefore, particularly skilful and precise requiring a high standard of finish to ensure that the fitting of the components guiding the passage of the weft, left no aperture in which the finest of yarns could be trapped or snagged. Furthermore, errors at any stage were difficult to correct due to the complexity of the work and expensive if a valuable block was wasted as a result.

Bearing in mind the testing nature of the rôle played by the shuttle in the loom its design appears relatively fragile, particularly in the automatic version, where only two sides connect the two ends

hold the pirn. The construction, however, allows the pirn when empty to be ejected through the bottom of the shuttle and a filled pirn to be loaded from above by means of an automatic mechanism. Again, in the jute cop shuttle a large cavity was machined out of the block, removing about 40% of its volume, in order to accommodate as much weft yarn as possible, thus reducing the number of stoppages; the sides and bottom enclosing this cop space were seldom more than 6 mm thick (in order to limit the outside dimensions of the shuttle) despite these surfaces having to withstand most of the wear and tear generated in the loom. The quality of the raw material was therefore of prime importance in prolonging the life of the shuttle. Consequently, after the Second World War, shuttle blocks were made from compressed or impregnated woods to this end, but for many applications were found to be too expensive; plastics made little impression due, among other technical factors, to the cost of producing the wide variety of moulds necessary to meet the demands of the industry.

The advent of the shuttleless loom removed many such problems and contributed in no small measure to the near extinction of the shuttle-making industry in the UK.

The jute cop shuttle was fitted with a metal cover which held the cop firmly in place; most shuttle-making firms made covers in their own blacksmith/engineering departments as large quantities were sent abroad, particularly to India, as spares. The cover needed to be rigid for the greater part of its length but with a degree of 'spring' - achieved by tempering - at either end, which ensured that the cover could be safely secured in the shuttle and would not be likely to fly open in use and thus cause extensive damage to the



warp threads. The blacksmith first cut the strip to the required length on a metal worker's guillotine. The steel strip as supplied was correct in section and of a specified carbon content so that when tempered the covers had a degree of flexibility as well as added strength.

Both ends of the short lengths were tapered in a standard engineering press. One end was then heated and turned to form an eye which, with a pin inserted in the shuttle, formed the hinge of the cover. The other end was turned cold to form a right-angle which allowed the catch to secure the cover in the closed position. The press was next used to form the cover into an arched cross-section which was then perforated with two rows of indentations to grip the cop in the shuttle.

The tempering process was carried out in an open furnace and the covers placed so that an end was heated to a bright cherry red after which it was immersed in an oil bath. The operation was then repeated for the other end; the ends of the covers were then put back into the furnace until the oil was burned off and a tempering heat was reached. The final operation involved the "rumbling" of the covers until an acceptable finish was achieved.

Shuttle-making was one of the most skilful of the woodworking trades involving much ingenuity and craftsmanship, only in the mid-1980's has automation taken over in the form of a multi-headed computerised routing machine capable of undertaking 80%, at least, of the tasks formerly done by hand.

## Chapter 1

### Footnotes

1. Spinning can be described as the drawing out and twisting of fibres with the object of producing a continuous thread. A sequence of operations is involved in the processing of the raw material in particular one known as slubbing or roving which brings the fibres together in the form of a rope suitable for spinning. This stage originally necessitated the use of large numbers of bobbins but since the Second World War technical improvements have removed this requirement.  
Spinning, depending on the type of fibre, is carried out on mules, fliers and ring spinning arrangements together with bobbins of varied design. When a single yarn is produced it can be used with other single yarns, twisted or laid together to increase strength or bulk. This entails the transfer of yarn on bobbins to other machinery for re-winding on other types of bobbin.
2. W. Brown, Early Days in a Dundee Mill (Dundee, 1979).
3. Ibid., p.34
4. Ibid., p.70
5. Ibid., p.78
6. W. Leggatt, The Theory and Practice of Jute Spinning (Dundee, 1916), p.256
7. See 1. above.

8. The contents list, reproduced in Appendix 1, of Wilson Brothers Bobbin Co.'s catalogue provides further examples.
9. D.S.Landes, The Unbound Prometheus (Cambridge, 1969), p.297
10. See pp.45-47 and 63-77
11. Abraham Rees, The Cyclopoedia or Universal Dictionary of Arts, Sciences and Literature (London, 1819). The definition is followed by an early reference to weaving by Bishop Aldhelm in A.D. 680 where he uses the shuttle and the web to illustrate a theological point

It is not a web of one uniform colour or texture without any variety of figures that pleaseth the eye and appeareth beautiful, but one that is woven by shuttles filled with threads of purple and many other colours, flying from side to side and forming a variety of figures and images in different compartments with admirable art

Perhaps the earliest reference occurs in Job, vii.

6,

My days are swifter than a weaver's shuttle...

12. See also pp.41-43a
13. G.J.Jenkins, (ed.) The Wool Textile Industry in Great Britain (London, 1972), p.131  
With regard to the British Northrop Loom Company, this firm enjoyed a virtual monopoly in the UK until the years following the Second World War when it was strongly and successfully challenged by the Swiss and Japanese and other manufacturers overseas. In recent years foreign loom makers have also led the way in perfecting a shuttleless loom.

14. The continuing use of the hand-loading jute cop shuttle (Fig. 7) is an example of the survival of established methods. This component, virtually unchanged in design, has been exported to Calcutta since the late 19th century by the Scottish shuttle-makers and is still used in considerable quantities despite the advent of the jute automatic loom in the 1950's.
15. J.H.Clapham, An Economic History of Modern Britain (Cambridge, 1926), Bk.11, p.554. Bk.111, pp.27-29, 84-85. Bk. 1V. p.175  
C.Gulvin, The Tweedmakers (Newton Abbot, 1973), pp.85, 138  
D.S.Landes, op. cit. pp.86, 212, 215, 453-4  
G.J.Jenkins, op. cit. p.40  
G.P.Jones and A.G.Pool, A Hundred Years of Economic Development in Great Britain, 1840-1940 (London, 1940), pp.87,101  
Third Statistical Account of Scotland, City of Dundee, (Arbroath, 1979), p.106
16. Dharma Kumar, (ed.) The Cambridge Economic History of India (Cambridge, 1983), Vol.2, p.576
17. Ibid., p.619
18. Ibid., pp. 569, 612
19. Quoted in C.A.Oakley, Scottish Industry To-day (Edinburgh, 1937), p.113
- 19a. C.W.E.Cotton, Handbook of Commercial Information (Calcutta, 1924), p.118

20. Third Statistical, op.cit., p.106
21. Dharma Kumar, op. cit., pp.567-8
22. Ibid., p.568. See also Appendix 2
23. Ibid., pp.581. An American viewpoint is found in D.H.Buchanan, The Development of Capitalistic Enterprise in India (New York, 1934), p.246

A typical mill has between 15 and 20 European assistants, one to every 200 or 300 Indians,.....who have learned their business in that mother of jute manufacturing. (Dundee)

p.254

In no mills are Indians being trained as they have been in the Bombay cotton mills, to carry out alone the whole process of manufacture. Nevertheless, a small beginning is being made, Indians are becoming more confident of their own industrial capacity and another twenty-five years may witness their definite control over this Scottish stronghold.

24. Ibid., pp.570-1
25. Report of the Indian Industrial Commission 1916-1918 Cmd. 51 1919, pp.12-14
26. V.Anstey, The Economic History of India (London, 1952), p.592. Also of interest in this connection A History of Bird and Company 1864-1929 (Calcutta, 1929), Vol.11, an in-house account of the Company's growth and development.
27. Dharma Kumar, op. cit., p.615  
IJMA = Indian Jute Mills Association

28. Ibid., pp.602-603  
 29. Ibid., pp.612 and 852

Also, from D.H.Buchanan, op. cit., p.253

There is no denying that the jute mill owners did very well for many years prior to the present depression. It is doubtful if any other group of factories in the world paid such handsome profits between 1915 and 1929. But these high earnings are not constant, and in some cases a part was required to balance up the poor returns in the nineties and the first decade of the twentieth century.

By way of example Buchanan quotes the dividends declared by Gourepore Jute Mill (1876)

1915	50 per cent
1918	300 " "
1920	250 " "
1931	nil " "

30. Ibid., pp.612-613  
 31. Ibid., p.614  
 32. Ibid., pp.640-642  
 33. Ibid., pp.949 and 962

34. The content of Tables 1.4, 1.5 and 1.6 was drawn from (a) The Annual Statement of Sea-borne Trade of British India with the British Empire and Foreign Countries, Dept. of Commercial Intelligence, Gov. of India  
 (b) Trade of British India with British Possessions and Foreign Countries, HMSO.

35. See pp36-39  
 36. Third Statistical, op. cit., p.79  
 37. R.H.Campbell, Scotland since 1707 (Edinburgh, 1985), pp.177-178

38. R.H.Campbell, The Rise and Fall of Scottish Industry (Edinburgh, 1980), p.71
39. Third Statistical Account, op. cit., p.108
40. Report...Scotland's Industrial Future pp.95-96
41. Ibid., pp.96-97
42. Ibid., pp.98-99
- 42a. Quoted in the Third Statistical Account, p.108
43. Third Statistical Account, pp.110-112
44. Dundee Trades Directory 1887-1888
45. Peter Sharp, Flax, tow and Jute Spinning (Dundee, 1882), Advertisements p.4
46. The information regarding the origins and development of Wilson Brothers Bobbin Company was drawn from a booklet produced by the Company in 1923 entitled One Hundred Years to mark their centenary; a copy has been preserved by Crossley Shuttles of Todmorden.
47. Textile Machinery Index 1969 (London, 1968), publishers John Worrall, London, pp.61-84
48. Timber Development Association, World Timbers (London, 1950), Vol. 1, No.6 pp.2-3
49. The conditions were also uncomfortable for the women employed who tended the spinning frames; they worked with bare feet on the tiled floor which was constantly awash with warm water due to the condensed steam. This practice persisted until the 1950's.
50. US Department of Agriculture, Department Bulletin No. 1436 Utilisation of Dogwood and Persimmon (Washington, D.C., 1926), pp.9-10
51. Hickory was the most suitable material for picking arms due to its strength, resistance to shock and flexibility.

52. US Department of Agriculture, Bulletin No.  
1436, pp.9-10
53. Ibid., p.42
54. Forest Products Research Laboratory, Wood  
Technology Course (Aylesbury, 1967), p.11
55. The bore in the barrel enlarged to its final size.



Chapter 2.WORKING LIFE AND CONDITIONS IN A SCOTTISHBOBBIN AND SHUTTLE MILLIntroduction

In order to gain a close understanding of the bobbin and shuttle manufacturing industry in Scotland, a detailed analysis was made of a firm which, in many ways, was typical of those in the trade. The Gateside Mills Company, in the village of Gateside in Fife, was chosen for this purpose for several reasons; first, the business was of average size, employing at its peak nearly 100 men, women and juveniles including the office staff; family-controlled, it grew from modest beginnings in the latter decades of the 19th century and was much influenced by the jute industry in India. In common with other firms in the trade, it depended on local sources for supplies of beech; it also imported persimmon and hickory in substantial quantities from the US and partly-processed bobbin blocks from Sweden. Furthermore, the productive capacity of each of its major departments was comparable to that of those mills which confined their interests solely to either bobbins or shuttles.

The surviving records included Purchase and Sales Day Books from 1893 and Balance Sheets from 1907. The Day Books were a rich source of information from which could be deduced the fluctuations in prices and the volume of production throughout the period, as well as the names of suppliers and customers, the sources of raw materials and the destination of goods sold. As noted earlier the Gateside Mills Company was also a founder member of the Bobbin and

Shuttle Manufacturers Association, instituted, in Dundee in March 1900, with the object of fixing prices and protecting and furthering the interests of its members.

(i) The village and the mill at Gateside in Fife

Before the advent of the railway in 1857, the village of Gateside was indeed remote. The Gazetteer of Scotland, published in Edinburgh in 1845 noted of Strathmiglo, a larger village, two miles to the east that:-

no public conveyance passed through either the town or any part of the parish, and the nearest point at which the coach between Edinburgh and the North of Scotland can be met is at the New Inn, distant about six miles to the South-east<sup>1</sup>

Within thirteen years however, a station at Gateside, on the new single-track railway, linked the village to the important junctions of Ladybank and Kinross, serving the North through Perth and the South and West through Edinburgh and Glasgow, a situation of some advantage in later years to a mill heavily committed to overseas trade. The first public building of consequence in the village was the Kirk, erected in 1825 as a meeting house for the Edenshead Congregation, following the breach in the Seccession Church six years earlier.

In 1840, according to the minutes of the Congregational Board, attendances of 300 were common and the parish minister was able to write in his report for the Statistical Account:-

It is proper to state that while in this as in every district containing a considerable population there are some individuals hackneyed in mendacity, there is in this parish a prevailing disposition among the poor to refrain from seeking parochial

Fig.25

Old Gateside

The old road through the village as seen in this photograph was flanked on the north side by cottages several of which were occupied by mill-workers, and on the south side by fields allowing the villagers a fine view of the Lomond Hills. Opposite the 'smiddy' stood the bridge toll house - the boys are sitting on the stonework of the bridge which carried the road over a burn feeding the River Eden. Adjoining the toll house was a spring which provided water for the cottages.

The date of the photograph is unknown but it was probably taken just before the First World War.

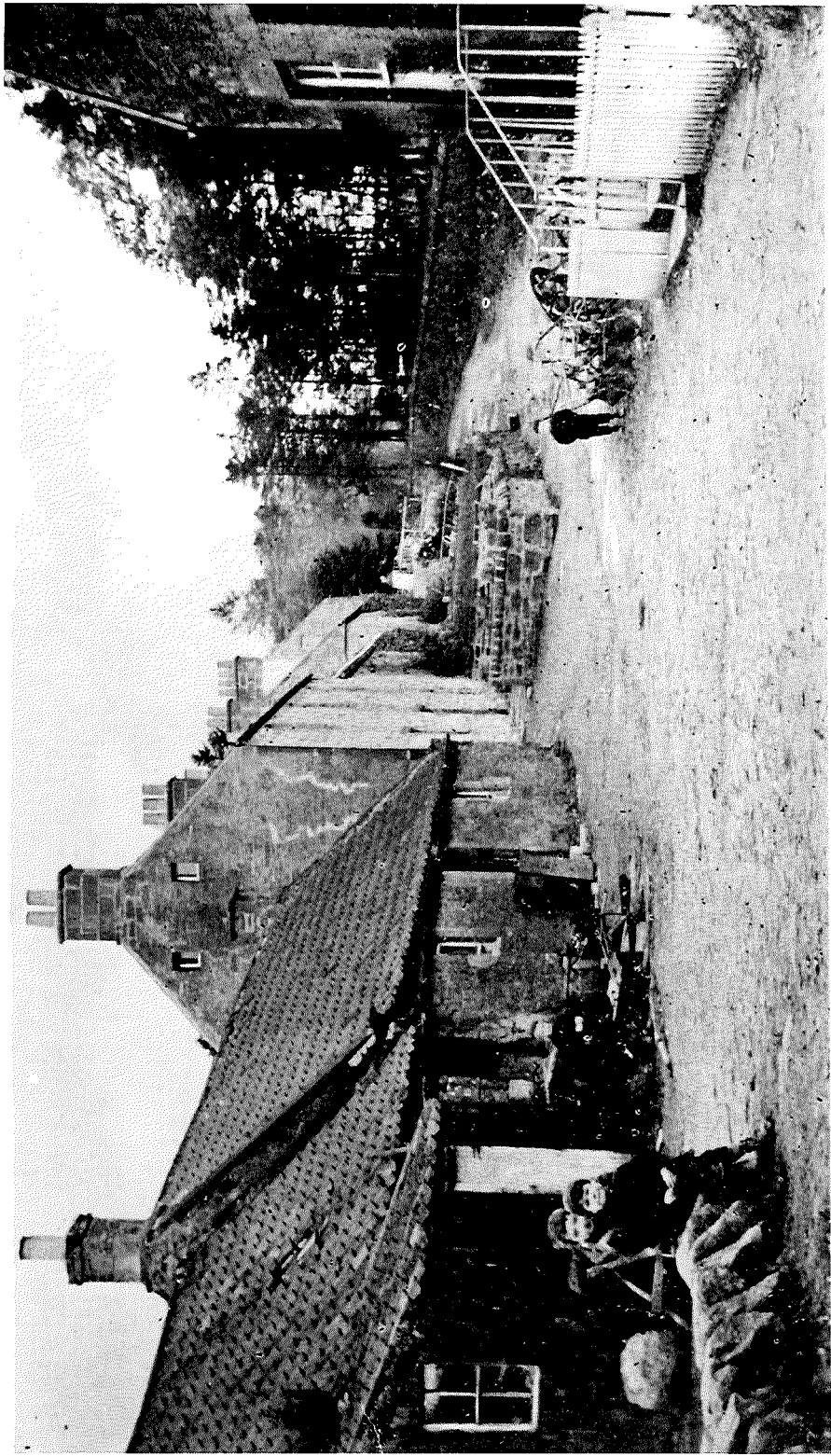


Fig. 26

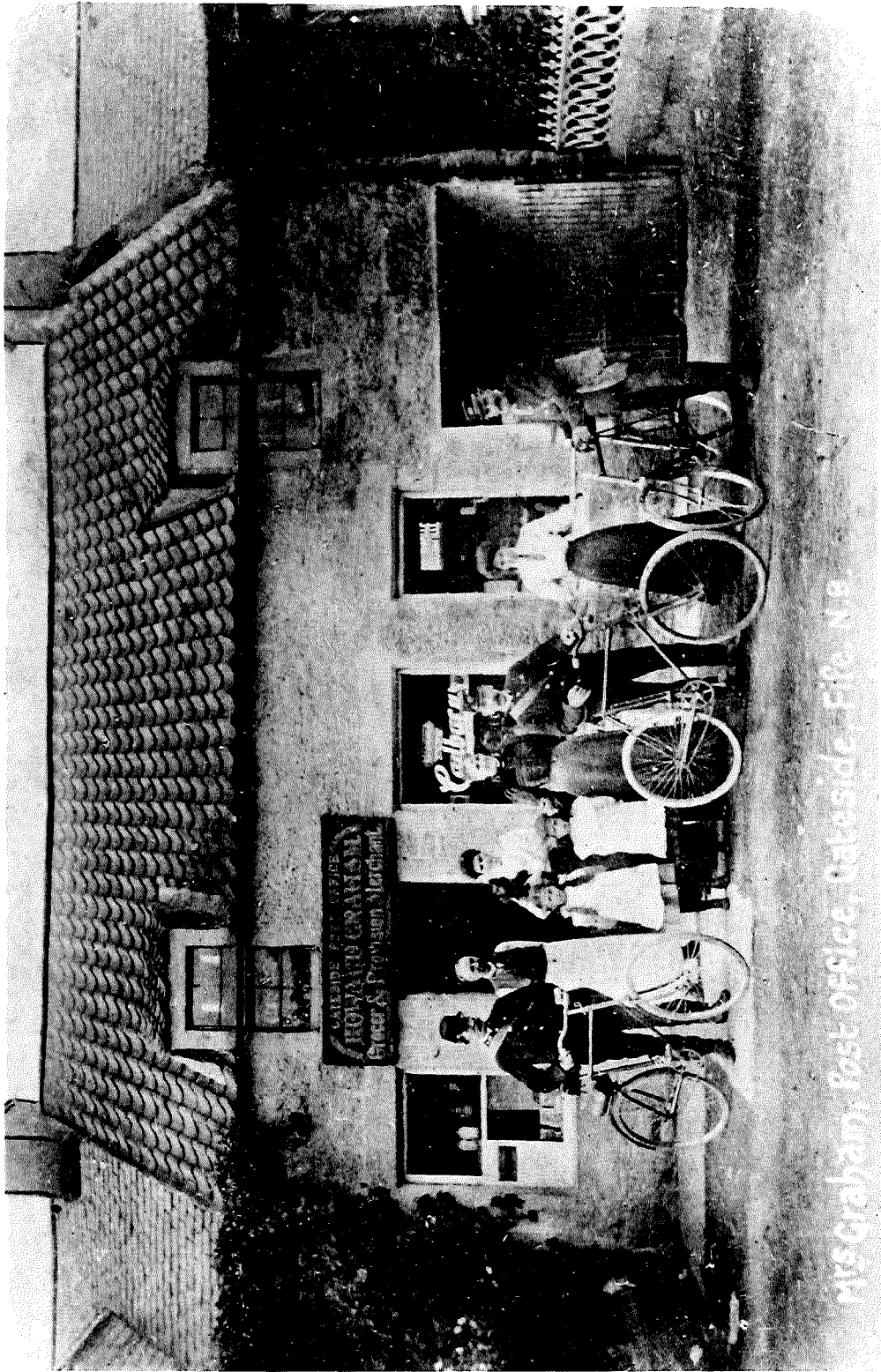
The Post Office at Gateside.

This photograph was recently published in the Dundee Courier and Advertiser. It was sent by a reader who wrote:-

I think it was taken in 1908 or even earlier.....Uniform and bicycles were provided for postmen but not footwear. I remember we had three deliveries a day. Telephones were not so much in vogue and only business people had them..... Dad's wage was less than a £1 per week.

The writer was the daughter of the postman in the centre of the group.

As it was the only shop in the village, it served as a Post Office, telephone exchange, grocery and general store.



Mrs. Graham, Post Office, Gateside, Fife, N.B.

relief. An honorable though laborious independence is in general preferred to the resources of charity.<sup>2</sup>

Those who remembered the villagers of the first half of the present century were quick to recognise those same qualities in the community of that time.

A school was built in 1877 and a village hall, as a war memorial, in 1919. In 1866 Westwood's Parochial Directory of Fife and Kinross detailed the population, traders, postal services and railway communications of Gateside and Strathmiglo and this picture of rural life appeared to remain unchanged, to a large extent, until the Second World War. The provision of water and electricity, in the mid 1940's, to homes in the village allowing flushing toilets, bathrooms, improved lighting and alternative methods of cooking, was little short of a domestic revolution and a dramatic change in the living conditions of this community, which had remained much the same for many decades.

The origins of bobbin and shuttle making in the village are revealed in a letter written by David H. McGregor, a shuttle-maker, to his nephew David D. McGregor who in later years - the 1940's - became Managing Director of McGregor and Balfour of Dundee, the largest of the Scottish bobbin and shuttle manufacturers. The letter written in 1935 is reproduced, in part, in Appendix 6 as it gives a lively account of life in this part of Scotland, in the closing decades of the 19th century, by one who had spent a lifetime in this industry. The founder of his family firm was born in 1840 and apprenticed, at an early age, to a shuttle-making firm in Ordie, near Perth, and thereafter set up on his own account, first in Millhaugh at Logie Almond in Perthshire, and then to Knap Mill nine miles from Dundee.

The enterprise prospered and a larger mill was sought as described in the letter:-

then they got word of Gateside and it was taken. But what a difference the water wheel in the Knap would be about 3 feet in breadth, Gateside would be 8 feet, at any rate a huge iron monster and the Eden a good supply of water the Railway Station at hand, so it was a grand change - but mind they did well at the Knap so near Dundee . . . so then came the flitting about 1866 and I came to Gateside in '68 - a bonny place - and my first job was to build Shuttle Blocks in a braw new shed. There was plenty of room in Gateside just the thing wanted. It was a great blessing to Gateside, the handloom was dying out and he engaged a lot of apprentices.

According to this account the mill buildings required major repairs; including the installation of large sliding doors and windows; the roof supported by tree trunks had been much neglected and the sluices, the stone built dam and the channel leading the water to the wheel, all needed attention. By arrangement with the Railway Company, all timber was unloaded at the station in Gateside, and brought to the mill by horse and cart.

However, the enterprise failed and Sequestration Proceedings in 1870 listed Messrs D. McGregor and Co. Shuttle and bobbin manufacturers of Gateside.<sup>3</sup> The census of the following year records a new proprietor, employing twelve men in shuttle turning, and trading as the Gateside Mills and the next census ten years later shows Mr. W.G. Leburn, aged 41, a J.P. and landed proprietor, employing twenty men and five boys in the manufacture of shuttles and bobbins; the mill remained in the ownership of the Leburn family thereafter.



The site of the mill was developed by the erection of further buildings and sheds; a major improvement was the construction of a siding linked to the Fife and Kinross railway, which ran close to the mill and provided a convenient service to the India-bound ships loading at Glasgow and to the Continent from Leith. Until the entry by road to the mill was improved in 1950, nearly all deliveries of raw materials and despatches of finished goods were made by rail and the amount of traffic necessitated a special telephone line between the mill and the station in Gateside. From a marketing viewpoint, the railway was also a valuable link with Dundee enabling a prompt service to be maintained for the benefit of customers in that city.

The situation of the mill in the midst of an agricultural area was of some advantage to those working in it; farmers usually needed extra labour at harvest time and at the 'tatties', and most mill-workers were experienced in these tasks. Should the mill be on short-time, they might find work in the fields and in the reeds, in the same way as their forbears in the village divided their time between the loom in the cottage and work on the farm.

When on full production, the mill employed a workforce of approximately 90 including management, and following major re-construction after a fire in 1939 and considerable expansion after the Second World War, could claim to be the best equipped mill of its kind in the UK.

After the loss of the Indian market the Company, in the 1950's and 1960's concentrated on widening its range of products to include the cotton and man-made fibre sectors of the textile industry. In 1987, the firm still maintains an interest in the production of bobbins, now manufactured from specialist plastics and metals.

(ii) The mill at Gateside; a place of work.<sup>4</sup>

Until 1939, when the main building was severely damaged by fire and rebuilt, the mill offered little physical comfort to its employees apart from a degree of shelter from the elements. The two storey building was unheated, the steam from the the Lancashire boiler, installed in 1899, being used for the engine and to heat the kilns.

The ground floor, an area of some 375 square metres, housed the bobbin department where, in cramped conditions, 28 machines were operated or serviced by a work force of 40-50 men, women and boys.

All the machines were belt-driven from the main shaft or counter-shafts mounted overhead, presenting a considerable difficulty to the movement of operatives or raw material on the shop floor. The wooden floor was generally knee deep in sawdust, turnings and mixed woodwaste; the dust-filled air carried a strong and distasteful smell of hot animal glue and the noise level prohibited any communication by word of mouth. Outside, bucket toilets of the most primitive kind and without washing facilities were housed in wooden huts; a tap with an iron cup attached to the outside wall of the mill, by means of a metal chain, provided the only means of refreshment.

On the first floor, the shuttle room occupied 2/3rds of the available space, the remainder being used for the making and the packing of wooden cases for shipment. The conditions for the shuttle-makers, about a dozen men and boys, were similar to those in the bobbin department; in an area of about 200 square metres 21 machines, all belt-driven, were sited on a wooden floor through which could be glimpsed those working below. Only the packing room was reasonably free of dust, noise and unpleasant smells and the floor clear of waste materials.

Since 1908, the sawyers and their tailsmen had been accommodated in a brick-built sawmill, 70 metres from the main mill, with its own power unit, a Marshall steam engine, a rack bench,<sup>5</sup> six circular sawbenches and a light rail system for moving bogies loaded with sawn material. This building was again unheated and due to the input of large logs to the rack bench through a wide entry in one wall, was open to the weather to the discomfort of the operatives. Here also, the noise level was, by modern standards, unacceptable without suitable protection for the ears. In addition six circular saws cutting hardwoods caused a considerable amount of moisture to be expelled from the green timber but no protective clothing was provided, the sawyers fashioning aprons from damaged hessian bags and the like.

The labourers normally worked in the storage sheds, stacking timber for air-drying, or in the kilns; two men were wholly employed at the railway siding unloading raw material and loading cases of finished goods. The storage sheds were weather-boarded structures with sparred floors, to promote air-drying and rickety wooden stairways to upper floors; all material was man-handled into these timber constructions which, by their design and condition, offered little assistance to the labourers carrying heavy loads on their backs.

The workforce, excluding Gateside management staff, in the 1920's and 1930's amounted to about 80 men, women and boys, 75% of whom lived in Strathmiglo, a village two miles to the east on the main road to Cupar. Many walked to the mill, the railway providing a shorter, though more hazardous, route than the road, and others cycled. Inevitably, such journeying in the Scottish climate caused the frequent problem of wet clothes on arrival at the mill; the two common remedies were to rub down with dry sawdust and turnings, which were available in abundance, or to pack strips of hessian cut from old jute bags, down the trouser legs. Jute bags were plentiful in the mill as they were used for the storage of raw material and when worn out provided the principal source of protective clothing in all departments. At this time the normal hours of work were:-

6 a.m. - 9, 10 - 1, 2 - 5 p.m. Mondays to Fridays

6 a.m. - 9, 10 - 12 a.m. on alternate Saturdays.

Those workers, who lived in Strathmiglo or at a similar distance, brought two 'pieces' one for each of the hour long breaks and a metal flask of tea which was re-heated before each stoppage. Meals were taken in odd corners in the workrooms as no other facilities were provided.

This account of the dismal conditions in this mill prompts the question of comparisons with other firms in the industry; evidence from employees who were loaned to McGregor and Balfour, T.C. Keay, John Howe or John Ireland in Dundee for some months, while the mill at Gateside was being re-constructed in 1939 and 1940, indicated that they witnessed nothing to envy or to foster dissatisfaction with their lot at their own place of work. Even in the 1950's,

J. & J.L. Brebner of Aberdeen, the bobbin-makers, and Macfarlanes of Stanley, the shuttle-makers, provided no better conditions for their employees, apart from the hours of working, than those existing in Gateside twenty years earlier.

Again, the question of the employer's lack of investment in the improvement of working environment, might be answered by reference to the trading uncertainties in the late 1920's and early 1930's<sup>6</sup> when the struggle for survival, as depicted in the Gateside balance sheets, would doubtless inhibit any expenditure on better facilities.

After the Second World War, many of the deficiencies in the working environment were put right at Gateside; the workrooms had been provided with heating at the time of re-building in 1939 and the move to electric power allowed the removal of many pulley and belt systems. Modern toilets and canteen facilities followed and in the 1960's an extraction system which removed dust, waste and fumes. These changes were prompted, not only by statutory provisions, but also by the need to attract labour in the post-war years of full employment, and to be efficient and competitive in an industry under severe pressure due to the loss of its principal market in India.

Former employees of the Company who had worked at the mill in the 1920' and 30's, recalled that they did not view it as a particularly dilapidated or disagreeable place of work, there being no other similar mills in the area with which it could be compared; its deficiencies apparently, were not a source of major discontent. One favourable aspect was the fact that most employees had relations or friends also working in the mill in the mixed workforce of men,

women and boys, drawn from the two small communities of Gateside and Strathmiglo.

In the hundred years from 1860, various additions and improvements in the buildings were made by the Company or its forbears, these developments are listed in Table 2.1, from which it can be seen that the most substantial investment was begun just before the market for bobbins in India was closed, a subject which is discussed more fully in Chap 4.<sup>7</sup> It is clear that the priorities governing this expenditure from the turn of the century, were strictly directed towards improving production and apparently little could be devoted to the well-being of the workforce until the early 1950's.

Table 2.1.

Improvements relating to the buildings at the  
Gateside Mills 1866-1960.

1866-71	The original adaptation of the mill buildings by David McGregor described in Appendix 6.
1899	Chimney built and boiler installed.
1908-1912	Sawmill, railway siding and storage sheds.
1939-40	Re-construction of main mill with heating system for the workrooms; general electricification.
1947-50	New road access, weighbridge and sawmill; modern kilns with heated storage space; newly built lavatories with washing facilities.

The provision of canteen services and the rebuilding of the offices followed in the next two or three years.

Fig.27

Gateside Mills in the 1960's.

On the left of the picture the old stone building housed the offices. Below, the outfall of the lead indicates the position of the original water wheel.

The railway track on the right was part of the Ladybank - Kinross line. Also on the right is the building which included the modern kilns and the storage space for seasoned timber.

In the foreground the light railway track linked the main mill with the storage sheds and the sawmills.

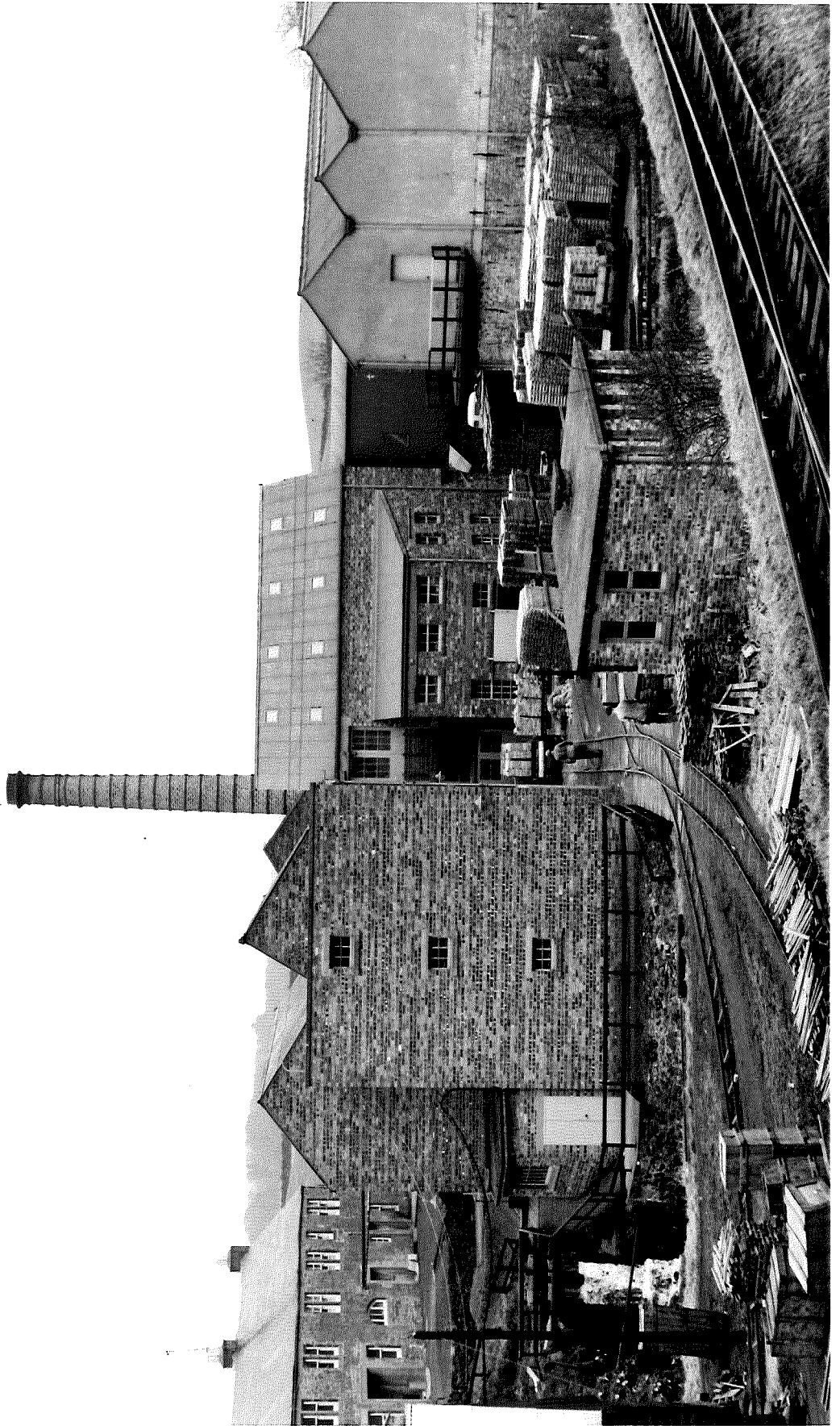




Fig.27a

Modern seasoning kilns.

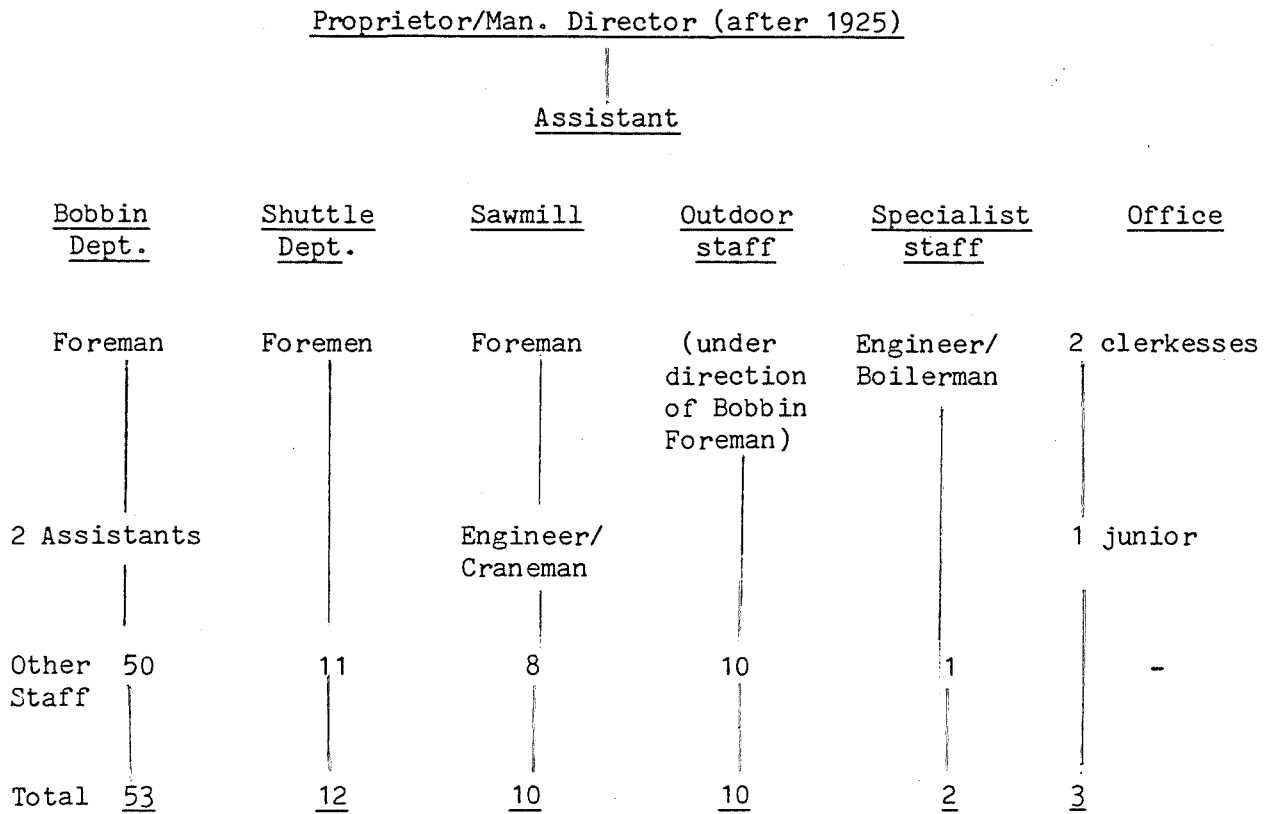
Each kiln at Gateside accommodated five bogies of timber as seen in the upper photograph. The timber in its various forms was carefully stacked in order to allow the free passage of air through the layers. The speed of the airflow, the temperature and the humidity within the kiln chamber were carefully controlled to ensure that the removal of moisture from the material did not cause cracks or distortion. In the lower photograph, the steam and humidity controls are on the left of the operations room and on the right the equipment for drying samples and weighing them to establish the moisture content. At the desk, the kiln operator responsible for the most vital of all the manufacturing processes.



(iii) The management structure

From the earliest records the pattern of management appears to have undergone little change. The proprietor (managing director after 1925) normally had an assistant, often a member of the family, and together they dealt with the selling of the products, purchasing raw materials, planning production and monitoring output, staffing, financial and other general management problems. The substantial amount of clerical work arising from the despatch of the greater part of the production to Calcutta and the importing of raw materials from the US and Sweden, necessitated the employment of two clerkesses. One dealt with the order book entries, invoicing and despatching of goods and the recording of materials received; the other with wages and the keeping of the normal books of account. A junior was also engaged for postal duties and for the less demanding clerical tasks. The office accommodation comprised two small rooms in a building, adjacent to the mill, mainly used for storage and for the safe-keeping of spare tools and machine parts; it included a sample room where a specimen of the product delivered against every order was kept.

Control over production was exercised through departmental foremen, the senior being the head of the bobbin unit. Expressed diagrammatically, the management structure and workforce of the mill operating at full capacity in the period when the Indian mills were the principal customers, would be:-

Table 2.2. Management structure of the Gateside Mills

Apart from McGregor and Balfour Ltd. which had a Board of Directors, the other firms in the industry in Scotland followed much the same style of management; sons were often brought into the business, straight from school, to learn the trade on the shop floor, advancing to a managerial level when considered fit to undertake the added responsibilities. Thereafter, they awaited their father's retirement or death before achieving full control. However, there were exceptions to this smooth pattern of events; in the post Second War period two sons in Aberdeen, once in control, converted their bobbin mill into a bar, naming it "The Old Bobbin Mill" and retaining some of the plant and equipment by way of decoration; they achieved considerable success.

In Cumbria, frustrated by their lack of progress in the family firm, two sons set up their own business in the same industry, with a similarly favourable result. In the 1940's and 50's, it became more common for sons to be given further education before joining the company and even to choose another way of life.

(iv) The labour force

There is no doubt that the environment and the facilities provided for the workers at Gateside and in other similar establishments in this industry in the early decades of this century, fell far short of any reasonable standard but were probably not untypical of conditions in other manufacturing sections.

Now considered are questions as to the deployment of personnel within the various departments, their training, promotion prospects, job security, relationship with the management and other aspects of their working life.

The bobbin department

The foreman of the bobbin department supervised most of the manufacturing operations of the mill apart from the shuttle room. He decided on the specifications of the timber cut at the sawmill and, most importantly, assessed when the material being kiln-dried was ready for use. This latter task was largely a matter of judgement, based on long experience, as before 1950 there were no instruments commonly available designed to measure the moisture content of timber.

The labourers working in the yard and storage sheds were under his

control and he was also the first source of assistance in the event of a major breakdown. Within the department, he had the help of two skilled men who set machines, prepared and sharpened tools and generally ensured that the production lines were running smoothly.

It was accepted that those in the workforce with at least four years experience who could set their machines, prepare their own tools and undertake most of the tasks in the department, were classed as skilled. The semi-skilled operated the less complex machines, which were set for them by a supervisor and tasks of a more simple nature were allotted to the unskilled. Within these broad categories wages could vary according to experience and efficiency.<sup>8</sup>

The department was organised to maintain a daily production of rove, spinning, solid spinning bobbins and an ancillary line of spools or ends for bobbin repairs, should there be spare capacity; the table which follows shows the manning of the lines of production and the level of skill required at each operation; the layout of the department is illustrated on Fig. 28 and 28(a) overleaf.

Figs. 28 and 29

The layout of the bobbin department.

These two sketches show in diagrammatic form the layout of the bobbin department at Gateside as it existed in the 1940's.

The three lines of production were supplied with seasoned timber and were expected to maintain a flow which ended at the point of despatch.

The sketch overleaf depicts an earlier process where green timber for bobbin barrels is part-processed and then seasoned. This method avoided the boring and rounding of seasoned beech which due to the hardness of the material in this condition was a slow and difficult operation.



Diagrammatic plan of the Bobbin Department at Gateside

1940

Rove bobbin line ——— Spinning bobbin line ———  
 Solid spinning bobbin line ———

Seasoned raw materials

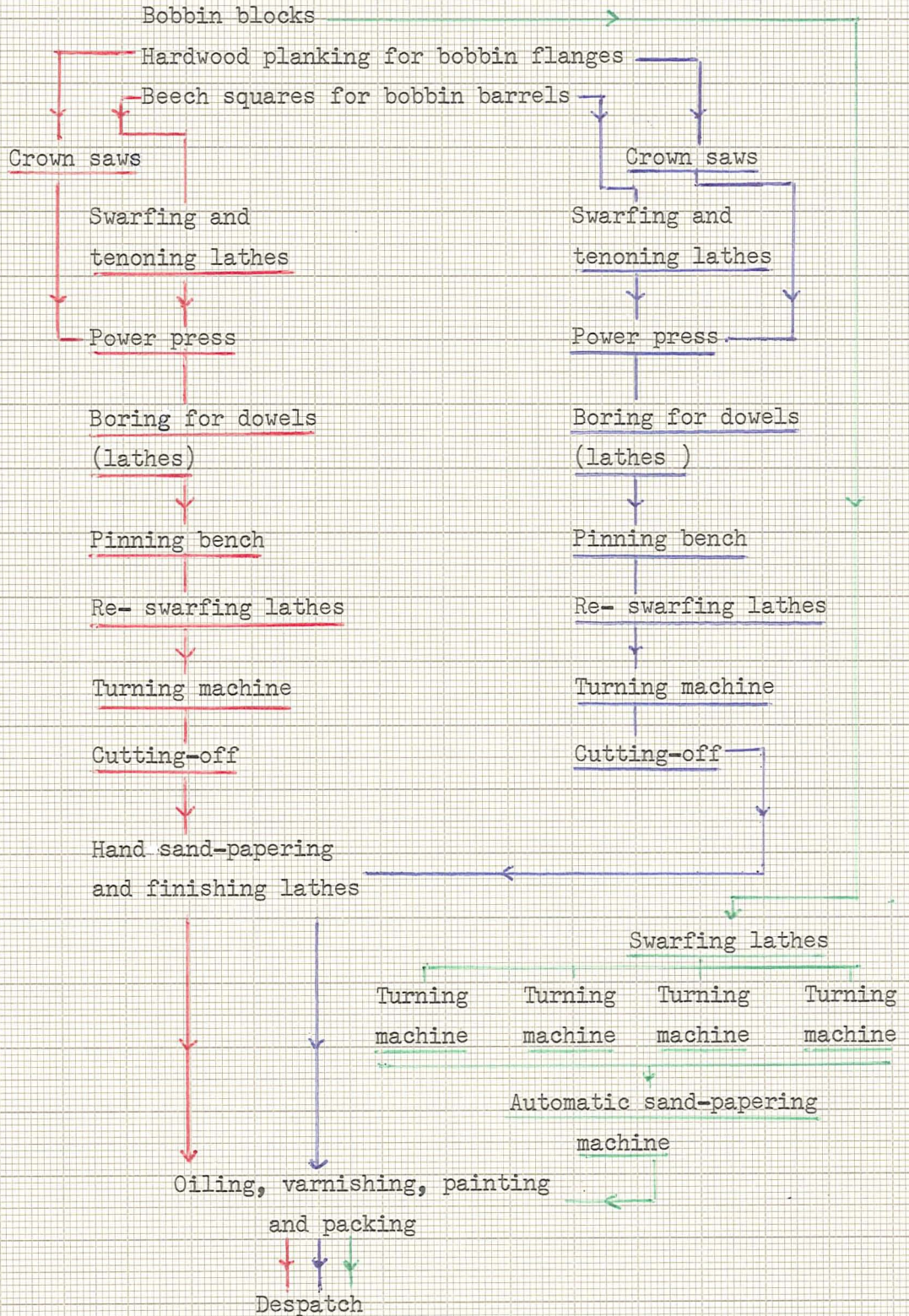


Fig. 28



Diagrammatic plan of the Bobbin Department (wet section)

at Gateside 1940

Raw material

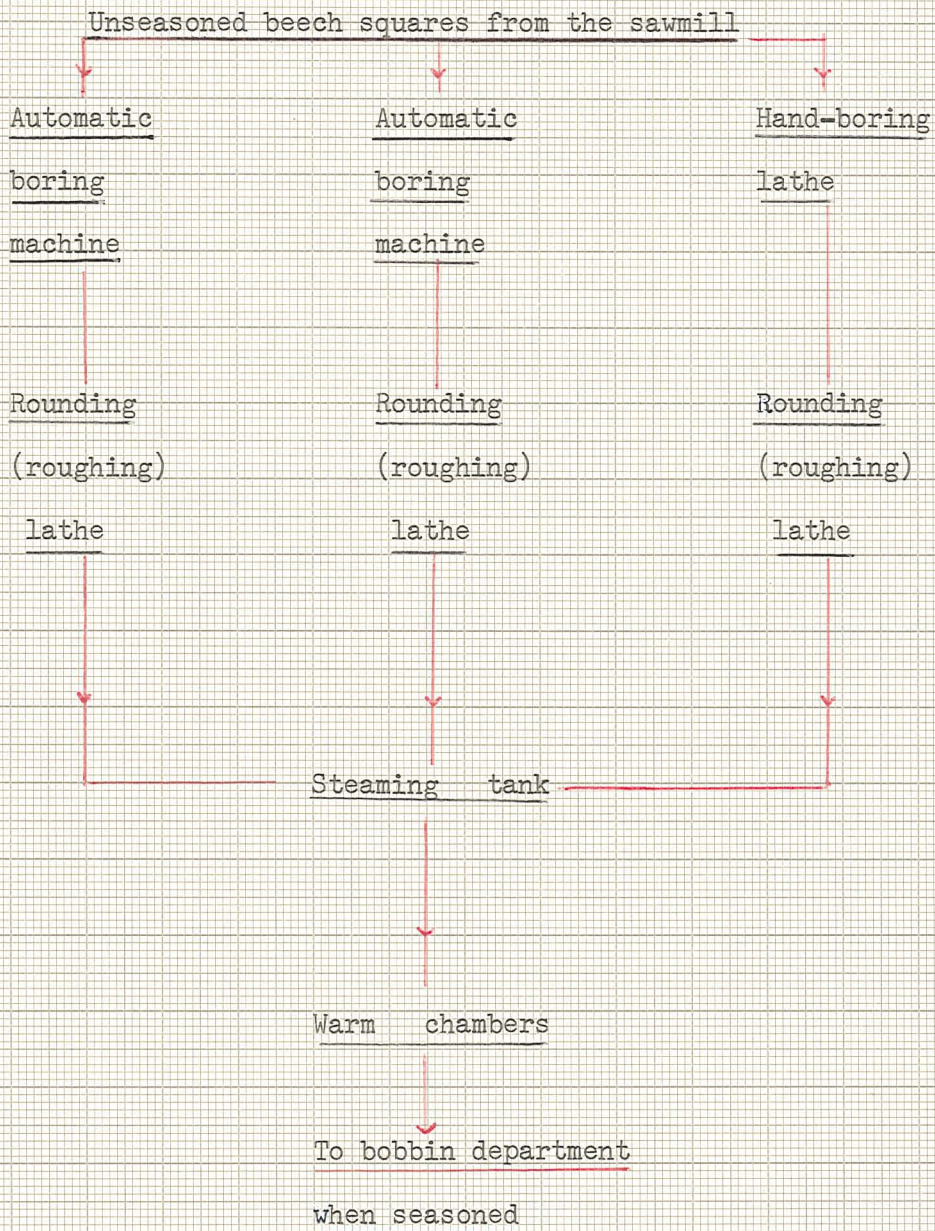


Fig. 29



Table 2.3. Typical deployment of workforce in the bobbin departmentThe Gateside Mills Co. Ltd. 1940-51

Grades: s = skilled  
 s/s = semi-skilled  
 u/s = unskilled

<u>TYPE OF BOBBIN</u>	<u>ROVE</u>	<u>SPINNING</u>	<u>SOLID</u> <u>SPINNING</u>	<u>GRADE</u>		
				s	s/s	w/s
<u>WET SECTION</u>						
Boring and rounding barrels	2	2		-	2	2
<u>DRY SECTION</u>						
Crown sawing flanges from planks	2	2		2	-	2
Swarfing and tenoning barrels	2	2		2	-	2
Pressing ends on barrels	2	2		2	-	2
Re-swarfing built bobbins	1	1		2		
Boring for steel pins	1			1		
"    " wooden pins		1			1	
Tapping and driving steel pins	2				1	1
Pegging (wooden dowels)		4				4
Swarfing pegged bobbins	1	1			2	
Machine turning	1	1		2		
Cutting off barrel ends	1	1			2	
Finish turning and sanding	3	3		6		
<u>SOLID BOBBINS</u>						
Swarfing bobbin blocks			2		2	
Machine turning			4	4		
Automatic sanding			2		1	1
Oiling, packing all bobbins			4	1	2	1
<u>TOTALS</u>	Skilled	22		22	13	15
	Semi-skilled	13				
	Unskilled	<u>15</u>				

The work in the main area of the bobbin department on the ground floor was divided into two sections, 'wet' and 'dry'. The wet section converted the newly sawn squares, destined to become bobbin barrels, into bored and rounded tubes in readiness for the seasoning processes. During these two machining operations the hardwood shed a great deal of moisture and therefore the work, particularly in winter was bearable only by the most hardy. Nevertheless, some employees preferred this section to the noise and dust of the dry area where bobbins were built, machined, sandpapered, oiled and packed. Here production was organised on a flow-line basis linked to the output of the turning machines; thus part of the team on a production line built enough bobbin blanks to keep the turning machine fully employed, whilst, after this operation, the rest of the team dealt with the finishing tasks, minor machining, sandpapering, oiling and packing, ensuring that the daily target was reached and the output cleared from the department. Personal effort was, as a consequence, disciplined by the demands of the system, which would work smoothly only if a small stock of material was built up between each operation to act as a 'cushion' in case of a minor breakdown.

Several lines were maintained in a normal day and the table below gives an indication of the output when the mill was on full production.

Table 2.4. Daily output of bobbins from a labour  
force of 50

Rove bobbins	1 line	1500 per day
Built spinning bobbins	"	1850 " "
Solid " "	4 lines	7600 " "
Ends for the repair of bobbins		1500 " "

However, in practice, the annual volume of production achieved was considerably less than these figures would imply. The main constraint was the difficulty of producing, or securing, sufficient seasoned raw material to maintain this level of production; for example, in 1914, a year of high output, the total quantity of rove bobbins manufactured was about 67% of the theoretical capacity and in the case of spinning bobbins, 76%.

Due to the levels of daily output, quoted in Table 2.4, many of the operations made considerable physical demands on the workers; skill was necessarily coupled with strength and dexterity. For example, the tubular saw machine which cut and bored hardwood discs - for bobbin ends - from planks (approximately 1.7 metres long and 35mm thick) needed a high level of skill in the setting and maintenance of the tools and much strength to hold fast the planks beneath the saw whilst operating the downward movement of the machine by means of a foot pedal; as an added discomfort the machine expelled a stinging spray of sawdust and wood chips as each of the 3000 pieces - to produce 1500 rove bobbins - was cut.

Fig. 30

Turning bobbins.

The operator's eyes are momentarily closed to avoid the spray of wood chips which occurs when the front tools are cutting and again when the back tools engage. In a working day therefore the operator was sprayed 3000 times. It was the output of this machine on a bobbin line which determined the day's production as the other workers on the line were employed either on building the bobbin blanks in readiness for turning or on finishing and packing tasks. This photograph, from the records of the Gateside Mills Co. Ltd., was taken at Gateside after the Second World War and was intended to be included in a new sales brochure. This project was abandoned due to changes in the types of product manufactured.



The turning of rove bobbins on the largest machine used for this operation in the bobbin department, was also a testing job, the setting and maintenance of the tools to produce the final dimensions needed skill, the manual manipulation of the heavy machine, strength, and the removal of each bobbin from the lathe without stopping the revolving headstock, dexterity. In 1956, when the identical operation was measured by independent work study specialists, the output achieved (1500) was rated as that worthy of a 20% incentive bonus providing the machinist was given improved handling facilities.

The bobbin finishers, the skilled turners who completed the final shaping and sandpapering of the bobbins, worked at mandrels revolving at 4-5000 revolutions per minute; many of the most serious accidents occurred at this stage.<sup>9</sup>

Some of the semi-skilled tasks needed a masculine strength to hold the workpiece during, for instance, reaming or machining but those, where the material was clamped in the machine, were suitable for women. Virtually all skilled and semi-skilled jobs required the operator to stand, but in the unskilled tasks of pinning or 'dumping' bobbins, a stool was provided. Oiling and packing bobbins were jobs suitable for unskilled women or boys provided that, when packing, they were nimble enough to climb into the large wooden cases in order to build the bobbins to a precise pattern and thus save shipping space.

The rigours of the 'wet section' have already been touched upon, but perhaps the women 'roughers' deserve special mention, (see Fig. 31 overleaf). This operation involved the conversion of squares

Fig.31

Bobbin machinery.

Top left, a motorised lathe with reaming tool.

Top right and below, two views of a lathe adapted for 'roughing' i.e. rounding square (in section) pieces of timber to a cylindrical shape. The belt on the lathe handle was secured around the waist of the operator leaving both hands free to slide the U-shaped cutting tool along the length of the workpiece.



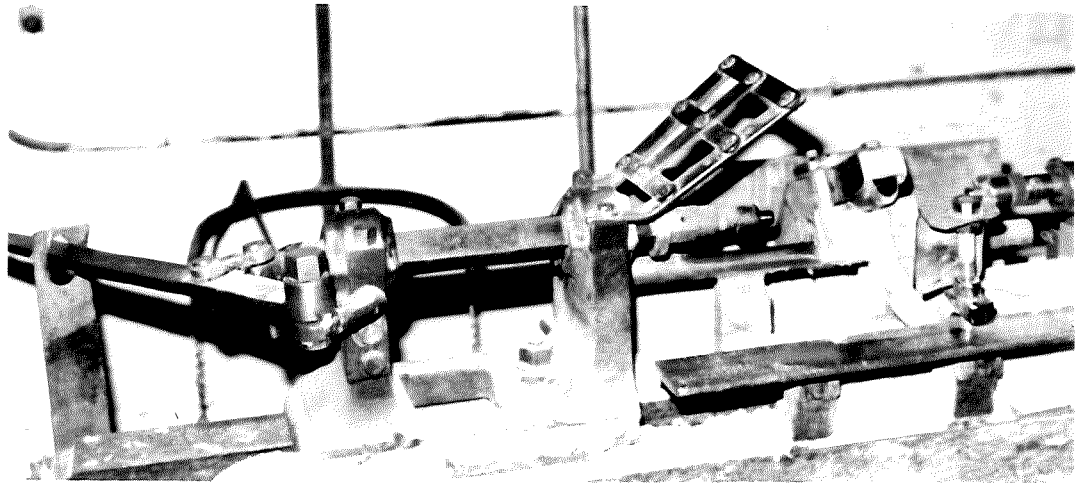
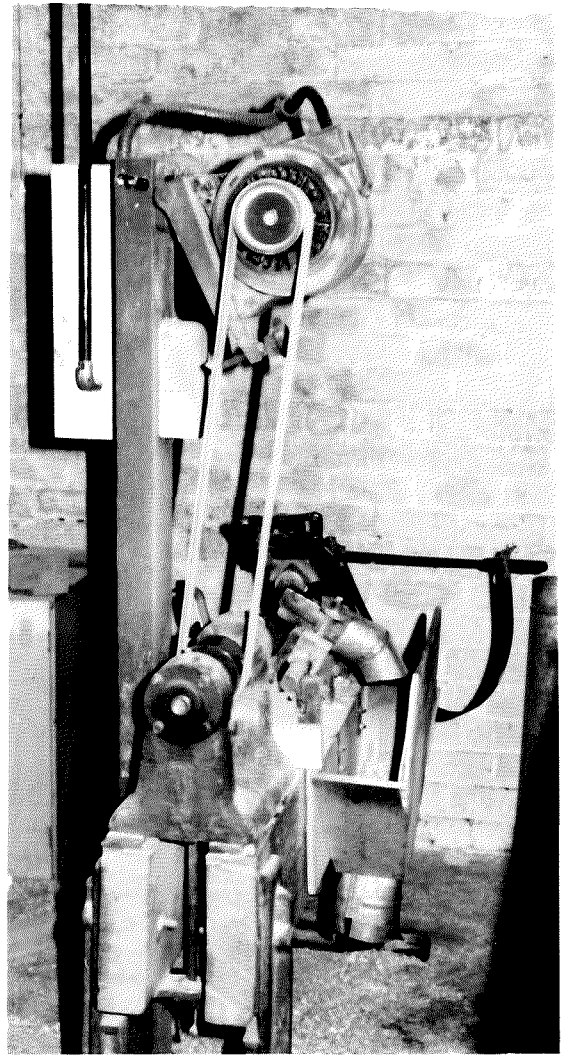
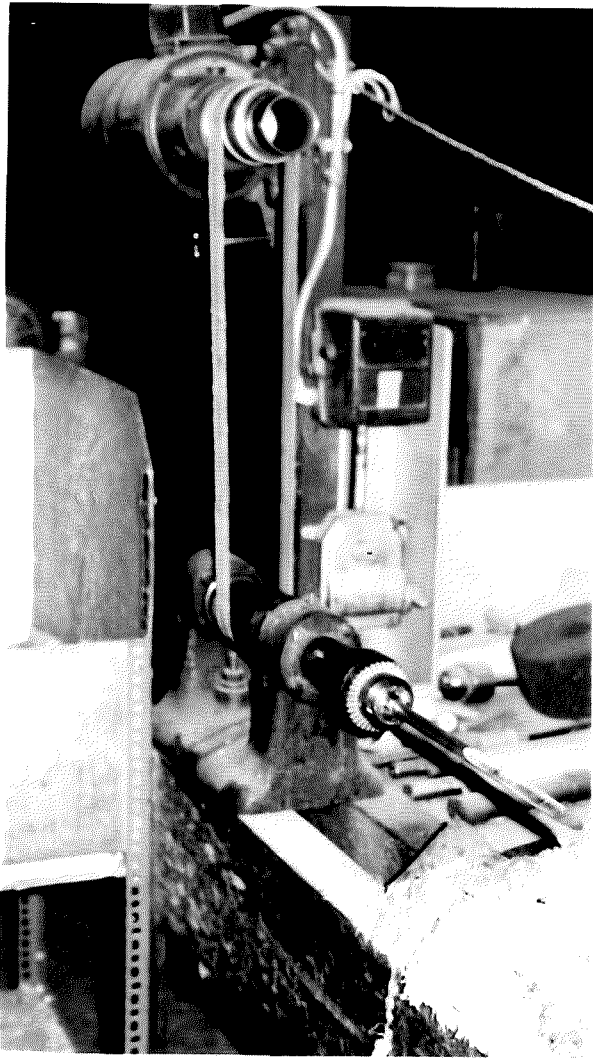
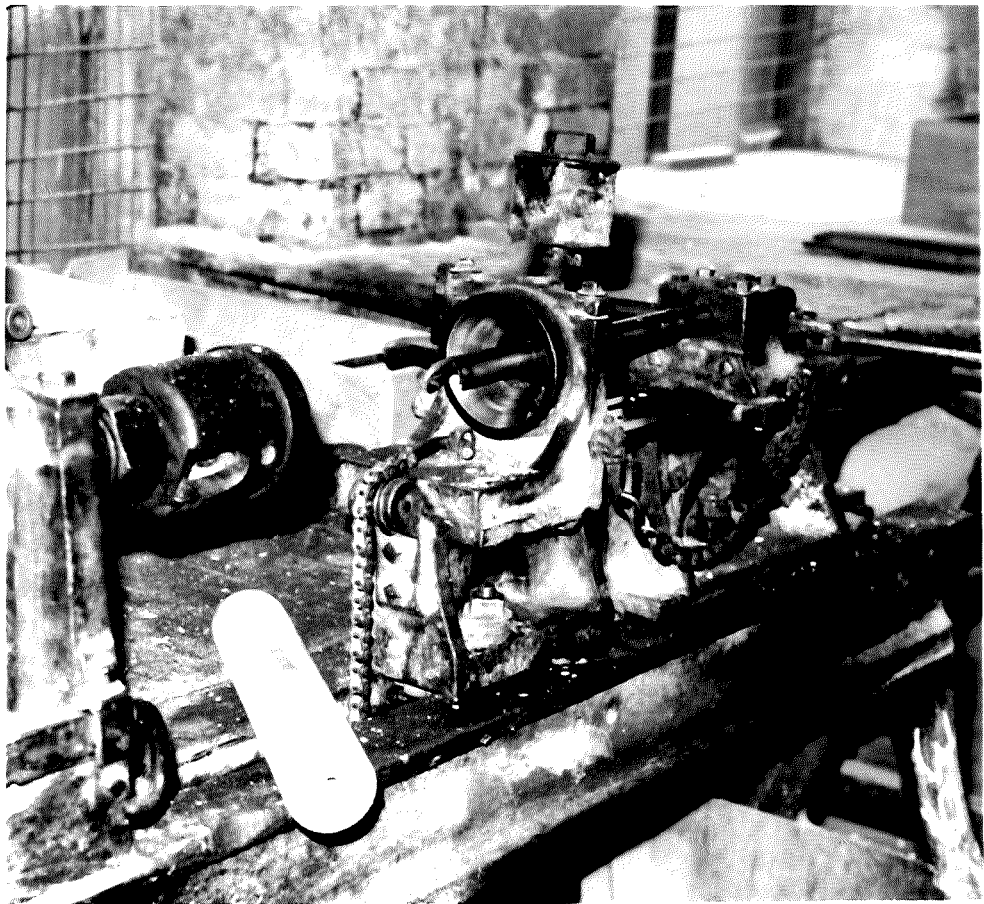
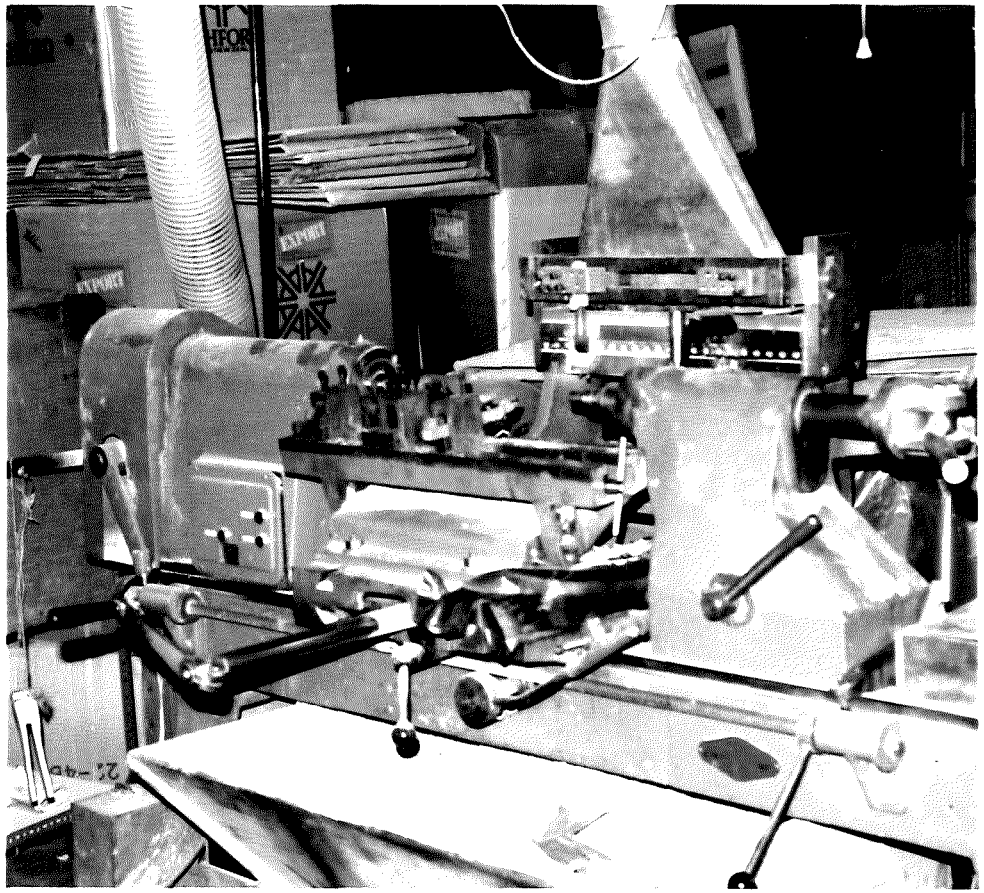


Fig.32

Another view of a modern bobbin turning machine.  
Below, a lathe adapted for boring tubes longitudinally.  
The boring tool is hollowed along much of its length  
to allow the waste to escape.



into tubes for use as bobbin barrels; the wood, fresh from the sawmill, was bored throughout its length and then passed to the roughers for the rounding process. This was done on a simple lathe, running at about 4000 revolutions per minute, by means of a U-shaped cutting tool mounted on a slide and moved by hand. As both hands were needed to operate the slide and the tool and, as the lathe was kept running during loading and unloading, the tailstock handle was opened and closed by means of a belt around the waist of the rougher. Much moisture was expelled from the green timber during the rounding so that, particularly in winter, it was a wet, cold and tiring job.

Nevertheless, some women preferred this work and with a combination of strength, nimble handling and a rhythmic motion of the body could convert, for example, 5000 squares (300 x 50 x 50 mm) into tubes 300 x 47 mm diameter in the course of an eight hour day.

Much further light is thrown upon the training and the prospects of the workers on the shop floor, by the experiences of a former employee, Clarence Ford, who joined the mill as a boy of 14 years of age in 1932 and who eventually became foreman of the bobbin department in the 1960's. Clare, as he was known, qualified at 14 for higher secondary education at Bell-Baxter school in Cupar but the needs of his family determined that he should look for a job. After a few months on a farm where he found the work too strenuous for his slight physique, he was pleased to be taken on at the mill where some of his relatives worked; he had no particular preference for woodworking but, as with many of his contemporaries, there was little hope of realising any cherished ambition - a job which offered pay to help the family income was the prime consideration. He lived

with his parents in Strathmiglo, the village two miles to the east of Gateside, and walked each morning to the mill in time for the 6 a.m. whistle, carrying his 'piece' in the traditional red spotted handkerchief in common with many of his fellow workers. The 'pieces' were packed in this way so that they could be hung on a nail out of the reach of rats and mice. His first task in the bobbin department was at the pinning bench where, armed with a light hammer and with the benefit of a few basic instructions shouted in his ear, he tapped square pegs into the round holes already bored in the bobbin ends, having first dipped the point of the peg into a pot of hot animal glue; the square wooden pegs were sawn from scrap wood and were more easily produced than round dowels. Thus he took his place on the production line between the 'dumper' (pressing machine) and the turning machine constantly aware, with his fellow pinners, of the vital necessity to keep ahead of demand from the next stage. As a newcomer, however, he was also given the responsibility of heating and distributing the tea flasks, brought by the workers in readiness for the 60 minute breaks at 9 a.m. and 1 p.m. For this duty he was allowed half an hour before each break.

In due course he moved to the 'dumper' and another pressing machine which drove the steel pins through the rim of the bobbin end into the side of the barrel; moves to other unskilled jobs, as the necessity arose, widened his experience but there was no pattern or official recognition in this regard. Clare was keen to progress and was attracted to the finishers bench where six men worked at high speed mandrels. At this stage the flanges of the bobbins were rounded and chamfered with a chisel and then, with the barrel, brought

to a smooth finish using first coarse and then fine sandpaper. Also at this point, final checks were made as to the quality and quantity of the production which attracted the close surveillance of the foreman and the management. There was no provision for training but Clare, having shown interest, was sometimes given an opportunity to sharpen a tool by another kindly finisher and a word of encouragement. The finishing operation demanded strong hands and wrists as the bobbins were slid over running mandrels and were held fast until the mandrel was safely locked by simple form of tailstock. If accidentally released before the mandrel was secured the bobbin was likely to fly off to the danger of the operator.

Clare's opportunity to be promoted to the finishers bench came in a dramatic fashion:-

One day when I was 17 I was sitting at the pinning bench with my back to the finishers when something happened behind me; Donald Archer had been finishing creel bobbins which had steel pins in them and one had come out and struck him in the eye and he was helped up to the office. He had just gone when Tom Croll, the foreman, came over and tapped me on the shoulder and said 'Get over to the finishing' as things had to be kept going. I cleared up the shavings spattered with blood and promptly removed them and so started my promotion but I got no more pay until later.

At first, he was much slower than his fellow workers on the finishing bench, as he had had little opportunity to acquire the necessary skills, but as he improved he "pestered and pestered the boss" to increase his pay to match his performance; finally he was able to produce the quantity required and to maintain the high standard

of quality demanded by the 'boss' and was awarded the full rate for the job.

At the time when he had spent just over 4 years at the mill he earned £1.50 a week and became within his family, self-supporting; he gave his mother £1.25p and kept 25p to clothe himself and to meet his other needs. To him, this was an important break from the past when he had handed his pay, intact, to his mother and had been given a little spending money; when 15 years old, for example, it amounted to 3d for a visit to the cinema in Strathmiglo and 1d for sweets; the long working days at the mill gave a young boy little opportunity to spend money.

For those employees who lived in Strathmiglo the long breaks from 9 a.m. to 10 a.m. and from 1 p.m. to 2 p.m. were tedious; the young, in fair weather, played a form of football in the small mill yard, others slept or played cards; even those with bicycles found it too far to return to Strathmiglo at these intervals. The question as to why the majority of workers, thus inconvenienced, did not seek to change the working hours is probably answered by the fact that the principal foremen and several of the very highly skilled operators lived in Gateside and were able to raise powerful voices against any alteration.

After the fire in 1939, Clare Ford was one of the skilled workers chosen to travel to Dundee each day and to work for McGregor and Balfour. A lorry had been hired and roughly converted to seat the twenty men who went to various member firms of the Association in that city, during the months of reconstruction at Gateside.

Clare Ford remembers that he found nothing impressive in his new workplace, the machinery and tools were generally inferior to those at Gateside and the standards of workmanship lower. The machine shop was even more lacking in space and orderly layout than at Gateside and to those from the country the quality of the labour force, men and women, appeared very low. On Christmas morning in 1939, the lorry taking the workers from Gateside to Dundee skidded off the road a short distance from the village and landed on its roof in a field; by great good fortune injuries were limited to minor cuts and bruises but thereafter, those employes allocated to Dundee were given a lodging allowance for the weekdays.

For a finisher, the only prospect of advancement was to become a machine turner or a crown sawyer, both jobs carrying a slightly increased pay and offering the wider experience necessary for the foreman's post. In 1939 the foreman in the bobbin department was in his late forties and his probable successor had emerged - without being officially recognised - as the person capable of deputising, when the need arose. He was the rove bobbin machine turner with a wide experience and lengthy service who eventually became foreman in the early 1960's. For Clare Ford therefore, the road ahead towards greater advancement appeared never ending; however, in 1940, he was called up and spent four years in the Army serving in the 4th Indian Division in the Western Desert, the Italian invasion and other Middle Eastern campaigns. Returning to the U K in 1946, he again took up his post again as a finisher and, after gaining further experience, became foreman in 1970, by which time the department was no longer



serving the jute industry but producing the more sophisticated bobbins for the man-made fibre, cotton and woollen sectors.

It is clear from the foregoing that, at Gateside, formal training and career structures were unknown and there is little doubt that, throughout the industry in Scotland, there was a similar lack of interest. The Scottish Bobbin and Shuttle Manufacturers Association was the body which, in the absence of a craft union, might have examined the subject, but there is no evidence, in the surviving records, of any such discussions. Until the advent of the Industrial Training Boards in the 1970's, training and promotion in this industry depended upon the determination of the employee to acquire skill and the lucky chance which opened an early way ahead; otherwise it meant a long and patient wait until the retirement of a senior provided a vacancy.

Traditionally, a boy started work at 14 years of age and providing he stayed in the industry until he was 18 and fortunate enough to have had the opportunity of gaining some degree of skill, he received a relatively substantial increase in his pay and was acknowledged on the shop floor and by the management as having 'served his time'. No document to this effect was issued; thereafter, he was rewarded with further increases as his skills developed until he was permanently employed in a fully-skilled post and in receipt of the appropriate level of pay. Those with less ability either remained in semi-skilled jobs or became labourers.

In view of the haphazard method of training in the industry the term 'served his time' would appear ill-chosen when applied to the process described; the implication of indentured bonds and a

lengthy apprenticeship under the eye of a master craftsman were features far removed from the experience of the like of Clare Ford. However, its use or perhaps misuse by those in the industry might be forgiven in that, at least it added some dignity to skills which were rare and largely unrecognised in the wider world.

With regard to matters of health and safety it has been established earlier that the buildings and basic facilities at Gateside before 1939 provided little comfort to the employees and did little to safeguard their health; furthermore, the hours of work extended by the lengthy breaks between shifts were a further inconvenience and in winter, an added hardship to the majority who lived two miles distant in Strathmiglo. Also, the manufacturing of bobbins generated a great deal of fine dust which could not fail to be, to some degree, a health hazard; respiratory disorders were not uncommon, on the other hand smoking cigarettes was a popular indulgence and was practised in the most damaging fashion. Half-smoked cigarettes were relit and smoked down to the last fraction; some workers chewed tobacco yet, certainly in two remembered instances, lived far beyond their allotted span. Despite the dust, the ill-effects of smoking, walking or cycling through a Scottish winter and the unhealthy quarters in which many lived, deaths before retirement were rare.

In the bobbin department, however, accidental injury was regarded with greater anxiety than the health risk from dust. Former employees can recollect the following serious accidents in the period 1920-1950:-

- (a) four men suffered the loss of an eye
- (b) three men and one woman lost one or more fingers
- (c) one man fell from an upper floor and was thereafter partially disabled
- (d) one man was seriously injured in the face and head resulting in disfigurement

Cuts, some necessitating minor grafting, were all too common. Two of the eye injuries were due to steel fixing-pins flying out of a bobbin running at speed, and the others to splinters from cutting tools being ground or sharpened. The question arises whether such accidents could have been avoided; woodworking machinery necessarily operated at high speed, in this period up to 5000 revolutions per minute, and circular saws were designed to reach a rim speed of 10,000 feet per minute and both deserved to be treated with caution. Machinery of this type had little protection incorporated in its design and fast-running belts added to the danger. Formal and expert training and the provision of effective guards were essential but regrettably absent throughout the industry. As to the danger from steel pins 6,000 were inserted each day for many months at a time according to the pattern of production - perhaps a million in a year; in that time very few would 'fly' dangerously but, as shown, the injury caused could be nearly lethal. Fortunately this method of securing the flanges to the barrel virtually disappeared when the Calcutta trade ceased in 1948 and rove bobbins made in this way were no longer in demand from the UK.

The abolition of belt drives in favour of electric motors fitted to each machine, removed many dangers and allowed the provision of

more practical and efficient guards, improvements which were included in the re-building and re-equipping of the mill in Gateside in 1940.

Fire was a major risk but according to those who worked at the mill during the inter-war years, no prevention equipment was provided, fortunately, the building had several exits from both storeys and a speedy evacuation was the accepted conduct in the event of a fire. However, the most destructive fire in 1939 occurred during the night and there is no record or recollection of any serious outbreak during a working day. In the new mill the construction was of brick and concrete supported by steel beams and with fire proof doors between departments; a comprehensive sprinkler system and a strategic disposition of extinguishers and fire buckets was intended to ensure that such a disaster could not happen again. Later, an ex-ARP fire tender was added to increase the protection of life and property and to secure the maximum discount from the insurance company.

#### The shuttle department

This branch of production and its normal complement of a dozen men and boys, were under the supervision of a foreman responsible for the examination of the raw material, i.e. shuttle blocks, on arrival, their seasoning, and the manufacture of the various types of shuttle supplied by the mill. In view of the high value of the imported raw material, every shuttle block was inspected on arrival by a skilled shuttle-maker and those blocks with cracks, knots or defects in quality were rejected and became the subject of a claim to the shippers. Assessing the readiness of the blocks for manufacture

into shuttles, at the end of the seasoning period, was a responsibility of major importance because a moisture content which was too high could cause the cavity cut for the cop or pirn to contract, as the drying process continued, and the shuttle rendered useless.

In the early 1920's the principal equipment in the shuttle department comprised:-

- 2 circular saw benches
- 1 hand planing machine
- 1 four cutter planing machine
- 1 shuttle tip assembly press
- 2 horizontal routers
- 2 " morticing machines
- 6 general purpose mandrels
- 2 drum sanders.

Shuttles were produced on a batch basis, using the machines as they became available. The batch was passed from machine to machine and the full quantity completed at each operation, thus allowing the multi-purpose machines to be set for other tasks. In the case of jute shuttles a convenient number for a batch was a 1000 representing a week's work and sufficient for the work space available. Due to the diversity of the wide range of shuttles produced in a normal year, it was not practical to lay out a sequence of machines and operations as in the bobbin department; for example, the principal types of shuttle involved the following number of operations:-

Jute shuttles	35-40 operations
Woollen "	45-55 "
Automatic "	75-100 "

which would exclude a flow line procedure similar to that in the bobbin department. The layout of the shuttle department is shown in Fig. 33

In shuttle making there were two types of operations, one where the material was held in the hand and presented to the revolving cutters and the other where the shuttle block was clamped into the machine and moved mechanically into the cutters. As many tasks as possible were carried out 'hand-held' as it was far quicker than clamping the work-piece in a machine. The size of the cut to be made was the determining factor, a large cut made by the fast revolving cutters would exert a pressure too great to allow the material to be held by hand.

Certain tasks required skilled operators, who, otherwise, assisted the foreman to set machines for the semi-skilled. The unskilled were employed on the more simple machining jobs, or inserting the metal fittings into the shuttles, or oiling and packing the finished goods in readiness for despatch.

Of the 12 personnel in the department the foreman and four others would be skilled shuttle-makers and the remainder semi-skilled and unskilled.

The work required a high standard of woodworking skill and necessitated very accurate machining of the shuttle to avoid any possibility of damage to the warp or weft in the loom. The machining tasks were

Fig.33

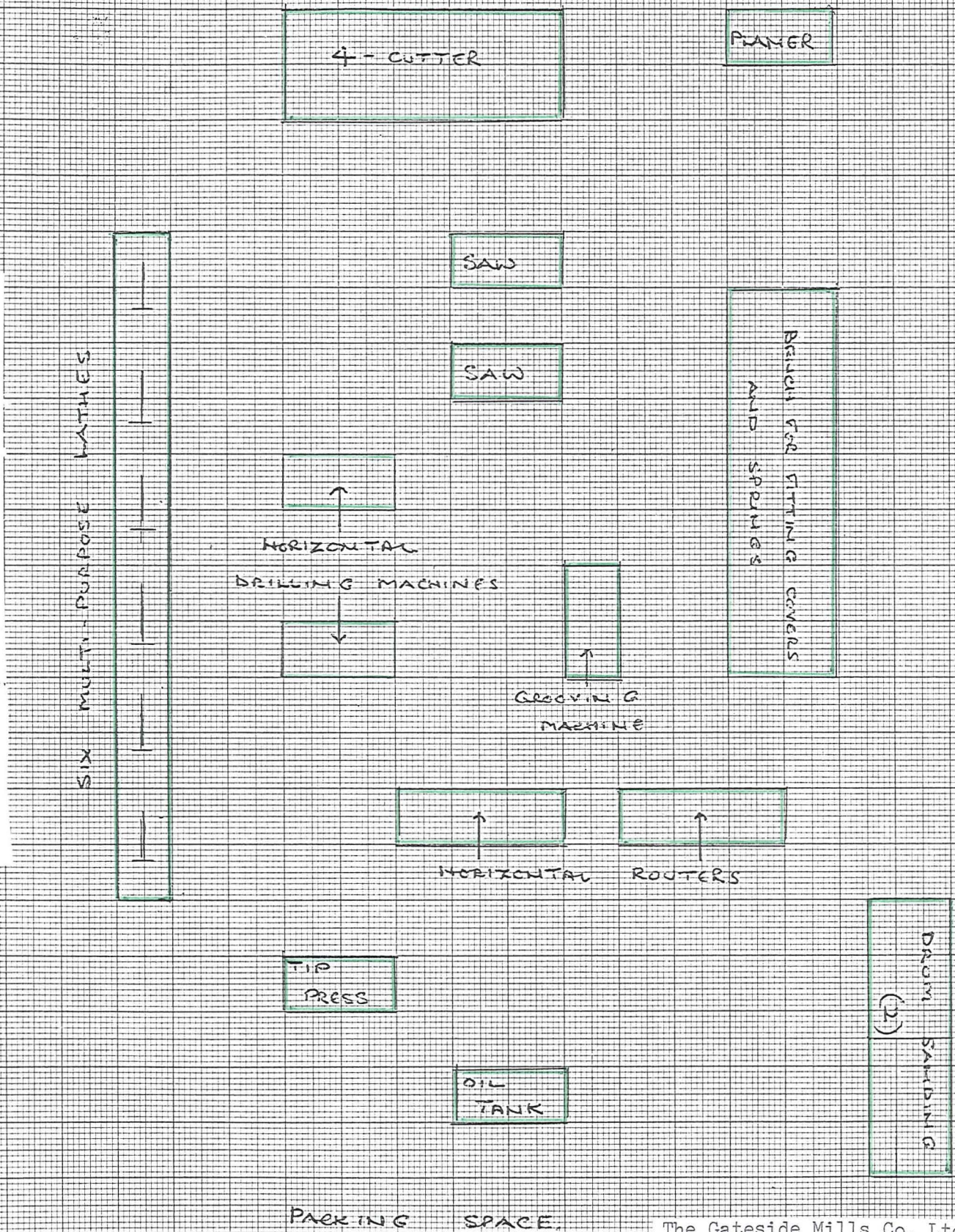
Layout of the shuttle department at Gateside.  
Due to the large number of operations involved in shuttle-making a flow line is not practical and therefore the machines are sited to allow the movement of a batch from one point to another with reasonable ease.



1939 - 1960

SHUTTLE DEPARTMENT

BASIC LAYOUT FOR JUTE SHUTTLES



The Gateside Mills Co. Ltd.



less arduous for the operator than in bobbin-making and the whole department tidier in that the raw material was of a common size and only slightly larger than the finished article; there was, therefore, less waste to collect but, in view of the amount of sandpapering needed to achieve the quality of finish, a great deal of fine dust.

Jute shuttles were fitted with metal covers to retain the cop; these were made in a blacksmiths shop sited in another part of the building to avoid the risk of fire. One skilled and one semi-skilled operator produced sufficient to equip to production of the shuttle department and to meet the orders for 'spares' which were a common requirement of the industry in Calcutta.<sup>10</sup>

With regard to questions as the standard of training, security of employment and career prospects, the early experiences of George Clark who joined the mill in 1926 as a boy of 14 years of age, were revealing. As a schoolboy 'he had a notion to work with wood' and was consequently very pleased to be taken on at Gateside. He lived on a farm, a mile beyond Strathmiglo and was given a bicycle by his parents for his daily journeys. At this time the mill was busy and the working hours were:-

6 a.m. - 9 a.m., 10 - 1 p.m., 2 - 5 p.m. for five days

6 a.m. - 12 midday on alternate Saturdays with one hours break

giving 50 hours on the long week.

His first job, apart from dealing with the tea flasks, was sandpapering the sharp edges of the near-completed shuttles to ensure a smooth surface wherever the yarn was likely to contact. Thereafter he moved to the oiling and packing of the finished product, stamping the name 'Gateside' on each. The shuttles were then steeped in linseed oil for 2-3 hours, removed to racks to drain off and finally packed in wooden cases ready for shipment. After six months he was allowed to operate the simple machine which pressed the metal tips into the shuttle, and to bore the small holes which held the cover and catch pins. Gradually, he gained experience in handling the more important machines, occasionally helped and encouraged by the older men although, as in other departments, some were reluctant to pass on any knowledge, seeing the young as a rising threat to their own jobs. After some four years, George Clark was considered to have served his time having had some experience of operating and setting most of the machines in the department, the skills acquired being due more to the demands of production than any planned process of training.

Normally in these inter-war years, there was a set scale of pay for the boys, starting at 54p and rising by 5p each year and to £1.50 a week when recognised as 'time-served'. Those classed as semi-skilled were paid on a merit basis, decided between the worker and the 'boss'. The semi-skilled operatives were often long-serving employees who lacked the ability to advance their skills and remained all their days at this level. The highly skilled were paid at a rate of £2.625 per week which, traditionally, covered all the key men in all the departments. As a young man of 19 (in 1929) George Clark considered himself reasonably well off; he gave one half of

his earnings to his mother and kept half for himself for clothes, entertainment and holidays. As he gained in experience he argued his case for further increases in pay with the 'boss' (the foremen did not deal with matters of pay) and by the time he was 30 years old he was earning only 10p a week less than the top level for the most highly skilled in his department.

In the early thirties there were periods of short-time working; at first the management abandoned the 6 a.m. - 9 a.m. shift as a means of reducing hours but the workers resisted this arrangement preferring, not unreasonably, three full days at work and three days on the dole, the management eventually agreed. Although there were opportunities, at times, to secure casual employment on dole days, generally they were not accepted as such action could result in the loss of unemployment benefit - the local employment official was based in Auchtermuchty and had a wide knowledge of the area and the people - particularly those drawing benefit.

After the fire in 1939 George Clark was transferred temporarily to T.C. Keay, a firm of textile machinery makers in Dundee, and there found only the nucleus of a shuttlemaking unit; with the benefit of his experience and organising ability the department was established on a sound basis and became within a few years a competitor, of some consequence, of the Gateside Mills Company. During these months, he found little to learn and much to teach and was glad enough to return to Gateside in the due course, to a newly built shuttle room.

As in the bobbin department training and promotion schemes were non-existent in the shuttle department and George Clark's progress

Fig. 34

Making automatic shuttles.

These two photographs and another five which follow were taken in the workshops of Bancroft & Company, of Blackburn one of the leading manufacturers of shuttles in the UK.

It is believed the photographs date from the 1940's. At this time the firm claimed to have 500,000 seasoned shuttle blocks in stock and stacked according to size as shown.

In the lower illustration the craftsman is making one of the dozens of cuts necessary to accommodate the threading device.



Fig.35

Making automatic shuttles.

In the upper photograph the operator is cutting grooves in a cop shuttle, one at a time. The Scottish manufacturers at this time were using a much faster machine which cut two grooves at each operation.

The lower illustration depicts the use of a router in this type of work. The machine was able to make eccentric cuts and operated at 18,000 r.p.m.



Fig.36

Making automatic shuttles.

Normally the workpieces in these two hand operations are revolving at speed but, in order perhaps to secure a clear photograph the lathe have been stopped.



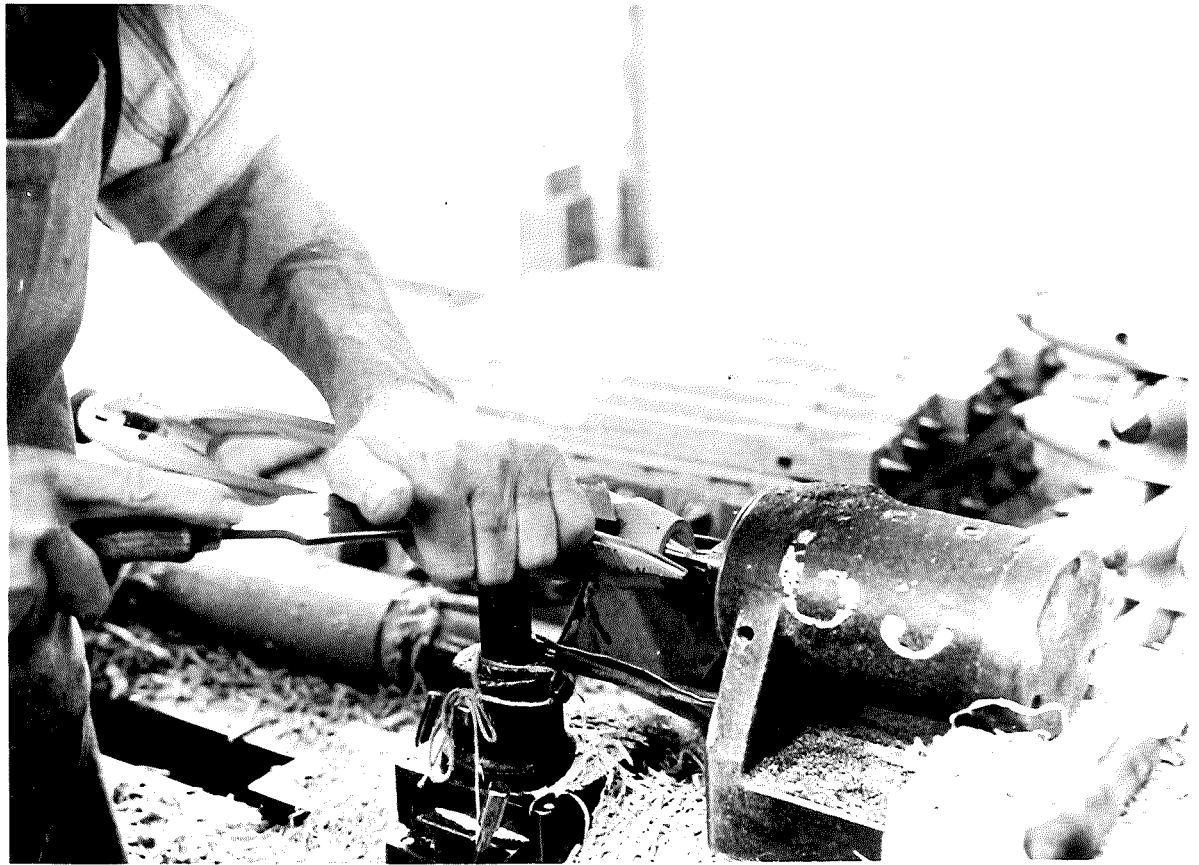
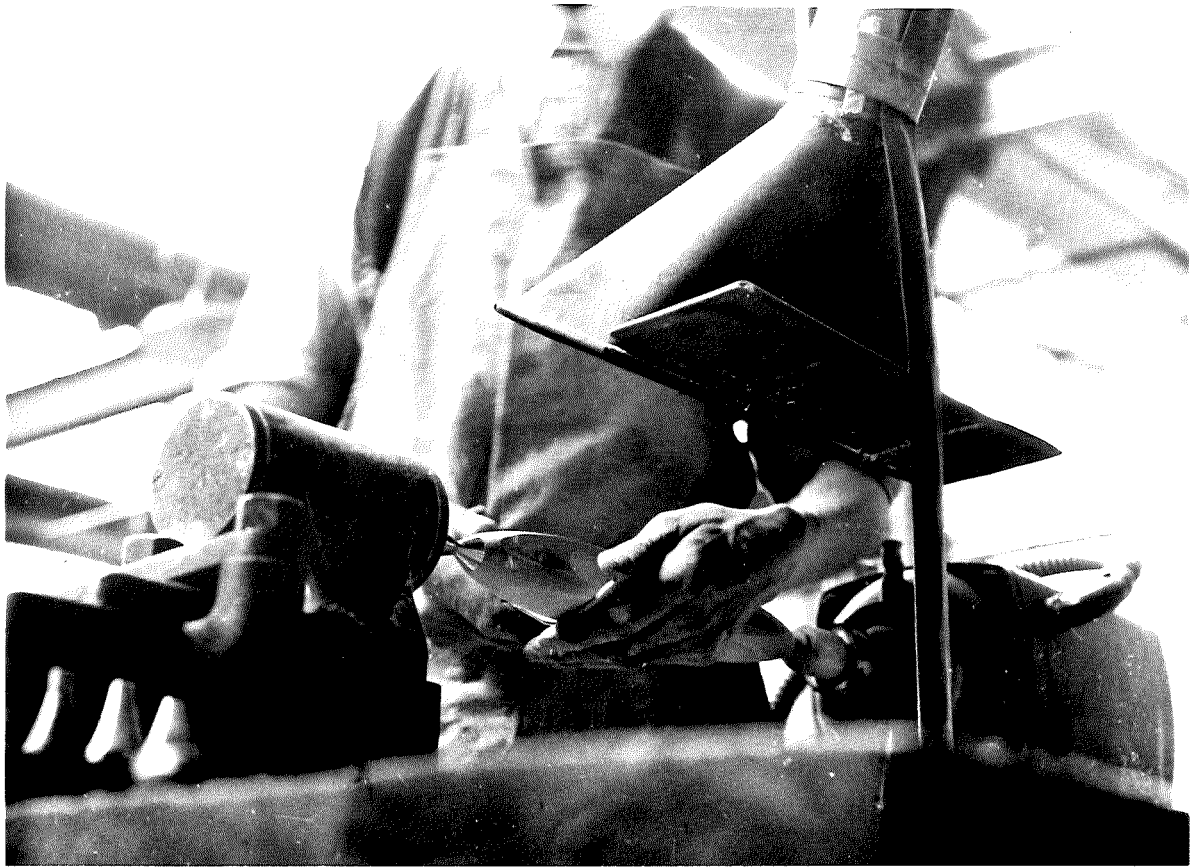


Fig.37

Making automatic shuttles.

Every shuttle is tested to ensure that it threads correctly before despatch. The accuracy and fine finish of the wood in the proximity of the threading device must be of the highest standard to avoid any possibility of the most delicate of yarns being snagged.



Fig.38

Shuttle machinery at Gateside.

At the top a typical motorised saw bench;  
in the middle, a boring and slotting machine and  
below a Scottish craftsman carrying out  
the same precise cutting operations as his  
English counterpart in Fig.34.

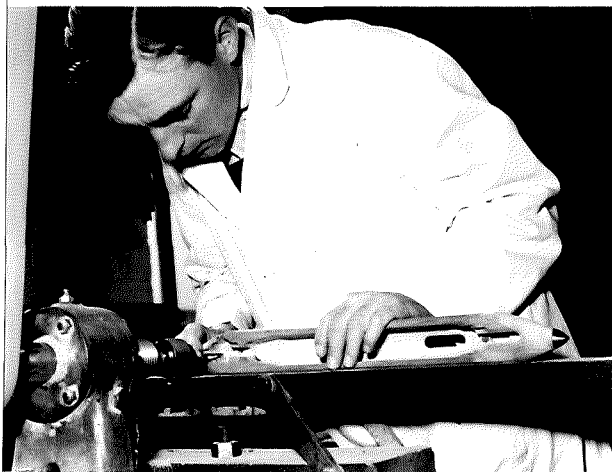
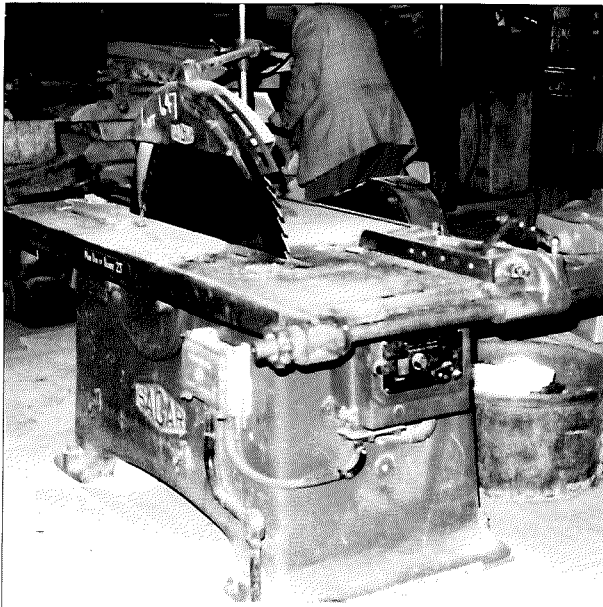
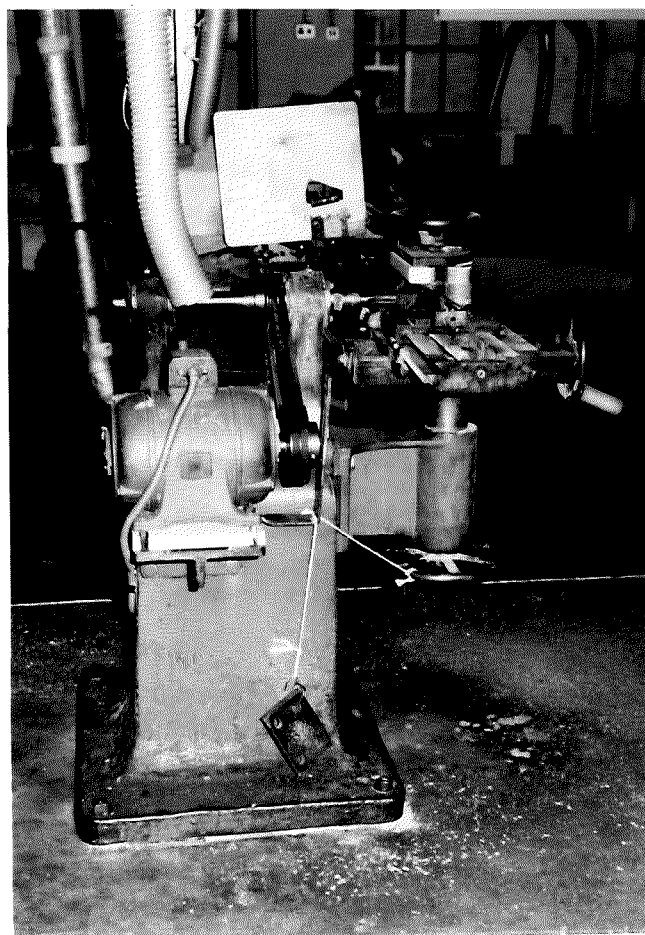
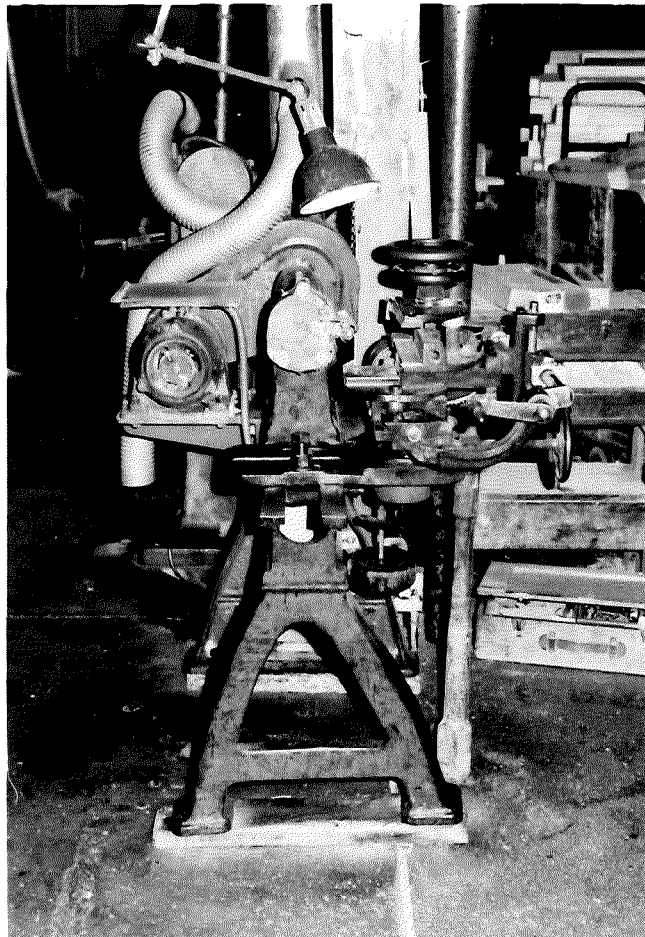


Fig. 39

Shuttle machinery at Gateside.

The upper photograph shows the machine which grooved the cop space of the jute shuttle. The standard specification was 40 grooves at 1/4 inch pitch sharply edged in order to grip the cop firmly and free from any blemish likely to snag the yarn.

In the lower photograph the machine illustrated was a horizontal router but more commonly known as the gutzer as it removed a substantial portion of the interior of a shuttle block to provide space for the cop.



to the post of foreman in 1960 was far removed from any resemblance to a career structure. He was fortunate that his foreman and other seniors in the department retired at 65 years of age, whereas a former occupant of the post carried on working until he was in his 80's.

Despite the lack of organised and supervised training, the skills finally acquired could be judged as being of a very high standard because by 1950, the department at Gateside was the only one in Scotland capable of manufacturing the complex automatic shuttles and the small pirn shuttles used in the cotton industry, in addition to a wide range of jute and woollen patterns.

Although new machinery was necessary to produce these additional types of shuttle, the skills required were available within the Company's own resources, allowing it to compete, after the Second World War, with the long-established English shuttle-makers.

One of the most important skills associated with this craft was the design and production of the many types of cutting tools which were needed to manufacture a wide range of shuttles. The work involved the machining and tempering of the tool steel and the mounting of the cutters on a holder which was then screwed into the lathe or machine. Up to 1950 these cutting tools were made 'by eye' i.e. without technical drawings but with the aid of a wooden footrule, a pair of callipers and an ancient engineers metal turning lathe; nevertheless, they were used successfully for many decades and were a very vital part of the department's equipment. Consequently, after the fire in 1939 the first person to sift through the debris in the early dawn was the shuttle department foreman, searching for the valuable tools many of which, by chance, survived. Part of the



expenditure on new machinery in the 1950's and 1960's was devoted to setting up a toolmaking section with a modern engineering lathe and employing a trained mechanic, such was the importance of these accessories and the skill required to produce them.

After the Second World War the shuttle department was producing automatic and handloading shuttles which were in great demand from the South American Cotton mills. The extra semi-skilled labour required was met, in part, by the introduction of women into this department, who were soon found to be particularly adept at handling the small components in these new products. The shuttle department was, by reputation, a safer place in which to work than the bobbin department; the raw material was of a uniform size and in view of its value and the intricacy of the work, was handled and machined with particular care. Although, as elsewhere in the mill, the machines operated at high speed and in addition two circular saws were in frequent use, serious accidents were rare; the care and caution required when working with expensive timber probably contributed to the better safety record in this part of the mill.

The development of the shuttle department therefore falls into three phases, the first extending from 1866, when the plant was set up, to 1892 when the records show the beginning of the trade with Calcutta. In these early years, the mill mainly served the flax and jute mills in the East of Scotland which meant for the the employees at Gateside a wide variety of shuttles to make but in small quantities (Appendix 6). This period was followed by fifty or more years principally devoted to the manufacture of jute shuttles for Calcutta in

two main patterns, sacking and hessian, and to a lesser degree shuttles for the woollen and flax trades. The third phase began in 1947, when management decided to widen the range of shuttles the Company could offer by undertaking orders for various types of hand-loading shuttles for the cotton industry and automatic pirn loading shuttles for the cotton and man-made fibre sectors. For the employees, these were challenging times as the work was in direct competition with the long-established English trade in Lancashire and Yorkshire. Some idea of the increased complexity of this new range can be gathered by a comparison between the number of operations in a standard jute shuttle i.e. 35 and in an automatic, 75-100.

Unlike the bobbin department the shuttle department machinery mainly comprised standard items such as a four cutter, circular saw benches, lathe headstocks and horizontal drilling and routing machines with the addition of one specialist machine which cut the forty grooves in the body of a cop shuttle. All the standard machines, however underwent considerable adaptation in order to cope with the specialist nature of the work. The only turning operation was the rounding of the ends of the smaller shuttles. For the workforce, the introduction of the four-cutter after the 1914-1918 war, was, without doubt, a great boon as it planed to size all four sides of the shuttle block at a rate of a thousand an hour thus avoiding many hours of hand planing, a tedious and tiring job, particularly in the case of persimmon which was a hard, dense material.

The general pattern of layout and machinery was well established by the end of the First World War and there was little change in the department until the reconstruction of the main mill in 1939

and 1940. The new shuttle room with its many windows and concrete floors was a great improvement on the old version and the opportunity was taken to refurbish and re-equip.

#### The sawmill

The sawmill was traditionally supervised by a foreman who also operated, with the help of a tailsman, the long rack bench where the round sections of logs were cut into slabs for planking. The remainder of the workforce was deployed as follows:-

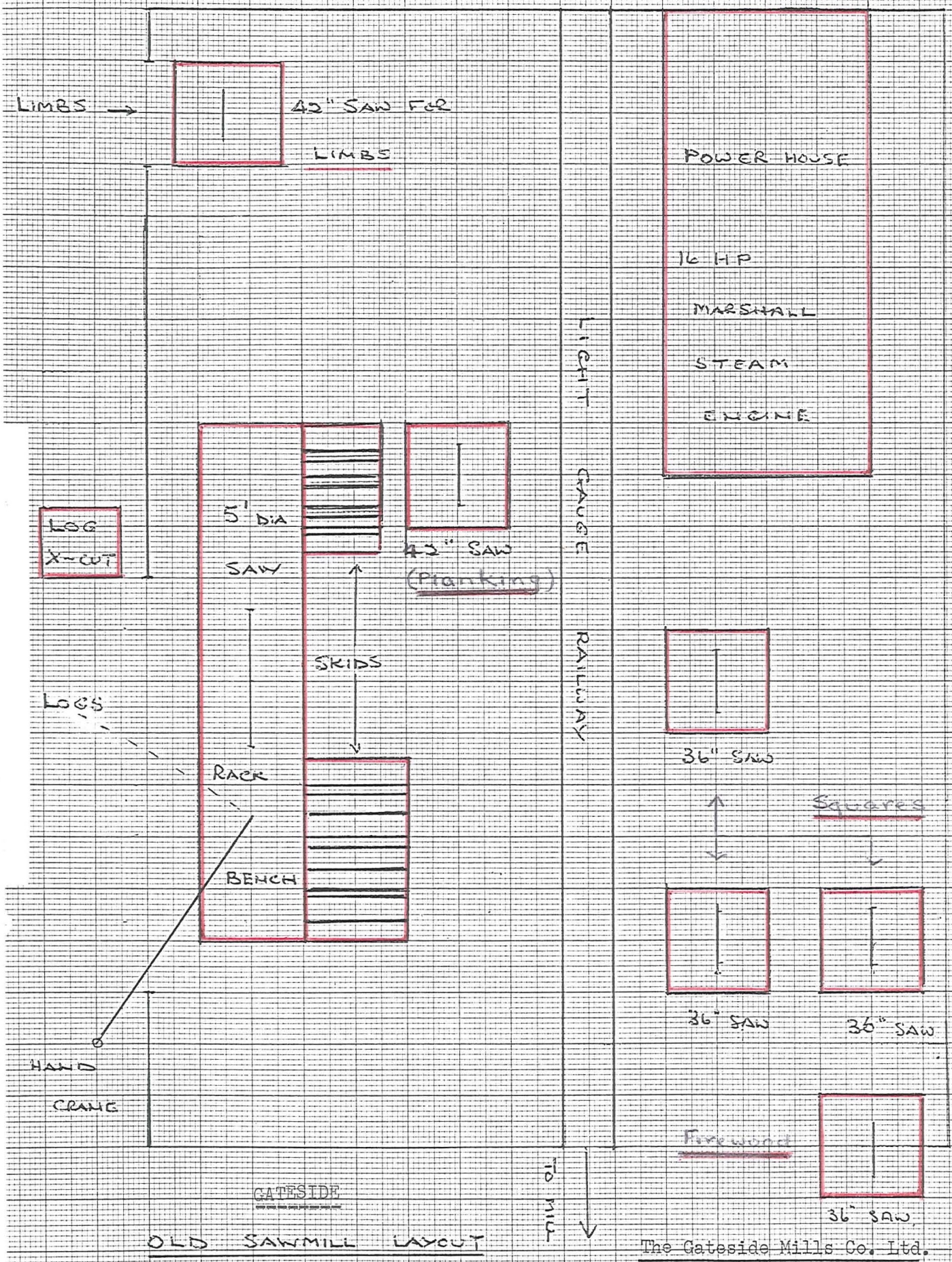
- |                             |                           |                             |
|-----------------------------|---------------------------|-----------------------------|
| (a) <u>Reciprocating</u>    | Cutting logs into lengths | 2 labourers                 |
| <u>cross-cut saw</u>        | for the rackbench         | (part time).                |
| (b) <u>Breast bench 42"</u> | Sawing planking from      | Skilled sawyer/<br>Tailsman |
|                             | slabs                     |                             |
| (c) <u>Breast bench 42"</u> | Cutting limbs into blocks | Skilled sawyer<br>Tailsman  |
|                             | for further conversion    |                             |
|                             | into squares for bobbin   |                             |
|                             | barrels and spools        |                             |
| (d) <u>Three breast</u>     | Converting blocks into    | 3 semi-skilled              |
| <u>benches 36"</u>          | squares for bobbin        | sawyers                     |
|                             | barrels and spools        |                             |
| (e) <u>Breast bench 36"</u> | Cutting rejected timber   | 1 trainee sawyer            |
|                             | into firewood             |                             |
| (f) <u>Steam engine</u>     | Power unit for sawmill    | Engineman/<br>craneman.     |
|                             | and crane.                |                             |

Fig.40

Old sawmill layout.

The sketch shows the siting of the various saws, including the travelling rack bench on the left and the steam engine on the right. The layout was, in the main, determined by the main belt drive and countershafts and remained unchanged for about 50 years.





GATESIDE  
 OLD SAWMILL LAYOUT

1903 - 1950

The Gateside Mills Co. Ltd.

Fig. 40



The types and sizes of timber to be cut were decided by the bobbin shop foreman and the sawmill foreman selected suitable logs from the bings; for example, the largest and of the best quality were essential for producing the rove flanges. Another important responsibility was the initial breaking down of the log to ensure the planking was straight grained and free from blemishes; this involved much physical effort moving the material on the rack bench in order to ensure the cut followed the grain. The sharpening of the 60" diameter saw and its adjustment to attain true-running were matters of skill and experience. While the saw was being sharpened the tailsman cleared the pit of sawdust, which gathered quickly as each cut of the saw removed 4 mm of wood in the form of sawdust.

The work was heavy - the rack was hand-operated - when moving the logs into the saw, which often would be cutting to its full capacity; furthermore, the foreman and his tailsman were much exposed to the weather due to the opening in the wall of the building which allowed the loading of logs on to the rackbench.

The two skilled sawyers and their tailsmen also had physically demanding jobs - in the case of the planking saw, handling the hardwood slabs weighing perhaps 100 kgs and pushing them through the saw.

The other sawyer cut the hardwood limbs of varying shapes and sizes into blocks of a convenient length for conversion into squares; these were sawn by the semi-skilled, the smallest common square being 250 mm x 38 mm x 38 mm which left little waste.

Traditionally, boys were not employed in the sawmill but when eighteen years of age, those interested in becoming sawyers were started at the firewood bench and thence to semi-skilled sawing,

receiving little instruction and dependent on those of the skilled men who were willing to impart some of their knowledge.

As noted previously the sawmill was never large enough to provide all the sawn material needed by the manufacturing departments and much was bought in from other sawmills, yet in the very depths of the inter-war depression, it was closed down and the sawyers paid off. Presumably, it was found necessary to reduce the wages bill to the minimum and skilled sawyers were more readily available in the labour market than skilled bobbin and shuttle makers, when the need arose.

With regard to serious accidents, in the period from the First World War until 1950 one man had been killed by a piece of timber thrown back from a saw and a tailsman lost an arm having fallen into the large rack bench saw; all the long term sawyers lost fingers and even in the case of a cut, which did not involve the loss of a finger, grafting of skin from another part of the body was necessary as the wide cutting edge of the saw blade removed the flesh. Other injuries were caused in the course of moving logs or large pieces of timber, but were generally of a less serious nature. The variety and sizes of the sawn material produced for the bobbin department, undoubtedly contributed to the high accident rate in such a small workforce; whereas in a commercial sawmill the object was to cut from a log the longest and widest planks, the bobbin sawyer was largely concerned with short lengths and small dimensions which brought the hands close to the saw blade.

This sawmill was built in 1908 and continued in its original form until the 1960's. In order to boost production, after the Second World War, a new sawmill was set up some fifty metres from the original unit on an all-electric basis and equipped with two rack benches and three breast benches. An underground scraper system removed the sawdust to a nearby incinerator. The old sawmill was left unchanged, perhaps a case of leaving well alone, as the layout, procedures and the skill of the sawyers produced the straight-grained material essential for the larger bobbins; furthermore, the unit was economical to run in that the steam engine was robust and reliable and was fed on waste timber; there were, however, drawbacks in that the belt-driven system prevented the fitting of power feeds on the principal saws which would have considerably lightened the work of the sawyers and tailsmen. The cranes adjacent to the mill, were also hand-operated by the workforce and it needed all the strength of two men to lift a short length of log to the rack bench - it was, throughout this period of over 50 years, no place for weaklings.

By the time the new sawmill was set up and ready for production, the Company had lost its principal market in India and the need for more sawn material was much reduced. However, after 1950, the new unit proved its worth in connection with other items of turnery manufactured by the Company far removed from its traditional products.



(v) Wages and conditions of employment in the Scottish  
bobbin and shuttle manufacturing industry 1860-1960

Information as to the wage levels, in the early days of the industry, is indeed sketchy. In 1864, apprentices serving their time with John Ireland, the shuttlemaker in Dundee, started at 37p a week rising to 45p after five years in one case, and at 25p rising to 40p in another. The young McGregor, in a letter (Appendix 6), expresses his pleasure at receiving 65p a week in 1871 as a journeyman at Gateside, and the frequent additions he mentions of 5p per week would appear not unduly generous, as the average wage in a Scottish woollen mill in that year was 71p.<sup>11</sup>

In the early years of the new century the archives of John Dixon (Appendix 7) reveal the following rates for a skilled bobbin-maker in England:-

1904	£1.50 per week
1913	£1.75 " "

The pay of an English bobbin-maker was deservedly higher than his counterpart in Scotland, as a greater degree of skill was required to meet the standards of quality and precision demanded in the production of the components used for the spinning of fine yarns. These figures can be usefully compared with those published in a Handbook of Employments published in Aberdeen, in 1908<sup>12</sup> covering the Scottish scene. The entry under Bobbin Turning gives the following information:-

No apprenticeship is required. Boys may start work about 15 or 16 years of age, and learn the trade by assisting the men. The wages begin at about 6s. and rise according to ability. When thoroughly trained and of man's age, the wages range from 23s to 26s per week. The hours of duty are 51 per week. It is healthy and light work and gives steady employment all the year. Girls are employed in painting and oiling the bobbins. The work is light and the wages average 10s to 12s a week.

Thus the Scottish level of pay was approximately 75% of that in England. Other comparisons, within Scotland, can also be drawn from the Handbook which indicate that the bobbin makers were in a low pay category.

Table 2.5 <sup>13</sup>

Rates of pay of Scottish bobbin makers compared with  
similar industries in 1908

Bobbin turning	Men	£1.15 - 1.30	per week
Jute mills	"	£1.00 - 1.25	"
Linen and cotton mills (beamers)	"	£1.50 upwards	"
Sawmilling, labourers	"	£0.90 - 1.20	"
Coopers (after apprenticeships)	"	£1.00 - 1.50 upwards	"
Golf club makers	"	£1.50	"
Sawyers	"	£1.40 upwards	"
Box and Packing case making	"	£1.30 - 1.60	"

Moving to the period of the First World War, Professor A.L. Bowley's study of prices and wages in the United Kingdom, 1914-1920,<sup>14</sup> compared wages and the cost of living in these terms:-

Table 2.6

<u>Wages - estimates of movements</u>		<u>Cost of Living,</u>
<u>in major industries</u>		<u>Labour Gazette Index</u>
July 1914	100	100
" 1915	105-110	125
" 1916	115-160	145
" 1917	135-140	180
" 1918	175-180	205
" 1919	210-215	210
" 1920	260	252

His conclusion reads:-

'So far as a generalisation is possible, we may state that the growth of rates of wages generally lagged behind that of prices but earnings in those very numerous cases where piece rates or overtime gave facilities for additional work and pay, increased more rapidly than prices from the outbreak of the War to the Armistice'.

Former employees of the Gateside Mills Company remember particularly the post war rate of £3.65 as it was reduced shortly afterwards to £2.65 per week. On the basis of the scale in Table 2.6, the 1914 rate of pay for the skilled at Gateside would have been £1.40 per

week, reflecting a modest increase over the six years from 1908.

This estimate of the prevailing rates would apply to all the skilled in each department at this time, as it was a strong tradition of the Company to keep the skilled sawyers, bobbin- and shuttle-makers at the same level thus allowing greater flexibility in the movement of personnel between departments, should the necessity arise.

During the inter-war years the English <sup>rates</sup> for bobbin-makers fluctuated between £3.07 - £3.60 according to the state of the trade but, in Scotland, the rate for the highly skilled workers remained steady at £2.65 per week; after the Second World War a similar differential existed. As already explained part of the gap can be explained by the level of skill demanded, but another important influence was the level of pay in Dundee, where three of the four largest firms of bobbin and shuttle makers were established. By 1890, the textile industry was predominant in the city employing 43,000, of whom three quarters were women. At this time, the average pay for adult males was £0.97 per week, a rate judged by the Board of Trade to be the lowest in the UK for textile workers.<sup>15</sup>

In 1905, the Dundee Social Union claimed that economic conditions beyond the control of employers have settled that labour in jute mills must be cheap labour and that the crying need of Dundee is more occupation for men.<sup>16</sup> Certainly, for men, the jute mills were one of the few havens; in 1906 the average pay for adult males was £1.08 per week and half earned less than the rate of £1.09 which Rowntree in 1901 had calculated to be vital to 'bare . . . physical efficiency' in a family composed of husband wife and three children.<sup>17</sup>

A minimum rate was established in 1920 at £2.50 per week which was reduced to £1.95 in 1923 in line with the general trend in wages. Professor S.G.E. Lythe in the Third Statistical Account of Scotland 1979 writes:-

it is equally true that Dundee persistently operated at a lower level of prosperity than more economic regions in Britain

This assessment held good particularly in the depression of 1931-32, when unemployment in Scotland was 25-30% and well over 30% in Dundee, with the jute industry registering 40-50% unemployed.

At the outbreak of the Second World War, adult males in Dundee were receiving only the legal minimum rate paid in Britain. Thus the bobbin and shuttle-makers in that city operated in a situation where wage levels for men were persistently low as compared with the UK and where there was a surplus of male labour. These two factors, inevitably, had a prolonged and marked effect on the wage rates of all the manufacturers of these accessories in the east of Scotland, in regard to their negotiations with the unions and within their trade association.

As noted, the rate of wages at Gateside and in the industry did not change from 1923 - after the general reduction - until the beginning of the war in 1939. The rates were:-

Highest skilled		£2.65	per week
Skilled		£2.00 - 2.25	"
Semi-skilled		£1.58 - 2.25	"
Labourers		£1.50	"
Women		£1.00 - 1.25	"
Boys	14 years	54p	
	15 "	59p	
	16 "	64p	
	17 "	69p	
	18 "	£1.50	

(after 4 years service).<sup>18</sup>

The rates, current in England over these years, are listed in Appendix 7. Another comparison can be made with the linen mills in Strathmiglo where women machinists earned £1.20 a week after 4 years experience; the starting rate was 47p.

Apart from the highest rate for the skilled and the rate applying to boys, the latter being a constant subject for discussion among the recipients, the earnings of individual employees at Gateside was very much a private matter between the person concerned and the 'boss' the managing director. G. Clark and C. Ford, for example negotiated their own wage level in this way, as did most others, and the result was rarely revealed or discussed with fellow workers.

Differentials of the equivalent of a halfpenny an hour were strongly debated between master and man and the result remained confidential.

At the end of the war, the principle of hourly rates was adopted and gradually, these personal agreements were grouped into broad bands and wage increases awarded on the basis of, for example:-

Men over 18	2d per hour
Men under 18	1 1/2d per hour
and women	

By the end of 1946, wages had more than doubled as compared with the inter-war years, but further increases were modest due to the uncertainties of the Indian market; however agreement was reached in 1949 to abandon Saturday working except on overtime conditions. The 47 hour week, adopted in wartime, was reduced to 44 hours without loss of earnings. A rise was included in the new rates which brought the skilled up to 13p per hour and the women to about 6p per hour, again well below the wage agreement in England in 1950, concluded by the Joint Industrial Council of Bobbin and Shuttlemakers. Modest increases in basic rates were applied over the next ten years in line with those agreed between the Association and the National Union of Municipal and General Workers as described in Chapters 4 and 5; in 1956 however, work study consultants were employed by the Gateside mills Company to introduce a bonus incentive scheme based on a 20% increase in earnings if production targets were reached.

As to the general trends in the hours of work during the period of this study, the earliest reference in Appendix 6 would appear to accept the 9 hour day as standard and the 10 hour as a former working day prior to 1878. In 1908 according to the Handbook previously quoted the hours in the bobbin industry were 51 over presumably 5 1/2 days but, at Gateside, these were divided into shifts of three hours, as already described and this system persisted until the war began in 1939 and, as noted above, the 5 1/2 day week of 47 hours then adopted was finally abandoned in 1949.

Until 1939 holidays were limited to a week in the summer - the Fife/Glasgow Fair - one day in the spring and one in the autumn and two days at New Year, all unpaid. To relieve the strain on the family income, a fund was started by the workers in the 1920's and supported by the firm on the basis of a weekly subscription which, over the year, would yield a weeks pay or for the more fortunate<sup>to</sup> cover the expense of a holiday. During the Second War and the following years the question of holidays moved through several phases including bonuses in lieu, and payment in part; eventually in 1953, two weeks summer holiday and the other spring, autumn and New Year holidays were paid<sup>18</sup> in full but Christmas Day remained a working day until 1959.

Mention has been made, with some grievous examples, of the serious accidents which could occur in this industry; some evidence of the level of compensation awarded in these cases was uncovered in the records of John Dixon and Sons Ltd, the bobbin-makers, of Steeton, Yorkshire.<sup>19</sup> It was the practice of this company to insure on the basis of paying the injured half wages while off work and, where appropriate, an agreed sum of compensation. Letters have survived demonstrating the efforts of the employers to secure improved awards for the employee; on the 14th of March 1906 the insurance company were advised that their offer of £2 as compensation, for the loss of an index finger on the right hand at the second joint, was too low and that £10 was more equitable. Other settlements after negotiations included, in 1908, an eye injury £20, a lump sum for the loss of an eye of £50 in 1910, and in 1911 an offer by the insurers of £20 for the loss of part of an employees foot, was considered by Dixons to be totally inadequate.



At Gateside, in the inter-war years the compensation for the loss of an eye was £80 and the award for the loss of an arm in the sawmill was reputed to have been £250, but it appears that the recipients, for reasons of their own, were disinclined to talk too freely of their settlements.

To revert to the situation of the Strathmiglo employees, it is with satisfaction that one notes the introduction of transport arrangements for these workers at the end of the 1939-45 war. Thereafter the principle of an organised system was firmly established with either the bus companies or private firms.

Finally, it would seem from the contents of this chapter that trade union organisation was much needed but, in fact, any efforts in that direction appear to have been luke-warm affairs which lapsed in the inter-war years. Nothing was fully established until the 1970's when the Transport and General Workers Union accepted the mill as an individual case and negotiated terms and conditions accordingly.

In any review of the various aspects of working life at Gateside and in this industry there would appear to be little to commend. Workrooms and basic facilities were inadequate, the rate of wages low, organised training non-existent and the accident record disturbing. In considering these shortcomings in this chapter, the constraints and influences which contributed to these conditions have also been given due weight. Certainly in the case of Gateside, the audited accounts give no support to the view that large profits were achieved by keeping wages low and neglecting investment. The pattern

of commercial life appeared to be a struggle for survival due to the two world wars and a world-wide trade depression, within 30 years, particularly as the firm was heavily dependent on imported raw materials and the exporting of its products.

As in many rural areas the reason why the trade unions failed to gain a foothold was due perhaps due to the closeness of management and workforce within these small communities. Even in the larger firms, the proprietor was no stranger to the shop floor and approachable working hours. For the employer, the retention of the skilled and semi-skilled workforce was of paramount importance; even those employees classed as labourers could become so expert in their job as to be highly valued. The workers, on their part, were also conscious of their worth and could feel secure in their jobs except in the most dire trading conditions, and able to negotiate with the 'boss' on their own accounts.

The existence of the Scottish Bobbin and Shuttle Manufacturers Association might be viewed as an incentive for the workers in the industry to organise themselves in a like manner, but it is clear that the Association was not primarily concerned with presenting a common face to the employees (although involved in wage negotiations) but rather to show a united front to the large international companies who were their customers in India. Nothing was of greater importance to the industry than the avoidance of a price war between suppliers stimulated and spurred on by the consumers.

## Chapter 2

### Footnotes

1. Topographical, Statistical and Historical Gazatteer of Scotland (Edinburgh, 1845), Vol.2
2. New Statistical Account (Edinburgh, 1845), Vol.9
3. The Notice of Sequestration was published in the Fifeshire Journal of December 29, 1870
4. The information in this section was gathered from former employees.
5. The rack bench which was fitted with the largest saw available, was used to make the first cut along the length of the timber. The log was lifted on to a travelling bench which carried it through the saw. The bench was moved by means of a simple rack and spindle arrangement operated by hand.
6. See pp.168 and 175
7. " pp.199-213
8. " pp.90-97
9. " also pp.75-77
10. The method of manufacturing shuttle covers is described on pp.49-50
11. C Gulvin, The Tweedmakers (Newton Abbot, 1973), p.169
12. Mrs Ogilvie Gordon, A Handbook of Employments (Aberdeen, 1908), p.41
13. Ibid., pp.24-33
14. A.L.Bowley, Prices and Wages in the United Kingdom 1914-1920 (Oxford, 1921), p.xix and p.106
15. William M. Walker, Juteopolis Dundee and its Textile Workers 1885-1923 (Edinburgh, 1979), p.91

16. Ibid., p.76
17. Ibid., pp.91-92
18. From the records of the Gateside Mills Co. Ltd.
- 19 In the care of Mr. John Dixon, Steeton, Yorkshire.

Chapter 3.COMMERCIAL AND FINANCIAL ASPECTS OF THIS SCOTTISH INDUSTRYIN THE LATE 19th AND EARLY 20th CENTURYIntroduction

Having explored the structure of the Scottish bobbin and shuttle industry and examined the working conditions, there now remain the the commercial and financial aspects to be investigated in detail. Here again the records of the Gateside Mills Company provide much useful information regarding the daily transactions of goods sold and raw materials purchased which, together with the audited Trading Accounts and the Balance Sheets, give a fair reflection of the changing fortunes of this enterprise. In addition some comparisons are made with other firms to provide a wider view of the industry. This chapter covers the period from the closing decades of the 19th century to the outbreak of the Second World War, a time of trading peaks and troughs which includes one global conflict and ends on the eve of another. In the spring of 1939 the main building of the mill at Gateside was almost totally destroyed by fire; the re-establishment of the business in the early years of the war, with the considerable help of other firms in the industry, and the events of the following two decades form the subject matter of Chapter 4.

(i) The pattern of growth before 1914.

Reference has been made earlier to the expansion of the jute manufacturing industry in India which, by 1914, had become the largest of its kind in the world. The number of mills in the Calcutta area

had increased from 5 in 1869 to 38 at the turn of the century and to 64 by 1914; the number of looms amounting to 36,000 as compared with 13,000 in Dundee.<sup>1</sup> What was the effect of this remarkable advance on the Scottish bobbin and shuttle makers? For Gateside the last decade of the century was a time of growth, much influenced by the events in India. The founding of the firm and its early development have been described;<sup>2</sup> by 1893 it was principally concerned with the supply of bobbins and shuttles and similar accessories to the flax, jute and woollen mills in Scotland. In addition, a modest export trade included one shipment to Calcutta, a market which grew in importance to the business in the following years:-

Table 3.1.

Value of exports to Calcutta and other overseas markets  
by the Gateside Mills Company, 1893-1900

<u>Year</u>	<u>Calcutta</u>	<u>Other markets overseas</u>	<u>Total annual sales</u> <u>(including U.K.)</u>
		<u>£'s</u>	
1893	69	237	1253
1894	86	423	1888
1895	322	615	2250
1896	473	1090	2885
1897	627	820	3069
1898	383	753	3070
1899	824	1143	4584
1900	1947	587	6426

The figures gave a reliable indication of the trend, in each instance, from 1893-99 as selling prices were unchanged until 1900 when increases were applied to some types of bobbins and shuttles:-

Table 3.2

Selling prices of jute bobbins and shuttles.  
The Gateside Mills Company, 1893-1900

<u>Item</u>	<u>1893-1899</u>	<u>£'s</u> <u>per gross</u>	<u>1900</u>
Rove bobbins, 10" x 5"	1.57		1.67
Spinning bobbins 6" x 3 1/2"	1.00		1.00
Solid bobbins 4" x 2 3/4"	0.40		0.50
Shuttles, persimmon	10.20		10.86
" beech	7.20		7.20

The increase in production necessary to achieve the sales figures in Table 3.1. was substantial as made clear in a comparison between 1893 and 1900:-

Table 3.3

The production, measured in quantity and value, of the Gateside Mills Company in 1893 compared with that of 1900

<u>Item</u>	<u>1893</u>		<u>1900</u>	
	<u>Quantity</u>	<u>Value</u>	<u>Quantity</u>	<u>Value</u>
Rove bobbins	15.1	152	111.7	1106
Spinning bobbins	39.6	198	186.3	950
Solid "	43.5	127	343.3	1225
Ends for repairs	-	-	127.7	393
Spools	17.6	36	21.3	51
Shuttles	7.7	437	41.3	2139
Planetree rollers	3.3	21	16.4	135
Miscellaneous items		<u>282</u>		<u>427</u>
Total		1253		6426

The content of these Tables pointed to a period of considerable growth for the firm stimulated by the rise of the new industry in India,<sup>3</sup> increased activity in overseas markets and a buoyant home trade. This improvement followed a depression in 1892 due to the high cost of jute and it was apparent that the firm did not escape its effect, as in 1893 the sales included many items outwith its normal trade, such as naves for wagon wheels, fencing stobs, ladder rungs and clothes pegs made in the shuttle department from hardwood offcuts; these items, whilst welcomed in slack times, would be a hindrance to production in a busy plant geared to mass production.

The considerable increase in production, as shown in Table 3.3, would certainly have necessitated a larger labour force and probably additional machinery; as a rough estimate a workforce of 50-55 would have been required to manufacture the quantities listed under the year 1900.

The growing importance of the Indian trade apparently encouraged co-operation between firms in the Scottish industry as there was reference, in these years before the end of the century, to transactions, between firms, involving finished goods or raw materials. McGregor and Balfour, for instance, purchased 100 gross of solid spinning bobbins on several occasions from the Gateside Mills Company, probably when their own productive capacity was unable to meet their commitments; at another time T.C. Keay of Dundee bought 1500 persimmon shuttle blocks also from the Mills, having presumably exhausted their own stocks.<sup>4</sup> These exchanges suggested that, in the case of finished goods, there existed, within the trade, some form of agreed price structure applying to sales; however, the situation was clarified



in 1900 when an association was formed, one of its principal objects being the fixing of prices.<sup>5</sup> This move towards closer co-operation pointed to the industry having enjoyed some few years of good trading and growth. In such favourable conditions it was more likely that firms in the industry would be prepared to make a commitment as to prices and terms of trade rather than in times of uncertainty and depression. A strong demand and stable selling prices boded well for the manufacturer, whereas in a slump, freedom of action in respect of prices might be judged to be more appropriate in the battle for survival.

In the years which followed, to the outbreak of war in 1914, the influence of the market in Calcutta continued to grow; in 1901 shipments from Gateside amounted in value to 30.2 per cent of annual sales, by 1908 this percentage had risen to 70.2 per cent returning to this level in 1913 after a trading setback in 1909 - 1912<sup>6</sup> as shown by the trend in annual sale:-

Table 3.4

Value of annual sales of the Gateside Mills Company, 1901-1913

<u>Year</u>		<u>£000's</u>	
1901	8.1	1908	23.3
1902	9.0	1909	19.5
1903	7.4	1910	19.5
1904	9.7	1911	13.4
1905	11.7	1912	18.7
1906	13.5	1913	25.0
1907	18.3		

As compared with the figure for 1900 - £6.4 thousand - sales volume in this period had doubled by 1906 and nearly quadrupled by 1913 despite the setback in 1911. Selling prices also fluctuated sharply reaching their lowest levels in 1911 and 1912 but recovered strongly in 1913, reflecting the difficult trading conditions which preceded the pre-war uplift. The next table shows these variations in selling prices affecting the major items manufactured:-

Table 3.5<sup>7</sup>

Selling prices, the Gateside Mills Company 1901-1913

<u>Product</u>	<u>£'s per gross</u>							
	<u>'01</u>	<u>'02</u>	<u>'03</u>	<u>'04</u>	<u>'05</u>	<u>'06</u>	<u>'07</u>	<u>'08</u>
Rove bobbins 10" x 5"	1.88	1.88	1.88	1.88	1.88	1.80	1.80	2.15
Spinning bobbins 6" x 3 1/2"	0.84	0.84	0.84	0.84	0.84	0.80	0.80	0.80
Solid spinning bobbins	0.65	0.65	0.65	0.65	0.65	0.54	0.65	0.65
Ends for repairs	0.55	0.55	0.55	0.55	0.55	0.50	0.57	0.70
Persimmon shuttles	11.10	11.10	11.10	9.00	8.90	8.90	8.90	10.20
<u>Product</u>	<u>'09</u>	<u>'10</u>	<u>'11</u>	<u>'12</u>	<u>'13</u>			
Rove bobbins 10" x 5" inches	2.15	1.80	1.57	1.68	2.40			
Spinning bobbins "6 x 3 1/2"	0.68	0.68	0.65	0.65	1.05			
Solid spinning bobbins	0.61	0.61	0.53	0.52	0.80			
Ends for repair	0.65	0.50	0.44	0.44	0.53			
Persimmon shuttles	9.00	9.00	9.00	9.00	11.70			

The sales entries in 1913 showed the effect of these severe increases in selling prices; a Dundee merchant, buying rove bobbins on behalf of Ganges mill in India, was charged £1.72 per gross at the beginning of the year and £2.50 per gross at the end. Spinning bobbins rose from £0.65 to £1.05 per gross and solid spinning bobbins from £0.52 to £0.80 within the year. Persimmon shuttles for jute looms at £11.70 per gross reflected a substantial increase in the price of shuttle blocks imported from the US.<sup>8</sup> However the modest rise in the cost of raw materials for bobbins would appear not to justify the steep increase in the selling prices of these items:-

Table 3.6

Raw material prices, the Gateside Mills Company, 1901-13

<u>Material</u>	<u>1901</u>	<u>1908</u>	<u>1912</u>	<u>1913</u>
			<u>£'s</u>	
Roundwood, per ton	0.85	1.20	0.90	0.90
Sawnwood, per gross	0.30	0.32	0.32	0.32
Bobbin blocks imported, per gross	0.32	0.32	0.32	0.35
Persimmon blocks " " "	3.35	4.20	3.30	4.20
Hickory squares " "	-	1.90	1.70	2.50

Another reason for the substantial increase in selling prices in 1913 would be due to the poor profits earned in the years 1909 - 1912 (Table 3.8); fortunately the upturn in trade in Dundee and in strong demand from Calcutta provided the opportunity for the bobbin and shuttle makers to repair some of the financial damage they had suffered in these years.<sup>9</sup>

A major industry as volatile as that of jute manufacturing presented considerable problems for its suppliers; for example sales, and therefore production, suffered severe fluctuations. The Table 3.7 which follows shows the volume of production as gauged by annual sales of individual items; the volume in 1900 is compared with that of the peak year of 1908 and the fall in 1911 and the rapid recovery in 1912 and 1913. To be noted particularly, in view of the approaching war, are the figures relating to solid spinning bobbins and to shuttles, two products heavily dependent on imported raw materials, indicating the vulnerability of the industry should it be denied these sources.

Table 3.7

Volume of production, the Gateside Mills Company 1900-13

<u>Year</u>	<u>000's</u>				
	<u>1900</u>	<u>1908</u>	<u>1911</u>	<u>1912</u>	<u>1913</u>
Rove bobbins	112	235	120	233	336
Spinning bobbins	186	470	248	321	442
Solid spinning bobbins	343	1552	1030	1672	1718
Ends for repair	128	797	541	679	631
Spools	21	71	129	—	113
Shuttles	42	58	54	59	75
Planetree rollers	16	149	23	33	147
Picking arms	1	21	16	23	19

These two items also contributed largely to the value of annual sales as evident when expressed as percentages of the total figure;

	<u>1899</u>	<u>1908</u>	<u>1911</u>	<u>1913</u>
<u>Solid bobbins,</u>				
Percentage of annual sales	18.8	30.0	24.6	28.4
<u>Shuttles,</u>				
Percentage of annual sales	32.8	24.6	29.1	19.4

Thus, when combined, the sales value of these two products often exceeded half the total sales in these years.<sup>10</sup>

The earliest annual account of the Gateside Company to survive was dated 1907 and listed only the assets and liabilities, total assets amounted to £8235 exceeding liabilities by £2568. Thereafter the accounts were presented in greater detail from which the figures tabulated below have been extracted:-

Table 3.8

Extracts from the trading accounts of the Gateside Mills Company,

	<u>1908-1913</u>					
	<u>£000's</u>					
	<u>1908</u>	<u>1909</u>	<u>1910</u>	<u>1911</u>	<u>1912</u>	<u>1913</u>
<u>Sales</u>	<u>23.2</u>	<u>19.5</u>	<u>19.5</u>	<u>13.4</u>	<u>18.7</u>	<u>25.0</u>
Purchases	12.9	12.0	11.8	6.8	11.7	14.1
Wages	2.9	3.3	3.1	2.6	2.8	3.6
Oncosts	3.6	3.4	3.7	3.3	3.4	4.3
Profit	3.9	0.8	0.9	0.7	0.8	3.0
<u>Total</u>	<u>23.3</u>	<u>19.5</u>	<u>19.5</u>	<u>13.4</u>	<u>18.7</u>	<u>25.0</u>

Here the effect of declining selling prices on profits in 1909-1912 is made clear; only in 1913 when prices were increased were profits restored to a reasonable level. The figures also show that when purchases and wages together exceeded 70 per cent of the annual sales, profits became slender necessitating an increase in selling prices.

With regard to oncosts, the increase in 1913 reflected the higher production achieved and its effect on such variable elements as carriage and freight, commissions and stores etc. The balance sheets for 1908-1913 also provided evidence of the damaging effect on the finances of the company arising from the downturn in trade which occurred in this period.

Table 3.9Balance sheets of the Gateside Mills Company, 1908-1913

	£000's					
<u>Liabilities</u>	<u>1908</u>	<u>1909</u>	<u>1910</u>	<u>1911</u>	<u>1912</u>	<u>1913</u>
Loan	1.0	1.0	0.7	0.9	0.7	-
Creditors	3.0	1.3	1.7	1.6	2.0	2.2
Bills payable	3.4	1.8	1.7	2.7	1.5	3.0
Bank of Scotland	4.6	5.3	3.7	4.5	3.7	2.6
Partner's interest	10.0	9.9	9.0	8.1	6.6	7.2
Total	<u>22.0</u>	<u>19.3</u>	<u>16.8</u>	<u>17.8</u>	<u>14.5</u>	<u>15.0</u>
<u>Assets</u>						
Buildings	3.0	3.0	3.0	3.0	3.0	3.0
Plant and machinery	4.0	3.9	3.7	3.6	3.4	3.2
Goodwill	2.6	2.6	2.6	2.6	2.6	2.6
Stock, stores etc.	9.5	7.8	5.8	6.6	3.8	3.6
Debtors and cash	2.9	1.9	1.7	2.0	1.7	2.6
Total	<u>22.0</u>	<u>19.2</u>	<u>16.8</u>	<u>17.8</u>	<u>14.5</u>	<u>15.0</u>

The year 1908 was of particular significance; the figure of £7,000, covering buildings and machinery, when compared with £2125, the equivalent entry for 1907, indicated a strong investment in these items. The improvements included a sawmill, set up 50 yards from the main mill, equipped with a new 16 h.p. steam engine; cranes were sited in the adjoining timber storage area and a light railway laid to facilitate the movement of materials; further details of the equipment installed at this time appears in Appendix 8.

Improved selling prices and a high level of production apparently encouraged the build-up of stocks in 1908 as well as the investment already described. Prospects for the industry were thought, presumably, to be rosy as the expenditure on raw materials was £18,925 which left an end-of-year stock of £9,539, as compared with £3,435 in 1907. In the event however, the following years proved testing, a low point being reached in 1911 when sales and production were nearly halved against a background of much unrest in the UK. A railway strike occurred in the summer and the ports were brought to a standstill due to strikes by seamen and dockers; the unrest continuing through 1912. All these disturbing events could only have exacerbated the problems of an industry so dependent on the railways, docks and shipping facilities for its exports and for the inflow of its raw materials from Sweden and the US.<sup>11</sup>

For the Gateside Mills and indeed the greater part of the industry, the Indian connection became, in these years before the First World War, the principal commitment displacing in importance other export outlets and the home trade. There were, however, drawbacks; the enormous volume of goods required by the Calcutta market necessitated the bobbin and shuttle manufacturers entering into substantial contracts with suppliers of raw materials in Sweden and the US, many months or even years ahead of their production needs. The time required to allow for restricted felling periods, drying the material sufficiently to allow shipment, transport delays and lengthy seasoning schedules in this country could be, in the case of persimmon, years and for bobbin blocks, many months. Large stocks were needed to ensure that delivery programmes were met. For these reasons it was difficult



for the industry to react promptly to adverse trading conditions, by restricting the intake of raw materials, unless the suppliers were particularly sympathetic and accommodating. In short, whilst the jute industry tended to fluctuate in the short term the bobbin and shuttle trade was saddled with sources of raw material which demanded long term planning and commitment.

Was the experience of the Gateside Mills in these years typical of the industry in general? Certainly McGregor and Balfour appear to have prospered; the McGregor family, after their failure as proprietors at Gateside in 1870, continued there in a management capacity until 1878 when a new enterprise was started in Dundee, (Appendix 4). In 1897, a limited company was floated at North Tay Works in Loons Road with a capital of £10,000 half in ordinary shares and half in 5% £1 Cumulative Preference Shares. Four years later the capital was trebled to 15,000 Ordinary shares of £1 and 15,000 5% Cumulative Preference Shares. The balance sheet just prior to the original flotation read as follows:-

Table 3.10

McGregor and Balfour, balance sheet 1897<sup>12</sup>

<u>Liabilities</u>		<u>£'s</u>	<u>Assets</u>	
Haulage debts	700		Stock	2368
Loan	60		Buildings, plant and machinery	3818
Commission	50			
Bills payable	76		Horse and cart	120
Creditors	1327		Debtors	1360
			Cash	195
			Goodwill	2000
<u>Total</u>	<u>2213</u>		<u>Total</u>	<u>9861</u>

By 1908 the net value of the company had more than doubled and the continuing trend to the outbreak of war was of steady growth apart from the two difficult years already noted:-

Table 3.11

Net value of McGregor and Balfour Ltd., 1897-1914

		<u>£000's</u>	
1897	7.7	1911	18.3
1908	17.7	1912	20.3
1909	18.1	1913	21.4
1910	17.8	1914	24.2

The Debtors entries for these years gave some indication of the trend in annual sales in that a rise in the figures would follow from the increased sales and a fall from lower sales. In the published accounts the amount due from Debtors was included from 1908 onwards:-

Table 3.12

McGregor and Balfour Ltd., debtors 1908-1914

		<u>£000's</u>	
1908	5.6	1912	6.2
1909	4.3	1913	6.8
1910	4.6	1914	6.2
1911	3.4		

A very approximate estimate of the annual sales of this Company was calculated by applying a multiplier, based on credit terms, to the Debtors figure. For example, in the case of the Gateside Mills Company the annual accounts showed that on average:-

$$\text{Debtors} \times 10 = \text{Annual sales.}$$

It was appropriate to use the same multiplier of 10 for McGregor and Balfour as their credit terms were identical as agreed within the Association. Therefore their sales in 1911 were probably in the region of £34 thousand (£3.4 x 10) and in 1914 on the same basis £62 thousand; at Gateside, the sales for these years were £13.4 thousand and £29.2 thousand respectively.

The balance sheet of McGregor and Balfour as at 31 August 1914 showed the business to be soundly based, with a major interest in Calcutta where the value of stock was nearly £10 thousand and over 50% greater than that held in Dundee:-

Table 3.13McGregor and Balfour Ltd. Balance sheet as at 31 August 1914

<u>Liabilities</u>	<u>£000'</u>	<u>Assets</u>	
Issued capital	15.9	Cash, Dundee	0.1
Reserve account	1.0	" Calcutta	2.1
Dividend "	3.0	Debtors, Dundee	3.0
Debts, Dundee	4.6	" Calcutta	3.2
" Calcutta	1.8	Stock, Dundee	6.4
Loans	4.6	" Calcutta	9.9
Suspense account	1.0	Horse and cart	0.1
Sundries	0.2	Deposit account	2.0
Balance	4.1	Bank	0.4
		Buildings, plant and machinery	6.6
		" Calcutta	0.4
		Sundries	2.0
<u>Total</u>	<u>36.2</u>	<u>Total</u>	<u>36.2</u>

The few family records which have survived provide some information as to the early days and the later progress of another firm in the industry John Ireland and Sons, Shuttle-makers, Dundee,<sup>13</sup> which became the largest concern in this branch of the trade in Scotland. The founder was born in 1790 and an account book contains details of his transactions in 1815-1818. Handloom shuttles, specially made to suit the weaving of a wide variety of cloths, were the principal products together with other wooden parts of the loom; in the main the shuttles were sold singly, orders for a dozen being very rare. In 1815, he made 265 shuttles and other components to a total value

of £164; occasionally he employed a craftsman at 12 1/2p per day. The founder of the business died in 1867 and was succeeded by his son who kept a private account book from 1886 onwards in which was recorded a detailed statement of his domestic expenditure but a rather more confused version of his business interests. From 1887 to 1894 the shuttle business showed little sign of sustained growth:-

Table 3.14

John Ireland and Sons,  
sales and profits 1887-1904

<u>Year</u>	<u>£000's</u>	<u>Profits</u>
	<u>Sales</u>	
1887	1.1	0.2
1888	1.3	0.3
1889	1.5	0.2
1890	1.4	0.3
1891	1.5	0.2
1892	1.3	0.2
1893	1.2	0.2
1894	1.2	0.3

However, by 1903, sales had climbed to £3.8 thousand yielding a profit of £0.8 thousand and in 1906 a statement for the year pointed to a greater progress suggesting benefits from the growth of Calcutta, from membership of the Association, or from better management, as by this time another generation of the family was engaged in the business.

Table 3.15

John Ireland and Sons, a financial statement for the  
year 1906

		<u>Dr.</u>	<u>CR.</u>
Stock-in-trade	1905	1.9	
"	1906		2.5
Expenditure	1906	3.7	
Income			4.8
Accounts to pay		0.6	
" " receive			0.6
Bank due		0.1	
New property			0.1
<u>Totals</u>		<u>6.3</u>	<u>8.0</u>

.....

By way of comparison, in 1906 the total sales of the Gateside Mills - bobbins and shuttles - amounted to £13.5 thousand with shuttles contributing 30%; thus John Ireland's production was probably as great, having a value of £4.8 thousand including all other items.

Little more is known of this firm in this period but it continued in business throughout two World Wars closing eventually in the 1970's although, by then, jute shuttles played only a small part in its operations.

International and national  
influences

Before leaving this period - the closing decades of the 19th century and the years preceding the outbreak of war in 1914, a brief appraisal of the national and international background, against which the Scottish industry developed, would be appropriate. In the second half of the 19th century Britain's position in the international economy declined from one of dominance in the 50's and 60's; in the 1870's this country produced a third of the world's output of manufactured goods, in the closing years of the century one fifth, and by 1913, one seventh. In the 1880's, this output had been exceeded by the US and, by 1910, Germany also had passed the British production; despite Britain having doubled her output between 1870 and 1913 her position declined measured against the four-fold increase in the world as a whole. Newly industrialised countries having the advantage of improved processes and products, tended to increase their production at a faster rate than Britain; furthermore, they not only made advances in meeting their own industrial requirements but also began to compete with this country in the markets of the non-industrial world.<sup>14</sup>

Another feature of industrialisation was a tendency to impose high tariff barriers in order to protect developing industries - in 1884, as already noted, the Scottish jute mills were complaining of the loss of overseas trade due to tariffs. Other sectors of the economy suffered likewise, as the countries concerned were generally expanding economies and attractive markets for British exporters.

To retaliate by restricting imports would have been of little benefit to Britain, as an important source of her wealth came from providing

the capital with which countries expanded their industrial potential.

The international situation with regard to tariffs and the harmful effect on Britain's trade gave rise to a political campaign at the beginning of the 20th century, led by Joseph Chamberlain, for protection with imperial preference, which proved unsuccessful,

He convinced large sections of the Conservative Party, but he still failed to convert Britain<sup>15</sup>.

This period was also notable for Britain's expansion of her empire which, by 1914, embraced a quarter of the world's population and a quarter of its land mass. One motive was to secure political control over market areas in order to expand the volume of trade; raw material sources were another target but in the view of William Ashworth in A Short History of the International Economy since 1850, (London 1964) there was much in the policy of "economic imperialism" that was:-

merely a mixture of irrational emotions disguised in the garb of economic pretension<sup>16</sup>

On the other hand as pointed out in another study of these decades, it promised relatively safe, protected and exclusive investment opportunities when investment yields in Britain were declining.<sup>17</sup>

Certainly political sovereignty could be a powerful influence in the control of colonial tariffs and regulations relating to the purchase of supplies for development projects. The equipment of the Indian railway system in the 1860's and 1870's was a case in point, - when the British Government stipulated that all equipment was



to be ordered from the home country. Again, on more than one occasion the Lancashire cotton manufacturers enlisted the support, with some success, of the British Government in opposing the increase in the import duty on cotton goods proposed by the Indian administration.<sup>18</sup>

Reverting to the home economy, it is generally accepted that the years from the mid-seventies to the mid-nineties were notable for a broad downward trend in prices (an experience shared by most industrialised countries) which was followed by a rise in prices until 1913. There were also crests and troughs of industrial activity in Britain which have been identified by Professor R.S. Sayers in A History of Economic change in England 1880-1939, (Oxford, 1967),<sup>19</sup> and which when compared with the progress of the Gateside Mills Company, McGregor and Balfour and John Ireland and Sons in the two or three decades before 1914 show that this Scottish trade, in broad terms, suffered the same setbacks and enjoyed the same advances as other sectors of the economy. As noted earlier the Scottish exporters would have been seriously affected by the strikes and unrest on the railways, in the docks and in the merchant marine, which occurred in 1911. One of the major issues was the failure of wages to keep pace with rising prices. In the words of G.D.H. Cole:-

the underlying movement was a mass movement of sheer reaction against the failure of orthodox Trade Unionism or moderate parliamentarianism to secure any improvement in the working-class standard of life.<sup>20</sup>

In the jute trade in Dundee, where wage levels had a marked effect on the bobbin and shuttle industry, there was very little movement in wages from 1907 to 1914 but in 1912 a six-week strike secured a rise of 2 1/2 per cent for preparers and spinners.<sup>21</sup> In the closing decades of the 19th century the falling price levels, already described, had brought benefits to workers in general; between 1880 and 1895-6 money wages had increased by 15 per cent and falling prices had reduced the cost of living by about 20 per cent. At the close of the century prices began to rise but real wages reached their peak in 1899 and then declined so that despite increases in money wages the wage earner was no better off in terms of real income in 1914 than he had been in 1896, hence the dissatisfaction.<sup>22</sup>

(ii) 1914 and four years of conflict

An enterprise, so heavily involved in exporting to the Indian sub-continent and so dependent on a regular supply of imported raw materials, could not fail to be severely jeopardised by a world war of four years duration in which the struggle for supremacy on the high seas was a major element. How did the Gateside Mills and the industry manage to survive these testing, troubled years? There follows an analysis of the financial and commercial aspects of the business for each year of war and comparisons with the immediate pre-war situation. Conveniently the company's accounting period covered the twelve months from December 1 to November 30 each year and therefore 1914 included the last eight months of peace and the four opening months of war and is used in this study as a basis with which to compare the years of conflict.

Since 1912 there had been at Gateside a period of growth; in that year sales reached £18,660, by 1913 £24,989 and in 1914 £29,162. The mill now exported over 97 per cent of its production, principally to the jute mills in Calcutta; in 1914, goods to the value of £26,903 were shipped to that port and a further quantity, worth £1,493, packed for shipment and sent to customers in the UK and thereafter despatched overseas. In many instances the final destination was not made known to the manufacturer for reasons of commercial prudence but in other cases the records show that goods were consigned to Belgium, Mexico, Italy and Russia.<sup>23</sup>

A dominant influence, as already established, was the expansion of the jute industry in India where, by 1914, the number of spindles and looms had more than doubled since the turn of the century. Appendix 2 records the 70 mills which were built by 1914 of these 34 were completed after the turn of the century. The Gateside Mill at the outbreak of the war was supplying 28 mills, twice as many as in 1900.

It is also clear that the pre-war pattern of marketing was one of substantial orders emanating from comparatively few sources. For example in 1914, four mills in the Bird & Co. group, Auckland, Standard, Union and Union South imported from the mill at Gateside these quantities:-

	<u>000's</u>
Rove bobbins	36.7
Spinning bobbins	70.0
Solid spinning bobbins	331.8
Bobbin ends for repairs	70.6
Picking arms	3.3
Planetree rollers	20.3
Miscellaneous	23.8
Shuttles	1.5

All the orders were placed by the London office of the group and the total value of £3,112 from this one customer represented 10.6 per cent of the annual sales.<sup>24</sup>

A matter of some importance in the exporting of these goods was the frequency of opportunities to ship from a convenient port.

Fortunately the port of Glasgow, before the outbreak of war, offered four or five ships each month, loading for Calcutta. Such a plentiful service not only solved the problem of storing the bulky consignments at Gateside<sup>25</sup> but also ensured a regular cash flow as the London offices, in particular, were meticulous in the settlement of their accounts on a monthly basis.<sup>26</sup>

With regard to the significant growth in the sales figure of 1914, it was found on investigation that the rise stemmed from increases both in selling prices and the volume of production. Table 3.16 compares the prices which were current only two years earlier:-

Table 3.16<sup>27</sup>

<u>Selling prices</u>				
<u>the Gateside Mills Company 1912 and 1914</u>				
<u>Product</u>	<u>1912</u>	<u>£'s</u>	<u>1914</u>	<u>% increase</u>
Rove bobbins 10" x 5" per gross	1.68		2.40	42.9
Spinning bobbins 6" x 3 1/2" "	0.65		1.05	61.5
Solid " 4" x 2 3/4" "	0.53		0.73	37.7
Shuttles, standard "	8.64		11.52	33.3
Picking arms, hickory "	3.00		4.65	55.0
Spools "	0.39		0.48	23.1

However, the impact of these increases was lessened by the delay in their application, due to the necessity of completing old contracts agreed at lower prices. For example, rove bobbins were invoiced in the course of the year at prices ranging from £2.10 to £2.40 per gross; likewise the increased price of solid spinning bobbins was not implemented until June 1914.

Coupled with the rise in prices was a substantial increase in production measured by the goods invoiced in that year:-

Table 3.17<sup>28</sup>

<u>Volume of production,</u>				
<u>the Gateside Mills Company 1912 and 1914</u>				
<u>Product</u>	<u>1912</u>	<u>000's</u>	<u>1914</u>	<u>% increase</u>
Rove bobbins	223.0		302.8	35.8
Spinning bobbins	320.8		424.8	32.4
Solid spinning bobbins	1672.3		2346.5	40.3
Shuttles	58.5		73.4	25.5

Over the same two year period wages, expressed in terms of annual cost, increased by 32.1 per cent, (see Table 3.8, and Table 3.19) generally in line with the rise in production which would suggest that more operatives were employed at approximately the same wage rates as there were no entries in the balance sheet relating to the addition of new plant or machinery designed to improve productivity.

From the evidence drawn from the company's records it would appear that the substantial increase in selling prices was prompted by a strong demand from Calcutta - as shown by the production figures - a need to generate higher profits after the low levels earned in 1909-1911, and the effect of rising raw material prices.

Purchases in 1914 included a large intake of persimmon shuttle blocks from the US, 162,438 pieces in all, and representing about 2 1/2 years of full production in the shuttle department. In view of the difficult years which followed, the transaction might be seen as one of great foresight and prudence; more likely, the purchase was a matter of a confident re-stocking reflecting the return of more prosperous times after the lean years. Over 2 million bobbin blocks were imported from Sweden to a value of £5,411 which together with the persimmon intake (£4,520) accounted for 57 per cent of the total cost of purchases for the year.

Another item of note was the large quantity of sawn wood bought from a firm of sawmillers, Jones of Larbert, in addition to the 1957 tons of roundwood required for the Company's own sawmill. The sawn wood amounted in value to £4022, 23.1 per cent of the annual purchases and it would appear from this transaction, that the output of built

and other items made from home-grown timber had already outstripped the capacity of the Gateside sawmill built only six years earlier.<sup>29</sup>

The pattern of purchases in 1914 was therefore:-

Table 3.18

Value of imported and home produced raw materials  
of the Gateside Mills Company in 1914

<u>Imported materials</u>	<u>£000's</u>
Bobbin blocks from Sweden	5.4
Persimmon shuttle blocks from US	4.5
 <u>Home-produced materials</u>	
Roundwood	1.8
Sawn hardwood	4.0
Other components	1.7
<u>Total</u>	<u>17.4</u>

In brief, it was evident from the information gathered that, in terms of the value of sales and the volume of production, the Gateside Mills Company in 1914 was operating at record levels. The Company was now well established in the Calcutta market and, from one aspect, deservedly so, as there is no reference in the books to any complaint relating to faulty goods, a remarkable attainment in view of the substantial quantities produced and the hazards of shipping wooden components to the Far East. Selling prices had recently been revised after the pressures suffered in the lean years

and stocks were at a high level particularly in regard to imported raw materials; as shown in Table 3.19, profitability was at an acceptable figure. Given conditions of peace and continued expansion in Calcutta it would be reasonable to expect the firm to achieve further growth and in due course to improve its plant and machinery from its own financial resources.

The First World War 1914-1918

At first sight the abstract in Table 3.19 drawn from the trading accounts of the years 1914-1918, would appear to be much in line with the pre-war situation just described:-

Table 3.19

Extracts from the trading accounts of the Gateside Mills Company.

1914-1918.

£000's

<u>Sales</u>	<u>1914</u>	<u>1915</u>	<u>1916</u>	<u>1917</u>	<u>1918</u>
	<u>29.2</u>	<u>27.8</u>	<u>31.8</u>	<u>30.9</u>	<u>27.1</u>
Purchases	17.4	16.7	17.3	19.5	16.2
Wages	3.7	4.2	4.3	4.9	5.1
Oncosts	3.7	2.9	3.4	3.1	2.9
Profit	4.4	4.0	6.8	3.4	2.9
<u>Total</u>	<u>29.2</u>	<u>27.8</u>	<u>31.8</u>	<u>30.9</u>	<u>27.1</u>

N.B. The Wages for 1915-1918 include a managers salary.

On analysis however these figures revealed a steep decline in the quantity of goods produced and an equally steep increase in selling prices. The Tables which follow show these trends year by year:-<sup>30</sup>



Table 3.20

Volume of production, the Gateside Mills Company

1914-1918.

000's

<u>Product</u>	<u>1914</u>	<u>1915</u>	<u>1916</u>	<u>1917</u>	<u>1918</u>	<u>% decrease</u> <u>1914:18</u>
Rove bobbins	303	225	176	178	166	45.2
Spinning "	425	414	400	335	232	45.4
Solid " "	2,047	1,483	1,156	416	102	95.0
Bobbin ends	647	988	722	592	581	10.2
Spools	115	74	114	137	95	17.4
Picking arms	18	21	21	20	7	61.1
Shuttles	72	60	74	67	47	34.7

Production of solid spinning bobbins was severely affected due to the cessation of supplies from Sweden in 1917.<sup>31</sup>

Selling prices, on the other hand rose sharply:-

Table 3.21

Selling prices, the Gateside Mills Company

1914-1918

£'s per gross

<u>Product</u>	<u>1914</u>	<u>1915</u>	<u>1916</u>	<u>1917</u>	<u>1918</u>	<u>% increase</u> <u>1914:18</u>
Rove bobbins	2.40	2.40	3.07	4.40	5.10	112.5
Spinning bobbins	1.05	1.05	1.32	1.75	1.88	79.0
Solid " "	0.73	0.85	1.25	1.35	1.50	105.5
Shuttles, standard jute	11.52	12.96	15.84	18.72	27.36	137.5
Picking arms	4.65	7.50	9.00	9.30	11.25	141.9

The prices shown are the highest recorded in the particular year but old contracts were still being completed at lower levels; in 1917 for example, rove bobbins were invoiced at £2.40 per gross the price current in 1914. By 1918, the contribution of certain goods to the total annual sales had changed considerably. Solid spinning bobbins in this context fell from 34.2 per cent in 1914 to 3.7 per cent in 1918 but bobbin ends and shuttles nearly doubled their share:-

Table 3.22

Value of annual sales apportioned to product,  
The Gateside Mills Company, 1914 and 1918.

<u>Product</u>	<u>1914</u>		<u>1918</u>	
	£000's	%	£000's	%
Rove bobbins	4.7	16.1	5.0	18.3
Spinning "	2.7	9.2	2.8	10.3
Solid " "	10.0	34.2	1.0	3.7
Bobbin ends for repairs	2.2	7.5	3.6	13.2
Spools	0.4	1.4	0.5	1.8
Shuttles	5.4	18.5	8.9	32.6
Planetree rollers	2.6	8.9	4.1	15.1
Picking arms	0.5	1.7	0.5	1.8
Miscellaneous	0.4	1.4	0.4	1.5
Waste products	0.3	1.1	0.5	1.8
<u>Total</u>	<u>29.2</u>	<u>100.0</u>	<u>27.3</u>	<u>100.0</u>

In a situation where opportunities to ship were scarce, due to wartime conditions, the mills in Calcutta would tend to give the highest priority to those accessories which were crucial e.g. shuttles.

Bobbin ends would be preferred to bobbins as they were much less space-consuming and their conversion into acceptable bobbins a simple task.<sup>31</sup>

Why did production decline in these war years when the industry was so closely involved with one working to full capacity on military supplies and equipment? The accessory makers in the UK might well have expected boom conditions coupled with increased selling prices to cover the rising costs of raw materials and labour. The fact that the decline in production occurred against a background of higher selling prices suggests that, despite a strong demand from India, an acute shortage of shipping frustrated efforts to meet it. Certainly a wider sales coverage of the UK was undertaken in 1917 and 1918, although the Calcutta market was still the most important outlet for the Company:-

Table 3.23

Market share of the value of annual sales.

The Gateside Mills Company, 1914-1918

	<u>£000's</u>				
	<u>1914</u>	<u>1915</u>	<u>1916</u>	<u>1917</u>	<u>1918</u>
Shipments to Calcutta	26.9	25.0	26.9	24.8	22.4
Other markets overseas	1.5	2.2	4.0	4.0	0.7
UK sales	0.8	0.5	1.5	3.0	4.4
<u>Total annual sales</u>	<u>29.2</u>	<u>27.7</u>	<u>32.4</u>	<u>31.8</u>	<u>27.5</u>

The huge losses suffered by the British merchant marine in the war at sea, particularly in 1917 when the U-boat campaign was at its most intense, obviously had a marked effect on all exporting operations in the UK. In 1914, the highest tonnage of merchant shipping

lost in one month was 88,000 but in 1917 the loss in one month, April, was 545,000 tons.<sup>32</sup> In view of the bulky nature of the products, the stocks of these accessories traditionally held in Calcutta and the existence of a woodworking industry near the Indian mills, the export of bobbins would be of low priority. Shuttles, however, due to the greater skills required in their making and the specialist raw materials used, merited favoured treatment as a shortage would have caused formidable problems. The next schedule lists the number of ships each month on which the Company's goods were loaded and shows the increasing constraints on shipping during the years of conflict:-

Table 3.24

The number of ships bound for Calcutta utilised by  
the Gateside Mills Company, 1914-1918

<u>Month</u>	<u>1914</u>	<u>1915</u>	<u>1916</u>	<u>1917</u>	<u>1918</u>
December 1913	5	3	4	3	2
January	5	2	2	2	1
February	4	3	4	3	1
March	4	2	3	2	1
April	5	2	4	2	1
May	5	1	4	2	1
June	3	4	3	1	1
July	4	3	3	1	1
August	2	3	4	3	1
September	4	4	5	1	1
October	4	3	3	1	1
November	3	2	3	1	1

Seventy-four ships were involved in this service of which nineteen were sunk at some period of the war, but not necessarily carrying goods from Gateside; twenty-nine more were attacked, some more than once, but escaped. Submarines accounted for all the sinkings and attacks. The first loss of the firm's products probably occurred when the City of Winchester, loaded in Glasgow in May 1914, was captured and scuttled east of Aden on the 6th August, 1914. The records also show that the mill was involved in replacing lost cargoes following the sinking of the City of Lucknow, the Maizar and the Kufue in late 1917 and early 1918. As all the consignments despatched during the war were shipped f.o.b. in accordance with the peacetime practice, their fate was the concern of the London offices of the Calcutta Managing Agency who were responsible for the shipping and insuring of the goods and who decided in the event of loss whether to send another consignment.

The other countries to which goods were consigned by the Company during the war are listed in Appendix 9 together with an indication of the accessories involved.

Also of major concern to the Company were the imports of raw materials from the US and Sweden.<sup>33</sup> At first glance, the total annual purchase figures for the years 1914-1918 appear to follow a fairly even pattern:-

<u>£000's</u>				
<u>1914</u>	<u>1915</u>	<u>1916</u>	<u>1917</u>	<u>1918</u>
17.4	16.7	17.3	19.5	16.2 <sup>33</sup>

In fact, the entries conceal a complex situation of rising prices, freight surcharges, war risk insurance and fluctuating exchange rates. Obviously the items principally affected were bobbin blocks from Sweden and persimmon shuttle blocks from the US which, as already noted, accounted for 57 per cent of the value of purchases in 1914. In the case of bobbin blocks, the quantity imported during the war decreased rapidly and ceased early in 1917:-

Table 3.25

Imports of Swedish bobbin blocks by the  
Gateside Mills Company 1914-1918

	<u>Quantity</u>	<u>000's</u>	<u>Value</u>	<u>£000's</u>
1914	2218.6		5.4	
1915	1180.0		4.3	
1916	1142.9		4.5	
1917	280.9		1.0	

Before the outbreak of war bobbin blocks of a standard size from Sweden (6 x 2 7/8") cost Scottish manufacturers £0.35 per gross.

Freight-surcharges and War Risk Insurance raised this figure to £0.41 in 1915 and to £0.50 in 1917. A further influence was the kroner exchange rate which varied, in wartime, from 16.05 to 16.83 to the pound, as compared with the pre-war cost, the price of bobbin blocks had increased in 1917 by 74.3 per cent (£0.61 per gross).

Table 3.26

<u>Wartime freight surcharges and WRI imposed on imports</u>		
<u>of bobbin blocks from Sweden</u>		
	<u>Freight surcharge</u>	<u>War Risk Insurance</u>
	£'s	
<u>1914</u>	0.25 per ton	2% of total value
<u>1915</u> February	0.36 " "	3% " "
" April	0.50 " "	4% " "
" October	0.86 " "	4% " "
<u>1916</u> January	1.25 " "	3% " "
June	1.28 per 1000 kgs	3% " "
" November	1.02 " " "	3% " "
<u>1917</u> January	1.02 " " "	3% " "
" February	1.02 " " "	3% " "

Persimmon blocks for shuttles continued to be imported throughout the war due to the importance of jute products for military uses.

Table 3.27

<u>Persimmon shuttle blocks imported from the US by the</u>		
<u>Gateside Mills Company 1914-1918</u>		
<u>For Sacking shuttles</u>	<u>For Hessian shuttles</u>	<u>For smaller shuttles</u>
	<u>000's</u>	
1914	60.0	84.6
1915	30.2	
1916	15.4	10.2
1917	48.8	44.5
1918	30.7	17.9

Until 1918 the basic cost of a gross of sacking blocks shipped to Liverpool fluctuated around £4.1, thereafter the price rose to £5.6. Here again however, extra freight charges and War Risk Insurance added significantly to the cost finally borne by the consumer. For example in 1916 these charges added £49.26 to a consignment valued at £128.93. In the following year freight and WRI charges together exceeded the basic value of a shipment and, by 1918, the total figure for a gross of sacking blocks reached £14.1. From May 1916 to September 1918 freight rates for shipment from the US of this material moved from 1.28 dollars to 7.90 dollars per 100 pounds weight of cargo. Hickory for picking arms was also imported until January 1917 by which time the 1914 cost of £2.30 per gross had risen to £3.95 due again to the higher freight and insurance charges.

As to the other raw materials, home-grown beech was required for built bobbins, bobbin ends for repairs and spools, and planetree for rollers. These hardwoods, as explained earlier, were obtained from woodlands generally in the east of Scotland and taken into the mill in the form of boles and limbs. In addition sawn wood, planks and squares, were purchased from sawmills, Table 3.28.



Table 3.28.

Purchases by the Gateside Mills Company  
of home-grown hardwood mainly beech, in log form  
compared with the purchases of sawn material 1914-1918

	<u>1914-1918</u>	<u>Cost</u>	<u>Average cost per ton</u>
		<u>£'s</u>	<u>£'s</u>
1914	1957 tons in log form	1826	0.93
1915	1778 " " " "	1914	1.08
1916	2411 " " " "	3265	1.35
1917	2062 " " " "	2887	1.40
1918	1279 " " " "	2070	1.62

Sawn wood in the form of planks and squares

	<u>£'s</u>
1914	4022
1915	4155
1916	4350
1917	2135
1918	3494

Within this period the price of planks rose by 55 per cent and squares by 86 per cent. It would appear from these figures that the Gateside Mills and the industry did not suffer any governmental constraint on their consumption of hardwood until, perhaps, in 1918 when the tonnage intake was much reduced; on the other hand, production in this year was also lower than in previous years.

Finally two items of metal were also examined in this analysis of raw material costs, malleable iron tips which were inserted into the ends of shuttles and the strip steel used for making shuttle covers. Both were the subject of regular purchasing and were specially produced for the trade. In the case of tips the price per cwt increased steadily year by year from £1.5 in 1914 to £3.0 in 1918; strip steel followed the same pattern rising from £1.09 per cwt in 1914 to £2.00 in 1917, the last wartime purchase.

Oncosts were reviewed in order to establish their effect on selling prices; as was shown in Table 3.19 they were found to have kept at a level of 10.2-11.2 per cent of the annual sales figure throughout the war and, in 1918 particularly, reflected the lower level production in that year. Carriage and freight combined amounted to only £417 as opposed to £1326 in 1914; commissions likewise fell to £14 from £142 despite the general increase in prices which occurred in the war.<sup>34</sup>

Other points to emerge touch on various aspects of the business; the first entry relating to national Health Insurance appeared in 1914 - £42 as against a wage bill of £3749; in 1915 and 1916 the figure fell to £34 indicating some reduction in the labour force, thereafter the NHI contribution in the accounts was merged with the general insurance entry and was no longer identifiable.

Bad debts in these years were negligible, £1 in 1914 and £3 in 1917; overdraft interest was reduced from £128 in 1914 to £21 in 1915 and thereafter none was incurred.

The balance sheets show that little investment in plant, machinery or buildings was made during these years, no doubt due to the decline

in trade and general uncertainty. There was, however, a purchase of 1.94 acres of land from the North British Railway Company, at a cost of £233 for a private siding to serve the mill, and a motor car, in 1917, which cost £168. Table 3.29 compares the balance sheets for the five years 1914 - 1918 and shows, in particular, the changes in the partners' interests; in 1915 the elder of the two partners died and his younger brother, who had joined the firm in 1908 and who had become the junior partner, thereafter took over the sole management of the firm. At the time of the partner's death the profits were shared on the basis of 2/3rds to the senior and 1/3rd to the junior but according to the partnership deed in the event of a death the survivor would receive the larger share and the remaining 1/3rd would be paid to the family of the deceased.<sup>35</sup>

The assets included in 1914 an entry "Goodwill" for the sum of £1644, a practice which had begun in 1907; the figure was deleted in 1915 and never again included, probably because the new management would view such an addition to the assets as of dubious value.

Also to be noted as an item of wartime control by the Government was the provision for Excess Profits Duty.<sup>36</sup>

Table 3.29

Balance sheets of the Gateside Mills Company 1914-1918

	<u>£000's</u>				
<u>Liabilities</u>	<u>1914</u>	<u>1915</u>	<u>1916</u>	<u>1917</u>	<u>1918</u>
Trade creditors	2.2	1.9	1.5	2.1	1.6
Sundry "	0.3	0.5	0.5	0.7	0.9
Bills payable	4.6	0.7	-	-	-
Bank of Scotland	2.0	-	-	-	-
Provision for E.P.D.	-	-	2.8	0.5	0.1
Capital and advances a/c					
P.M.G. Leburn (died 1915)	5.7				
G.C. Leburn	2.5	4.2	5.5	6.9	7.6
P.M.G.L. executry		4.2	4.2	4.3	4.2
	<u>17.3</u>	<u>11.5</u>	<u>14.5</u>	<u>14.5</u>	<u>14.4</u>
 <u>Assets</u>					
Buildings, plant, machinery	6.0	5.9	6.0	5.9	5.8
Goodwill	2.6	-	-	-	-
Stock	5.1	2.3	2.9	3.0	4.9
Motor car				0.2	0.1
Book debts	3.4	2.9	3.6	2.2	2.0
Bank of Scotland		0.3	2.0	2.7	1.6
Cash on hand	0.2	0.1	-	0.5	-
	<u>17.3</u>	<u>11.5</u>	<u>14.5</u>	<u>14.5</u>	<u>14.4</u>

So how did this Company, which in 1914 exported 97 per cent of its production and imported 57 per cent of its raw materials, manage to survive the First World War? Evidence drawn from the records of the Company would suggest that it was fortunate to be able to export goods to Calcutta throughout the war although the volume shipped was much reduced; nevertheless in terms of value the Indian trade never fell below 78 per cent of sales in any one year. Furthermore a part of the shortfall was made good by a greater involvement in the UK market in 1917 and 1918. It is also clear that the increases in selling prices applied during the war amply compensated for rises in raw material and labour costs.<sup>37</sup>

As to the availability of imported raw materials, bobbin blocks from Sweden continued to be delivered until the early months of 1917; persimmon shuttle blocks from the US were shipped throughout although by 1918 the cost, due to shipping risks, was becoming prohibitive.

As shown in Table 3.20 the continuation of supplies from overseas fortunately delayed the impact of these wartime constraints until 1917 and 1918 whereas a complete cessation at the outbreak of hostilities might have been difficult to survive.

Substitute materials also played their part; home-grown beech was used for shuttles instead of persimmon and even in 1919 the proportion of beech shuttles was nearly 40 per cent of the total produced. Ash was useful as a substitute for hickory in the manufacture of picking arms. Again, in connection with raw materials, the considerable stocks held by the Company at the outbreak of war were doubtless a great boon, not only in matters of production, but financially too, in that prices of such items rose steeply.

The change in the pattern of purchasing, due to the war, was considerable; in 1918 the intake of roundwood and sawnwood from local sources amounted to 70 per cent in value of annual purchases whereas in 1914 the equivalent figure was 33 per cent, persimmon and bobbin blocks accounting for 57%.

The effect of the critical shortage of shipping in 1917 and 1918 on the exporting performance of the Company was difficult to define. Certainly by 1917 practically all shipping movements were at the direction of the Government and focused on military needs and the importing of foodstuffs. Demand from Calcutta may also have eased for a variety of reasons including the evergreen problem of over-production or an increased involvement with the local production of bobbins. Certainly McGregor and Balfour suffered a setback in 1918, as shown overleaf, and their large stocks in Calcutta in this year would suggest a decline in demand.

Despite all the difficulties, the Gateside Mills Company remained profitable in cash terms, from 1914 to 1918, requiring to make a provision of £2.8 thousand for Excess Profits Duty in 1916 but of considerably smaller sums thereafter.

All the firms in the industry survived the war and, in fact, McGregor and Balfour fared far better than the Gateside Mills Company.

The Debtors figures in the balance sheets of the Dundee company give an indication of the annual value of sales assuming a multiplier of 10.<sup>38</sup>

Table 3.30Debtors and estimated salesMcGregor and Balfour Ltd., 1914-1918

<u>Year</u>	<u>Debtors</u>	<u>£000's</u>	<u>Estimates Sales</u>
1914	6.2		62.0
1915	9.9		99.0
1916	10.5		105.0
1917	15.2		152.0
1918	10.2		102.0

The balance sheet for 1918, as at 31 August, shows a considerable advance in cash terms as compared with 1914 and a firm financial base with investments of £14.9 thousand and a total stock of £30.0 thousand in Dundee and Calcutta.

Table 3.31McGregor and Balfour. Ltd.Balance sheet August 31 1918£000's

<u>Liabilities</u>		<u>Assets</u>	
Issued capital	15.9	Cash, Dundee	3.5
Dividend Equalisation		" Calcutta	7.1
Account	6.0	Deposit account	4.0
Profit and loss account	0.6	Buildings plant and	
Reserves	4.1	machinery	4.9
Workmens insurance	1.0	Investments	14.9
Debts, Dundee	3.5	Debtors, Dundee	2.9
" Calcutta	3.9	" Calcutta	7.3
Loan, Dundee	7.3	Property account	0.3
" "	4.5	Stock Dundee	9.9
E.P.D. provision	19.4	" Calcutta	20.1
Accruals	0.1	Sundries	1.4
Repairs	0.1		
Balance	9.9		
<u>Total</u>	<u>76.3</u>		<u>76.3</u>

The rôle of the jute manufacturers in Calcutta in the First World War has already been touched upon, their full capacity being utilised for the greater part of the period on military supplies. Dundee was likewise under pressure and soon became subject to Government intervention following a desperate need for sandbags in 1915.



All second-hand bags were requisitioned together with the output of the mills at prices fixed by the War Office. Such direct control soon required to be extended to the spinners and eventually within eighteen months to the buying of raw jute and having all the manufacturing processes paid for on a commission basis; a classic example of a modest degree of intervention by the Government demanding a deeper and deeper involvement, unforeseen at the outset and unwelcome in the event.<sup>39</sup>

With regard to other outlets, the war denied the bobbin and shuttle making trade many of the overseas markets which the industry had served since the late 19th century. White, Child & Beney, a firm based in London, was particularly active in this field operating as agents and merchants - principally in Europe - for the British textile machinery and accessory makers. The firm had prospered in that it made a practice of negotiating, quoting and corresponding in the customer's own language and currency, a considerate way of conducting business but uncommon among British exporters. The war was particularly damaging to this firm in that all its assets in Russia, for example, were seized without compensation in the Revolution of 1917. Although insurance was carried to cover the loss, which amounted to £50,000, the Court of Appeal decided that the de facto recognition by the British Government of the Soviet Russian Government was tantamount to legalising all confiscating actions performed by the latter.<sup>40</sup> Other firms in the Scottish industry also suffered losses in Russia especially John Ireland, the Dundee shuttle makers.

The trade with Germany, interrupted by the war, was settled more satisfactorily, all debt outstanding being discharged through the Anglo-German clearing banks after hostilities were ended.<sup>41</sup>

(iii) Post-war boom and depression

After the Armistice in 1918, the demobilisation of the armed forces in the UK and the closing of factories producing munitions and other war materials would, it was feared, bring depression and widespread unemployment. In the event, however, this gloomy forecast was proved wrong because a short post-war re-stocking boom generated a time of full employment, due, in part, to the large number of women who gave up their wartime work. This brief boom was followed by a slump, the effect of which can be gauged from the level of unemployment which resulted; by 1921 the percentage of the working population without jobs was 18 per cent, a figure which had reached 23.4 per cent during the coal strike in May of that year. The exporting industries suffered particularly, the international markets having changed considerably, compared with the pre-war days, as nations pursued policies of self-sufficiency and protectionism.<sup>42</sup>

In an effort to stimulate international trading, the British government embarked upon a policy of deflation in preparation for a return to the gold standard, as it was widely held that Britain's success in pre-war years had been due to free trade and an international gold standard.<sup>43</sup> Commodity prices began, in fact, to fall in the spring of 1920; the Economist Index of Wholesale Prices based on a level of 100 in 1914 showed the extent and speed of the slide; in 1920 (March) the index stood at 323 and in the same month, a year later, at 197 and by December 1921 at 168. As prices fell the exchange value of the dollar moved from 3.22 to the pound in February 1920 to 4.69 in February 1923<sup>44</sup> and, in 1925, Britain returned to the gold standard at a rate of 4.86 dollars to the pound.<sup>45</sup> Whether

or not this move was wise has stimulated a great deal of discussion but certainly one aspect is commonly agreed; the rate of exchange of 4.86 dollars to the pound was over-valued and aggravated a situation where Britain's exports were already becoming less competitive.<sup>46</sup> Such was the effect on coal prices, for example, that labour troubles in the mines followed, leading to the General Strike in 1926.<sup>47</sup>

Furthermore, in order to preserve the gold reserve, it was difficult for the Bank of England to initiate expansionist and credit policies which industrialists claimed were necessary to revive trade.<sup>48</sup> A worldwide slump, which began in 1929, brought a host of international financial difficulties in its wake forcing Britain to abandon the gold standard in 1931.<sup>49</sup> In a slump of this severity Britain's export trade could not escape a sharp setback; further problems arose from the level of tariffs, markedly higher in 1931 than in 1920's, and the use of exchange controls and quotas. The important markets of India, Australia and Argentina were hedged by tariffs protecting their domestic industries;<sup>50</sup> since 1921 India and the Dominions had controlled their own tariff levels and only in the smaller colonies could Britain exercise her powers over tariffs or purchase policies. An Imperial Conference in Ottawa in 1932 sought to extend imperial preference and to develop the empire markets for British exports but met with only limited success. From the viewpoint of India, imperial preference had been of little interest while Britain remained a free trade country, but should this policy be abandoned, then India would be anxious to partake in any new preferential system in order to protect her important British market. Consequently an agreement was drawn up in Ottawa giving India admission to the British market

either free or at preferential rates in return for which Britain was granted preferential rates in India for a substantial number of manufactured goods.<sup>51</sup>

Following Ottawa, Britain pursued a policy of negotiating commercial contracts with individual countries, in 1933-34 with South America and the Scandinavian states and in 1936-8 with the US. However all these efforts failed to raise the volume of Britain's export trade even to the 1929 level<sup>52</sup> and in 1938 Britain supplied less of the reduced world trade in manufactured goods and less of the total imports of the Empire than in 1929.<sup>53</sup> For Britain, empire markets could never suffice whether or not her goods paid lower duties because the Dominions and India were determined to industrialise.<sup>54</sup>

Unemployment was a persistent problem after the collapse of the post-war boom in 1920. Prices fell sharply, orders were cancelled and wage-cutting became general, the increases of the war being reduced by about 60 per cent. Unemployment reached 22.5 per cent in 1932 falling gradually to 10.8 per cent by 1937 (Ministry of Labour figures) until a brief recession in the following year increased this figure.<sup>55</sup> One of the contributory factors was the reduced volume of exports which in 1937 was only 77 per cent of the 1929 level and 67 per cent of the volume achieved in 1913.<sup>56</sup>

Although, between the wars, the staple industries of Britain were in dire straits in terms of exports, the country benefited to a modest degree from the performance of the new industries, car manufacture, aircraft production electrical goods and accessories among others which in turn, were favoured by a decline in the cost of living.

In 1929 these new industries contributed 8.2 per cent to total export receipts as compared with 42 per cent from the staple trades. By 1937 the export value from the new industries had grown to 21 per cent and the staples had dropped to 37 per cent.<sup>57</sup>

The wage-cutting already mentioned reduced wage rates from a peak of 275 in the winter of 1920-1 (July 1914 = 100) to 173 in the winter of 1923-4.<sup>58</sup> Wage rates remained almost unchanged from 1924-1929 but fell, by 1933, to a level of 6 per cent below 1924 due to the slump. However the cost of living in this period also declined by just over 20 per cent; by 1937, average earnings had doubled since 1914 but the cost of living had risen by only 55 per cent to the benefit, particularly, of those in regular employment.<sup>59</sup>

In Scotland, the industrial scene in these inter-war years was even more depressing than conditions south of the border. Before the First World War, Scotland led the world in shipbuilding, marine engineering, the woollen trade - particularly hosiery and tweeds - and jute manufacturing. At that time her industrial activity and equipment compared very favourably with that of England but, of necessity, much of her production was for export and therefore the economy was vulnerable to a slackening in world trade. During the war years, however her industry was, by Government direction, focused on the production of armaments. The heavy industries were developed to this end and to an extent which upset the economic balance of the country and gave rise to grave problems when hostilities ended.<sup>60</sup> After a short-lived post-war boom in 1919-1920 Scotland also faced an international trading scene markedly different from the post-war

years. Exporting, crucial to the economy, was now hampered by a move towards self-sufficiency in many countries and the widespread use of tariff barriers and exchange controls. Consequently, in these years between the wars Scotland's basic industries declined; measured in terms of employment, shipbuilding showed a reduction of 18 per cent between 1925 and 1938; the coal industry employed 28 per cent less workers in the same period, iron and steel 6 per cent and engineering 1 per cent,<sup>61</sup> although, particularly in coal mining, mechanisation played some part in these reductions. In the jute industry the number of insured workers in employment dropped from 35,117 in 1929 to 19,853 in 1938, unemployment in that sector standing at 24 per cent in October of that year.<sup>62</sup>

The world slump in 1929-1932 intensified the country's problems. By 1932, in general engineering, 42 per cent of the insured workers were without jobs as against 29 per cent for the UK. Although there was some improvement in this sector after 1932, the 1929 level of employment had still not been reached in 1939.<sup>63</sup> In marine engineering unemployment in the slump (1932) was 64.8 per cent as compared with 55.1 per cent for the UK; in ship-building, unemployment reached almost 70 per cent in 1932, the low level of activity affecting the scores of firms which specialised in the equipping and furnishing the wide variety of ships built.<sup>64</sup>

Much of the employment was long term, in Scotland in 1938 20,909 had been without work for 3 years or more and the number of men, out of work for 12 months or more, was approximately 25 per cent of the total male unemployed, compared with 16.6 per cent in the UK as a whole.<sup>65</sup> The high level of unemployment caused great poverty;

20 per cent of adults in Scotland had an income of less than 10 shillings a week, twice the percentage in England and 23 per cent of the population lived in overcrowded conditions, whereas in England the equivalent figure was 4 per cent.<sup>66</sup> For the more fortunate, between 1924 and 1936 an average of 126,400 non-subsidised houses were built in England and Wales, which generated a degree of domestic consumption - as compared with 3100 in Scotland.<sup>67</sup>

Reverting to the heavy industries, in 1939 for the first time tonnage ordered abroad by the UK was in excess of British tonnage built on foreign account.<sup>68</sup> The loss of a significant part of their work for the Royal Navy following the Naval Disarmament agreements was a further blow to the Scottish yards.<sup>69</sup> Another major obstacle, in the pursuit of shipbuilding contracts was the subsidising by foreign governments of their own industries, a practice which the British Government declined to adopt.<sup>70</sup>

The post-war slump coincided with the exhaustion of certain coalfields in Scotland and the opening of new fields was delayed due to a lack of housing in the appropriate areas; this factor coupled with the trade depression reduced the workforce dramatically<sup>71</sup>. Mechanisation in this industry and the other heavy sectors probably had a more pronounced effect in Scotland, due to its greater share of these trades than in England. Fortunately, the Scottish engineering firms continued to invest in their plants during the inter-war year despite the unpromising economic outlook, and kept abreast of modern developments; they were therefore able to provide the vital requisites for the demands of a wartime economy in 1939-1945.<sup>72</sup>

By the late 1930's, the Government and other bodies interested in the Scottish economy came to the conclusion that the country needed new industries to restore the economic balance.<sup>73</sup> The traditional heavy industries appeared to have little potential for growth (except in war production) and therefore the principal effort should be directed towards increasing the development of new enterprises which catered for the domestic market and which would be less affected by cyclical depressions in the export field.<sup>74</sup> Scotland's record in this direction since the First World War, had been poor despite having suitable labour, cheaper power, cheap sites and a strong industrial tradition. In England, several industrial estates had been developed (Welwyn, Letchworth, Slough etc.) whereas only one in Scotland had been started in the late 30's at North Hillington in Renfrewshire, apart from some minor sites in Lanarkshire.<sup>75</sup> The disparity between the two countries in this aspect of their economies is apparent in the number of new factories started; in 1932-1936 out of 2688 new factories in the UK only 102 were in Scotland.<sup>76</sup> The Table 3.3.2. showing the contribution of the new and staple industries in the two economies in 1924, 1930 and 1935 and the comment which follows are quoted from Richard Saville's The Economic Development of Modern Scotland 1950-1980 (Edinburgh 1985).



Table 3.32<sup>77</sup>

The contribution of the new and staple industries to the  
value of the total net output in Scotland and the UK

		<u>1924</u>	<u>1930</u>	<u>1935</u>
(Figures expressed as percentages of net output of all Census of Production Figures)				
<u>Scotland</u>	'New' industries	8.3	9.1	11.0
	Staple "	43.2	40.9	36.8
<u>U.K.</u>	'New' industries	14.1	15.9	21.0
	Staple "	37.0	29.6	27.8

Source: Neil K. Buxton, 'Economic Growth in Scotland between the Wars: The Rôle of Production Structure and Rationalisation,' Economic History Review, 2nd series, Vol. 33, no. 4 (1980) Table 6, p.549.

the main features of the Scottish economy between the wars were the heavier commitment to industries that were stagnating or in decline ... [and] at the same time, an inability to secure a share in the 'new' growth industries of the 1930's . . . in 1924 the 'new' industries in Scotland were conspicuous largely by their absence. Subsequently their development was so slow that over a decade later they were still less important in the Scottish economy than they had been in the UK in 1924.<sup>78</sup>

Later, in 1938 the Scottish Economic Committee reported the sad fact that Scotland produced no private cars, no significant output of cycles, and had one aircraft factory, one commercial vehicle company and some coach builders. Only 15 per cent of the workers employed in engineering in Scotland were in the sector relating to motor vehicles, electrical goods producers and the 'new' industries, whereas in the UK as a whole 40 per cent of the engineers were involved in these undertakings.<sup>79</sup>

The Scottish Economic Committee concluded that increased intervention by the Government was fundamental to Scotland's economic recovery. The Committee recommended that a State Planning Authority should draw up plans for the layout and development of the country in order to avoid the existing haphazard approach of the burgh and city areas. The zoning of industry and the creation of satellite towns together with central control over public services and transport facilities were also considered to be necessary. Although such a degree of state intervention was perhaps not in accord with the political attitudes of the late 1930's nevertheless it would appear that the Committee's Report provided valuable guidance in the developments undertaken in the decades following the Second World War.

Referring to the engineering sector the Economic Committee also concluded:-

In Scotland the total employment in the five groups of industry concerned in 1937, was about 2% above the 1929 level, whereas the expansion in the United Kingdom during that period was over 21%. Again, the contraction in employment in the recent period

of general depression was only 12% in the United Kingdom, as against 41% in Scotland. Scotland, therefore, was not only more severely hit by the slump, but also manifested a slower rate of general recovery."<sup>81</sup>

Scotland's poor economic record for the greater part of the 1919-39 period cast dark shadows over the lives of many of her people. In Professor T.C. Smout's A Century of the Scottish People 1839-1950 (London, 1986), p.115 a quotation from the publications of the Carnegie United Kingdom Trust describes how the workless:-

acquired the art of patience. They had longer and more frequently recurring experiences of unemployment. With drooping shoulders and slouching feet they moved as a defeated and dispirited army. They gave their names, signed the necessary forms and shuffled out of the Exchange. This, twice a week, was the only disciplined routine with which they had to comply."<sup>82</sup>

and again Dr. Richard Saville in The Economic Development of Modern Scotland 1950-1980 (Edinburgh, 1985),

It is difficult for a modern generation to envisage the poverty and hopelessness of parts of Scotland in the inter-war years."<sup>83</sup>

1919-1931

Following this brief survey of the international and national trading situation in the inter-war period there remains the question of the effect of this dismal background on the Scottish bobbin and shuttle industry. In order to provide an answer the accounts of the Gateside Mills were examined first for the years 1919-1931 when a post-war boom was followed by a slump and a worldwide depression beginning in 1929. Thereafter the period 1932-1938 is analysed with the same objective and comparisons made with the financial records of McGregor and Balfour.

A general picture of the peaks and troughs of the post-war years can be gained from the extracts drawn from the trading accounts in the following table:-

Table 3.33

Extracts from the trading accounts of the  
Gateside Mills Company 1919-1931

	<u>£000's</u>						
<u>Year</u>	<u>1919</u>	<u>1920</u>	<u>1921</u>	<u>1922</u>	<u>1923</u>	<u>1924</u>	<u>1925</u>
<u>Sales</u>	<u>33.3</u>	<u>43.3</u>	<u>70.2</u>	<u>34.3</u>	<u>27.0</u>	<u>34.2</u>	<u>50.4</u>
Purchases	19.9	25.7	41.3	20.1	13.9	19.5	33.0
Wages and salaries	7.2	9.3	12.5	6.9	6.7	7.2	8.9
Oncosts	3.6	5.5	7.6	3.6	3.8	4.1	4.5
Profits	2.6	2.8	8.8	3.7	2.6	3.4	4.0
<u>Total</u>	<u>33.3</u>	<u>43.3</u>	<u>70.2</u>	<u>34.3</u>	<u>27.0</u>	<u>34.2</u>	<u>50.4</u>
<u>Year</u>	<u>1926</u>	<u>1927</u>	<u>1928</u>	<u>1929</u>	<u>1930</u>	<u>1931</u>	
<u>Sales</u>	<u>38.7</u>	<u>36.4</u>	<u>38.5</u>	<u>34.9</u>	<u>32.2</u>	<u>11.3</u>	
Purchases	24.1	19.1	21.9	20.0	17.4	4.5	
Wages and salaries	9.7	8.4	9.1	8.6	8.2	4.6	
Oncosts	3.9	5.1	4.6	4.4	4.1	3.2	
Profits (loss)	1.0	3.8	2.9	1.9	2.5	(1.0)	
<u>Total</u>	<u>38.7</u>	<u>36.4</u>	<u>38.5</u>	<u>34.9</u>	<u>32.2</u>	<u>11.3</u>	

Certain years were selected for detailed analysis; 1919 was chosen to clarify the immediate post-war conditions, 1921 in order to investigate the circumstances whereby the value of sales doubled within two years, 1925 to examine this second peak and finally 1931 to discover how the Company survived the crippling reduction in sales.

Table 3.34The Gateside Mills Company.Exports to Calcutta and other overseas marketsas a percentage of annual sales in1914, 1919, 1921, 1925 and 1931

<u>Year</u>	<u>1914</u>	<u>1919</u>	<u>1921</u>	<u>1925</u>	<u>1931</u>
Shipments to Calcutta	92.1	76.8	88.6	64.3	70.8
Other overseas markets	5.1	13.3	4.9	19.2	6.1
UK sales	2.8	9.9	6.5	16.5	23.1
	100.0	100.0	100.0	100.0	100.0

The year 1919 was notable for a demand from other overseas markets; goods were shipped to Italy, France, Holland, Sweden and Russia.

The firm of White, Child and Beney, was the source of much of this business being particularly active in 1925, shipping substantial quantities of spools to the US.<sup>84</sup> Home sales, figured more prominently in 1925 and included sales of raw material to other firms in the trade, evidence of the pressures of a busy period. In 1931, a lack of demand from Calcutta obviously stimulated a more active interest in the home market and modest orders were obtained from the linen industry in Northern Ireland. Reverting to the Indian trade, it was found that virtually all the mills, 36 in number, who were supplied by the Company in 1921 figured in the sales recorded for 1931 but on a much lower scale indicative of the widespread reduction in activity in that market, but also demonstrating the close and continuing relationship between supplier and customer common in this business. A further insight into this aspect is provided in the correspondence

between the Company and the London office of Bird and Company, a longstanding and valued customer, during the years of severe depression. Bird and Company controlled ten mills in Calcutta at this time and therefore their annual purchases of bobbins and shuttles were substantial unless trade was at a very low ebb.

In view of the necessity to order supplies of bobbin blocks and persimmon shuttle blocks far ahead of demand, the manufacturers were anxious to persuade Bird and Company to contract for all the accessories they would need in a year, shipped to an agreed delivery schedule. Although prices were arranged at the outset a fall during the course of a contract could cause difficulties for the Agency offices in London, as they were expected by their principals in Calcutta to buy at the most competitive levels; the correspondence reveals more than one occasion when the Gateside Mills Company Ltd. in these circumstances, volunteered reductions in the agreed prices to shield the London offices from criticism. Eventually the contracts included an inequitable clause whereby any reduction in the market price was to be passed to the customer as and when the goods were invoiced, whereas no increase was to be applied during the course of the contract, which in fact, might far extend beyond the year in question.

Competition during these years was particularly fierce; in December 1927 Bird and Company wrote:-

"Although Calcutta have indicated that their requirements are to be placed with Scotch makers for next year . . . you may take it as an absolute certainty that if because the business has come back to this side prices are going to be raised, then

we think Calcutta will not hesitate to again place their orders with Finland as it must not be forgotten that we can buy 4" bobbins delivered c.i.f. Calcutta at the price of Scotch bobbins delivered f.o.b. Glasgow".

The importance of the Calcutta view of events is made plain in another comment in the same month:-

on scrutinising the orders recently placed against our last indent they note a preponderance of goods have been placed with your goodselves. They further state that you turn out quite satisfactory articles but they prefer that their requirements should be spread over the Scotch Bobbin makers of repute.

However, a substantial contract was placed for the year 1928 and another in October 1928 (overleaf) to cover the following year; at this time the Gateside Mills Company Ltd. reviewed the contract nearing completion. Most of the items had been supplied at the lowest price available in the open market but rove bobbins were an exception and the Company wrote:-

you will note that we have reduced the contract prices for 10" x 5" bobbins and Ends for 10" x 5" bobbins. Our reason is that owing to our trade being so bad at this time suppliers are quoting the minimum list price which is 77/6 (£3.87) per gross and 19/- (£0.95) per gross respectively and we would not like the fact of your having placed a contract to reflect upon either your buying or our manufacture.



HIS ORDER IS FOR ACCOUNT OF

**ORDER.**

No. C.1956. Ref. RR/HL.

Telegraphic Address:—"POPINJAY, STOCK, LONDON."

FROM

Telephone: AVENUE { 5550.  
5551.  
5552.

**BIRD & Co.,**

PARTNERS: { THE ESTATE OF LORD CABLE.  
H. P. BENNETT.  
B. A. WHITE.

7, GRACECHURCH STREET,  
LONDON, E.C.3.

London, 23rd. October 1928.

Messrs. Gateside Mills Co. Ltd.,

Gateside,

FIFESHIRE.

Calcutta Order No.

3000/4000 gross	-	4" Bobbins.	@	21/6d. per gross.
750 gross	-	5" Bobbins.	@	29/6d. per gross.
		5.1/2" & 6" Bobbins.	@	30/-d. per gross.
1000 gross	-	10" Rove Bobbins.	@	85/-d. per gross.
600 gross	-	10" Rove Bobbin Ends.	@	20/-d. per gross.
400 gross	-	Planetree Rollers 7/9".	@	73/9d. per gross.
4000	-	Persimmon Shuttles	@	3/9d. each,
		Sacking.	@	4/-d. each.

To be of our usual standard sizes.

Delivery to be taken over 1929, and if necessary we are to have the option of completing in the following year,

Prices as above stated, nett.

Packed and delivered f.o.b. Glasgow, Clyde dues paid.

Terms of Payment:—

**Shipment**

The Packing Cases, etc., used must be specially strong and in every way suitable for export to India by railway transit thereafter. Also all Shipping marks must be clearly stencilled. Any damage or losses incurred through failure on your part to comply with these instructions will be for your account.

All packages are to contain a label or impression giving the Shipping mark, Numbers and Port mark as shown on the outside of the package.

Invoice in Sextuplicate with statement showing Cash Discount. Marks, Nos., Weights, and Measurements to be given on Invoice.

Merchandise Marks Act to be observed.

MARK AND NOS.

To be advised later.

Should any details not be found correct, kindly inform us in your acknowledgment, which must be sent by return of post.

per pro. BIRD & CO.

*A. K. Kallista*

Trade worsened and in October 1930 the Gateside Mills Co. Ltd. wrote to Bird and Company:-

Bobbins and Shuttles for 1931

Under present conditions we feel you may not desire to contract for next year.

Our intention of course in getting you to contract was to benefit you as well as ourselves and we notice your consumption has steadily fallen since you started contracting in 1926.

We would be willing if you thought of putting on certain quantities to quote you now, or to charge the prices ruling at the time of delivery. In any case we must buy our material now for 4" solid bobbins for 1931 and we intend covering you for 4,000 gross without any obligation to order at all.

The reply was guarded:-

In view of the present situation it would be very unwise to definitely commit ourselves to any extent over the next year, but would like to thank you for bringing the question forward. We note the steps you intend to take in connection with supplies for next year which we very much appreciate and will certainly do everything possible in this connection. Needless to say although we are not placing a definite contract we intend to do all we can to continue the pleasant relationship which has existed.

The next contract was placed in November 1931 (overleaf) to cover the following year but the prices entered show a considerable reduction on those current in 1928:-





BIRD & CO. (LONDON) LTD.

to Gateside Mills Co.Ltd.

PAGE NO. 2.

DATE 3/11/31.

The foregoing material to be supplied during 1932  
as required by us.

We to have the option of increasing any or all of  
the above quantities (except Planetree Rollers) by  
50%, if the increase is specified before the end  
of February 1932.

Any reduction in prices to be passed on to us as  
and when the goods are invoiced. No increase to  
be charged.

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Table 3.35Contract prices agreed between the Gateside Mills Co. Ltd.and Bird and Company 1928 and 1932

<u>Product</u>	<u>£'s</u>	
	<u>1928</u>	<u>1932</u>
Rove bobbins 10"x 5"      per gross	4.25	3.88
Spinning "    5½"      "    "	1.50	1.45
"    "    5"      "    "	1.48	1.43
Solid spinning bobbins      "    "	1.07	0.95
Ends for spinning bobbins    "    "	1.00	0.95
Persimmon shuttles each	0.20	0.14
Planetree rollers            per gross	3.19	2.48

Another contract was sought for 1933 but the response was discouraging:-

We have gone very carefully into this matter and decided that taking all things into consideration our Calcutta friends will not approve of our entering any contract for next year. We can assure you nevertheless that we will do everything possible to keep your name on our books to as great an extent as previously

A promise that was kept. In March 1933 the Gateside Mills Co. Ltd. wrote:-

The bobbin and shuttle trade is in a very precarious condition and practically every mill in Scotland the turnover for the last 2½ years has been about 25% of a normal year and the loss per year naturally very considerable.

But the London offices of the Managing Agents were not without problems of their own; the purchasing policy of their masters in Calcutta was unambiguous, in the case of bobbins and shuttles - the highest quality at the lowest price and a strict adherence to the agreed delivery date. As to quality, should the manufacturer fail to meet the required standard, he was likely to be listed as an unsatisfactory supplier and thus lose the custom of not one mill but all within the group. Equally the London offices were anxious not to be seen as having failed in their duty to keep the suppliers on their toes.

Not unnaturally, the mills in Calcutta viewed the Association fixed price list with disfavour, preferring to buy against competitive tenders, and therefore kept the price levels under the closest scrutiny. The reliability of the delivery dates promised by the supplier was a major issue and, due to the sharp fluctuations in demand characteristic of the jute manufacturing industry, the bobbin and shuttle makers were either subjected to great pressure for speedier deliveries or left, as made clear in the correspondence, to assess for themselves what the future might hold and to stock accordingly at some considerable risk.

As already demonstrated selling prices were severely affected during the years from the end of the war to the depression. Table 3.36, listing four principal products, shows in 1921 a fourfold increase over the 1914 levels and in 1931 prices less than those current in 1919.





Turning now to the volume of production the years 1919, 1921 and 1925 were compared with 1914 and, to illustrate the effect of the depression, the reduced output in 1931:-

Table 3.37

Volume of production, the Gateside Mills Co. Ltd.

1914, 1919, 1921 and 1931

000's

<u>Year</u>	<u>1914</u>	<u>1919</u>	<u>1921</u>	<u>1925</u>	<u>1931</u>
<u>Product</u>					
Rove bobbins	303	91	289	330	75
Spinning bobbins	425	357	358	487	178
Solid " "	2047	323	834	837	442
Ends for repairs	647	393	704	540	1830
Spools	115	114	93	354	900
Shuttles	72	67	65	44	20
Planetree rollers	173	66	7	279	32
Picking arms	18	13	15	6	12

Even in the peak years of 1921 and 1925, the production of solid spinning bobbins fell far below that of 1914 although the first direct imports from Sweden arrived late in 1919; in this connection there is evidence of heavy purchases of home-grown birch in log form, shortly after the end of the war, in an effort to fill the gap caused by the lack of Swedish imports. With regard to shuttles, in 1919, 41,500 were made from persimmon and 25,600 from beech i.e. 38.2 per cent of the total produced; by 1921 the proportion of beech shuttles had

dropped to 16.8 per cent and to 3.3 per cent in 1925 demonstrating the consumers preference for the American material despite the higher cost which could amount to 50 per cent more than a shuttle made from beech.

The high number of ends for bobbin repairs produced and shipped in 1931 probably reflects a policy on the part of the mills in Calcutta to restrict expenditure on the purchase of bobbins; repairing their damaged bobbins with these ends would in times of low production at the mills be sufficient to maintain their stocks. The demand for wooden spools was at its greatest in times of poor trading when it was necessary to stock yarn wound on these tubes in readiness for an uplift in demand.

Another important aspect of these post war years was the rise and fall of raw material prices:-

Table 3.38

Raw material prices of the Gateside Mills C. Ltd.

1914, 1919, 1921, 1925 and 1931

<u>Year</u>	<u>£'s</u>				
	<u>1914</u>	<u>1919</u>	<u>1921</u>	<u>1925</u>	<u>1931</u>
<u>Product</u>					
Round home-grown hardwood per ton	0.93	1.65	1.75	1.50	1.30
Bobbin blocks per gross	0.35	0.76	1.08	0.64	0.56
Persimmon " " "	4.17	8.71	12.60	6.60	5.76
Beech sawn wood " (325 x 50 x 50 mm)	0.50	0.76	1.20	0.68	0.60
Shuttle tips per cwt	1.50	3.00	5.20	2.77	2.50
Steel strip for shuttle covers per ton	21.4	22.3	28.0	16.75	15.6
Softwood boarding for cases, per 1000 sq. ft.	4.00	11.03	13.58	6.50	6.0

In these years beech, in the log form, was still the principal raw material for the production of bobbins - except of course the solid type - and most miscellaneous items. Hardwood, sawn to specified dimensions, was also bought in substantial quantities as the sawmills at Gateside were not large enough to cope with the mill on full production. For example, in 1921 2049 tons of logs were purchased at a cost of £5036 and sawn wood to a value of £10,941. Together these quantities were equivalent to approximately 3,500 tons of logs or expressed in another way about 2,000 trunks of trees averaging 2 feet in diameter and 15 feet in length.

Persimmon was affected by the high freight charges which persisted for some months after the end of the war due to the danger from uncleared mines in the sea lanes. In June 1919 a delivery to the value of £137 bore £59 of extra freight charges but by February 1921 basic rates had returned. In the case of the American blocks purchases were made by the bobbin and shuttle makers from suppliers based in the UK and transacted in sterling. The Swedish exporters of bobbin blocks also quoted in sterling and therefore in both instances manufacturers were not directly involved in currency variations.

The changes in the prices of such items as shuttle tips, a specialised malleable casting, steel strip for shuttle covers and softwood boarding for packing cases in addition to those materials already considered gave some indication of the difficult commercial conditions in which this industry and, no doubt, many others operated in these post war years, accentuated in the case of the bobbin and shuttle makers by the necessity to carry large stocks, for reasons already explained.

As a broad generalisation, the raw material costs of this industry in monetary terms, doubled during the years of the 1914-1918 war, sharply increased again by 1921 and finally fell back in 1931 to a level approximately 50 per cent higher than those current in 1914.<sup>85</sup>

But why did the value of annual sales at Gateside double within two years from £33.2 thousand in 1919 to £70.1 thousand in 1921? R.S. Sayers describes the immediate post-war situation:-

Not surprisingly, the initial impact of the cessation of hostilities (Armistice Day was 11 November 1918) was a slackening of activity, for wartime demands stopped abruptly while a variety of circumstances prevented even the most pressing peacetime demands from becoming immediately effective'. . . Then (in the spring of 1919) the great re-stocking boom began: a boom in 'working capital'.

Both home and export trade soared, export demand for the less dislocated of the European countries leading the way as trading contacts were re-established and merchants sought to fill the pipelines.<sup>86</sup>

For the Scottish bobbin and shuttle manufacturers, the records showed a swift return to the pre-war trading relationships particularly with the jute industry in Calcutta. Although hampered in its development during the war by the difficulty of importing machinery the jute industry in India was geared to continue its expansion in peacetime, despite the spasms of over-production it suffered from time to time. The structure of the industry and its management was unchanged and the future as yet unclouded by the threat of alternative means of packaging and of handling the world's crops.<sup>87</sup>

In Scotland the bobbin and shuttle trade was ready to meet the 're-stocking' demand; in 1921 the Gateside Mills achieved a substantial increase in production, Table 3.37, trebling the output of rove bobbins, and doubling that of solid spinning bobbins as compared with 1919. This advance was coupled with an increase of prices exceeding in some cases, 100 per cent, (Table 3.36) more than compensating for a less dramatic rise in raw material costs. Wages in this post-war period have been examined<sup>88</sup> but in short the increase of 73.6 per cent in the annual cost of wages between 1919 and 1921 coupled with the increases of raw material prices listed in Table 3.38 demonstrated how selling prices kept well in advance of costs. Exports to Calcutta accounted for 88.6 per cent of all sales.

Once re-stocking had been completed the British economy moved into a period of rapid deflation, posing the most taxing problems for the small and medium-sized firms which made up the Scottish industry, but, perhaps, justifying their having made the most of the preceding halcyon days.<sup>89</sup>

Referring again to the trading accounts for this period, Table 3.33, it would appear that for the Gateside Mills the general strike in 1926 had only a marginal effect on the costs of production. Certainly the combined carriage and freight figures for 1926/7 show a substantial increase (£2.8 thousand as compared with £2.2 thousand in the two previous years) but the only other entry likely to be linked with the strike was a series of purchases at this time amounting in all to 96 tons of sea coal.<sup>90</sup>

The fall in annual sales in 1931 to £11.3 thousand prompts the question: how did the Company survive? The most stringent pruning of costs was affected as shown in the trading accounts; purchases were reduced

to 39.8 per cent of sales from the normal level of 55-65 per cent aided by falling raw material prices. Wages and salaries on the other hand could not be reduced to the same degree (despite the managing director electing to draw no salary) as about a third of the workforce e.g. the highly skilled and the oncost personnel would have had to be retained irrespective of the level of production. Hence wages amounted to 40.7 per cent of annual sales rather than the normal 17-25 per cent. Oncosts likewise included a fixed element (insurance, rates, coal for example) largely unaffected by a rise or fall in output, thus they also reached 28.3 per cent rather than the usual 9-14 per cent of annual sales.

The reduction in the cost of purchases in relation to sales therefore figured largely in the battle to minimise losses and it was possible to achieve such a significant fall in this cost because of the changed pattern of demand. As shown in Table 3.37 two items, ends for repairs and spools, both low cost items, were made in large quantities whereas high cost rove bobbins, spinning bobbins and shuttles were much reduced.

Furthermore, spools and the smaller ends were made from off-cuts of timber always in plentiful supply and consequently heavily written down in value.

The cash position of the Company as drawn from the balance sheets, Table 3.39, reproduced overleaf was also a cause for concern in 1931; creditors being due £2.5 thousand whereas book debts, bills receivable and loans amounted to £1.8 thousand. The net value of the Company was therefore reduced to £10 thousand equivalent to the share capital when it was floated in 1925. The value of the stock at £5.5 thousand was higher than normal by some 10 per cent; stock of this type, part-made bobbin blocks, shuttle blocks cut carefully to size and the majority of the

Table 3.39

The Gateside Mills Company (registered as a limited company in 1925)

<u>Balance Sheets</u>													
<u>1919-1931</u>													
<u>£000's</u>													
<u>Liabilities</u>	<u>1919</u>	<u>1920</u>	<u>1921</u>	<u>1922</u>	<u>1923</u>	<u>1924</u>	<u>1925</u>	<u>1926</u>	<u>1927</u>	<u>1928</u>	<u>1929</u>	<u>1930</u>	<u>1931</u>
Capital								10.0	10.0	10.0	10.0	10.0	10.0
Trade creditors	2.7	4.5	6.7	3.3	3.0	5.7	8.5	5.3	5.2	5.8	7.3	2.9	2.0
Sundry "	1.0	1.7	2.0	1.9	1.1	1.0	1.8	1.0	1.6	1.0	0.7	0.4	0.4
Overdraft		0.5						0.2			0.3		0.1
Profit-loss a/c	-	-						1.0	4.0	4.3	3.0	2.9	
Loans	4.1	4.2	5.6	4.6	3.9	4.1	0.8	-	-	-	-	-	-
G.C.L.	7.8	8.8	13.1	7.7	7.8	7.7	11.4	-	-				
	<u>15.6</u>	<u>19.7</u>	<u>27.4</u>	<u>17.5</u>	<u>15.8</u>	<u>18.5</u>	<u>22.5</u>	<u>17.5</u>	<u>20.8</u>	<u>21.1</u>	<u>21.3</u>	<u>16.2</u>	<u>12.5</u>
<u>Assets</u>													
Ground & buildings	3.2	3.3	3.3	3.3	3.6	3.6	4.2	3.4	3.4	3.4	3.4	3.0	2.8
Machinery	2.4	3.0	2.8	2.7	2.9	2.8	2.7	3.3	3.1	2.9	2.7	2.4	2.1
Motor cars		1.3	0.6	0.5	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Stock	3.9	5.0	5.0	4.0	4.6	5.9	5.2	5.3	5.1	5.2	5.3	5.1	5.5
Book Debts	4.9	7.0	5.4	4.5	1.4	3.9	3.7	2.2	4.3	4.2	5.2	2.2	0.6
Bills Rec'ble							0.6	0.5	0.4	1.0	0.3	0.3	0.3
Cash in Bank	1.2	0.1	10.3	2.5	2.9	1.6	5.8	0.1	4.2	1.4	1.6	2.6	0.1
" in Hand													
Investments						0.3				0.5	0.5		
Due by G.C.L.								2.4		2.2	2.0	0.3	0.8
	<u>15.6</u>	<u>19.7</u>	<u>27.4</u>	<u>17.5</u>	<u>15.8</u>	<u>18.4</u>	<u>22.5</u>	<u>17.5</u>	<u>20.8</u>	<u>21.1</u>	<u>21.3</u>	<u>16.2</u>	<u>12.5</u>

Note:-

G.C.L. = G.C. Leburn, Managing Director.

metal fittings were specialised items and of little value outwith this narrow branch of the bobbin and shuttle making industry.<sup>91</sup>

As was to be expected, investment in the period under review was limited to a few items of plants and machinery; in 1921 the lighting arrangements in the mill were improved and the steam crane at the sawmill provided with a steel jib. A large rove bobbin machine for turning was bought for £85, a modest expenditure for a machine crucial to the volume of production. Another prudent purchase was a set of thread-cutting machines, one of which cut an external thread on the barrel and the other a matching thread internally on the flange. This method of construction was widely used in the English branch of the bobbin-making trade as it provided added strength necessary in bobbins for the cotton spinners.<sup>91</sup> Thus the Company was able to offer a wider range of bobbins and the additional skills acquired in the setting-up of the machines were to prove valuable in future years when the demand for the traditional patterns of jute bobbins declined due to technical advances in spinning machinery.

#### 1932-1938

Following the disastrous reduction in output in 1931 a period of slow but steady growth raised annual sales to levels high enough to yield very modest profits. This recovery however, was halted in dramatic fashion by a serious fire at the Gateside mill which destroyed a large part of the main buildings leaving intact only the sawmill. Therefore in these analyses of the years to the outbreak of war, 1939 is considered separately.

The recovery to the end of 1938 can be traced through extracts from the trading accounts;-





Some raw material prices on the other hand tended to rise at an earlier stage in the period:-

Table 3.42

Raw material prices drawn from the purchase records  
of the Gateside Mills Co.Ltd. 1932-38

<u>Year</u>	<u>£'s</u>						
	<u>1932</u>	<u>1933</u>	<u>1934</u>	<u>1935</u>	<u>1936</u>	<u>1937</u>	<u>1938</u>
Roundwood, per ton	1.15	1.15	1.20	1.15	1.15	1.20	1.20
Bobbin blocks,							
per gross	0.37	0.37	0.50	0.52	0.54	0.62	0.66
Persimmon							
per gross	5.83				5.17	5.03	5.40
Sawn beech							
per gross	0.40	0.42	0.47	0.52	0.57	0.70	0.70
Shuttle tips							
per cwt	2.50	2.50	2.50	2.48	2.48	2.48	2.48
Steel for covers							
per ton	15.63		16.25	16.00	16.00	18.70	18.70
Softwood for							
cases, 1000 sq. ft.	5.25	5.00	5.25	5.25	5.25	5.75	5.75

With regard to these three aspects of the business, sales, selling prices and purchase prices it was apparent from the records that more sophisticated types of bobbins began to figure in the deliveries to Calcutta and elsewhere. Rove bobbins were fitted with flanges of multi-plywood thus ensuring not only greater

strength than that of the traditional solid flange but also an improved resistance to the demanding climatic conditions in India. Another departure from the old designs arose from the introduction of new machinery incorporating a self-doffing arrangement; the bobbin devised for these spinning frames required a higher standard of finish and to be made to closer tolerances than those which had been in common use for over seventy years. This advance in the techniques of spinning also reduced the number of bobbins required to service the process. Further information on this subject is contained in Appendix 10.

Again, over these years the Calcutta market was the dominant outlet taking more than 70 per cent of the annual production. The mills served in India were virtually those supplied in pre-war years, the Company appearing to be adept at retaining its customers but making little progress with the more recently established mills.<sup>92</sup>

It is clear from Tables 3.41 and 3.42 that selling prices in this period did not advance ahead of raw material costs in times of strong demand. The bobbin and shuttle making firms in the Association appear to have been under restraint in order, no doubt, to protect their considerable interests in this market, despite the pressure on profits which would follow.

The level of production in 1938 after six years of recovery from the damage suffered in 1931, was still far below that achieved in the peak year of 1914; only in one instance was the volume of output exceeded:-

Table 3.43The Gateside Mills Co. Ltd.The output of principal items in 1938 expressedas a percentage of that achieved in 1914

<u>Item</u>	<u>Percentage</u>
Rove bobbins	70.3
Spinning bobbins	82.1
Solid spinning bobbins	47.0
Spools	54.0
ends for repairs	111.0
Shuttles	53.0

As noted earlier the demand for substantial quantities of ends for repair pointed to a period of restricted purchasing by the mills in Calcutta and reflected a time of poor trading in the jute industry in the UK and India.

Although in the trading accounts salaries and wages were not entered separately until 1934 it was noted in earlier accounts that the managing director drew no salary during the leanest years. In 1934, his eldest son joined the business in a management capacity and his salary, together with some repayment to the managing director acknowledging his losses of salary, would explain the comparatively high figures under this heading in the following four years.

It was evident from the low level of profits earned between 1932 and 1938 that selling prices were not high enough to give a reasonable return. Although significant increases in the price list were made in 1937 the full effect would not be apparent until outstanding contracts had been completed, Table 3.40.

The stock figure in the balance sheet for 1937, (Table 3.44) was the highest - at £10.6 thousand - in the period under review and 50 per cent greater than 1936, indicative of an air of confidence in business prospects doubtless encouraged by the increased sales for the year. As shown in the accounts cash at this time was by no means plentiful; this constraint coupled with the time-lag due to seasoning which affected most stock items points to high degree of confidence in the jute manufacturing industry in India.

As might be expected there was no record of the payment of a dividend during these years. A provision for bad debts in the sum of £1000 reflects the trading hazards of the times but there were no indications that any were incurred. Apart from the replacement of motor cars there was no evidence of any investment of consequence in ground, buildings, plant or machinery.

Table 3.44

The Gateside Mills Co. Ltd.Balance sheets 1932-1938

	<u>£000's</u>						
<u>Liabilities</u>	<u>1932</u>	<u>1933</u>	<u>1934</u>	<u>1935</u>	<u>1936</u>	<u>1937</u>	<u>1938</u>
Capital	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Trade creditors	2.9	4.7	4.3	6.1	5.9	4.2	5.0
Sundry "	0.4	0.3	0.4	0.1	0.8	3.2	3.2
Overdraft	-	-	-	-	-	-	-
Profit and loss a/c	0.7	0.8	0.5	0.8	1.3	2.0	2.9
<u>Total</u>	<u>14.0</u>	<u>15.8</u>	<u>15.2</u>	<u>17.0</u>	<u>18.0</u>	<u>19.4</u>	<u>21.1</u>
 <u>Assets</u>							
Ground, buildings	2.5	2.3	2.0	1.8	1.7	1.9	1.7
Machinery	1.9	1.7	1.6	1.4	1.3	1.1	1.0
Motor cars	0.2	0.2	0.4	0.3	0.5	0.4	0.4
Stock	5.1	5.5	5.4	5.1	7.0	10.6	6.3
Book debts	1.0	2.0	1.9	2.6	2.6	2.9	2.4
Bills rec'ble	0.3	0.3	0.6	0.3	0.3	0.3	0.3
Cash	1.7	2.0	1.4	3.8	4.4	1.8	8.6
Due by GCL	1.1	1.0	0.7	0.5	-	-	-
Loans	0.2	0.2	1.2	1.2	0.2	0.4	0.4
Dollars at cost	-	0.6	-	-	-	-	-
<u>Total</u>	<u>14.0</u>	<u>15.8</u>	<u>15.2</u>	<u>17.0</u>	<u>18.0</u>	<u>19.4</u>	<u>21.1</u>

The inter-war years also posed problems for McGregor and Balfour Ltd., Table 3.45 lists nett profits (now included in the published accounts) and debtors. By applying a multiplier of 10 to the debtors figure it appears that estimated sales reached £285 thousand in 1924 and dropped to £146 thousand in 1931. Likewise nett profits plummeted from a peak of £14.7 thousand in 1925 to £0.6 thousand in 1931. The sales of the Gateside Mills Co. Ltd. over these years fluctuated even more sharply but McGregor and Balfour's large stocks in Calcutta may have lessened, to some degree, the impact of the depression. In 1931 the value of these stocks in Dundee and Calcutta amounted to £54.1 thousand and normally the greater part was held in Calcutta in the form of finished goods.<sup>93</sup>

Table 3.45<sup>94</sup>

McGregor and Balfour Ltd. Nett profits and debtors.

1919-1931

<u>Year</u>	<u>£000's</u>	
	<u>Nett profit</u>	<u>Debtors</u>
1919	9.6	18.8
1920	10.9	27.0
1921	11.6	16.9
1922	10.5	26.0
1923	12.7	26.3
1924	13.9	28.5
1925	14.7	23.0
1926	9.4	22.4
1927	13.9	25.9
1928	14.0	16.6
1929	14.6	22.5
1930	12.9	15.7
1931	0.6	14.6

Assuming the estimates of the sales achieved by McGregor and Balfour to be as indicated then their volume of output in the years 1922-26, for example, would have been seen to eight times greater than that of the Gateside Mills. Taking an average of sales and profits over the whole period 1919-31, McGregor and Balfour's sales were £221 thousand and profits £11.5 whereas the Gateside Mills Co. Ltd.'s equivalent figures were £37.6 thousand and £3.0 thousand.

The balance sheet of the Dundee firm as at August 1931 showed the Company, despite the depression, to be financially sound.

Table 3.46

McGregor and Balfour Ltd.

Balance sheet as at 31 August 1931

£000's:

<u>Liabilities</u>		<u>Assets</u>	
Issued capital	16.9	Cash	10.8
Creditors	10.6	Investments	6.1
Tax reserves	8.4	Debtors	14.6
Reserves	26.3	Stock	54.1
Profit and loss account	37.8	Buildings, plant and machinery	14.4
<u>Total</u>	<u>100.0</u>		<u>100.0</u>



For McGregor and Balfour also the pattern of recovery was slow; annual sales failed to reach their pre-depression level until 1939, and net profits averaged for this eight year period, £7.0 thousand.

Table 3.47

McGregor and Balfour Ltd.

Nett profits, debtors and dividends 1932-39

	<u>£000's</u>		
<u>Year</u>	<u>Nett profit</u>	<u>Debtors</u>	<u>Dividend (p)</u>
1932	3.1	12.3	0.32
1933	3.4	16.0	0.32
1934	6.7	20.3	0.37
1935	8.9	18.3	0.43
1936	10.9	17.1	0.50
1937	10.9	19.1	0.57
1938	7.1	17.8	0.57
1939	5.4	28.0	0.57

The issued capital throughout was £16.9 thousand.

In 1939 the net profit appears low as compared with the estimated sales (28.9 x 10) but this apparent anomaly might arise from the Company making special provisions in view of the outbreak of war.

Average annual sales were £187 thousand and average profits £7.0 thousand as compared with £24 thousand and £0.6 thousand at Gateside.

### Chapter 3

#### Footnotes

1. See Tables 1.1 and 1.2 pp.8 and 9
2. " pp. 53-55
3. V. Anstey, The Economic Development of India (London, 1952), p.279
4. GMC Sales Books 1893-1900. N.B. GMC = Gateside Mills Company.
5. See pp.31-32
6. GMC Sales Books 1901-1913
7. Ibid.
8. GMC Purchase Book 1913
9. V.Anstey, op. cit., p280
10. GMC Sales Books 1900-1913
11. G.P.Jones and A.G.Pool, A Hundred Years of Economic Development in Great Britain, 1840-1940 (London, 1940), pp.263-4
12. Tables 3.10-3.13 were compiled from the accounts lodged with the Registrar of Companies, George Street, Edinburgh
13. The original records have been deposited in the Central Museum and Art Gallery in Dundee. The account books contain information as to the rents payable for domestic accommodation in Dundee in the early 19th century. Household accounts for a period 1886-1895 provide details of school fees, visits to London by sea and to Manchester for Trade Exhibitions, and various recreational pursuits including a local Shuttlemakers Festival. The only references to wages concern the employment of a shuttle-maker in 1815 at 12½p. for a 10 hour day and in mid-century two apprentices were taken on by the firm, in one case at 25p. per week for the first year rising to 40p. in the fifth year.

14. W.Ashworth, An Economic History of England 1870-1939 (London, 1960), p.34
15. S.Pollard, The Development of the British Economy 1914-1950 (London, 1962), p.23
16. W.Ashworth, A Short History of the International Economy since 1850 (2nd ed. London, 1964), p.148
17. S.Pollard, op. cit., p.22
18. R. Floud and D. McCloskey, (eds.) The Economic History of Britain since 1700, Vol.2, (Cambridge, 1981), pp.90-91
19. R.S.Sayers, A History of Economic Change in England 1880-1939 (London, 1967), p.32
20. Quoted from Jones and Pool, op. cit., p.263
21. William M.Walker, Juteopolis, Dundee and its Textile Workers 1885-1923 (Edinburgh, 1979) p.93
22. Jones and Pool, op. cit., p.266
23. GMC Sales Books 1912-1914
24. Ibid.
25. The storage problem can be appreciated if the volume of a typical weeks production is calculated,

50 gross of rove bobbins packed in	
10 cases each 70.3 cu.ft.	703.0
250 gross of spinning bobbins packed	
in 9 cases each 93.2 cu.ft.	838.8
1500 shuttles packed in 3 cases	
each 37.2 cu.ft.	111.6
Other items, say 3 cases each	
70.3 cu.ft.	210.9
Total cu. ft.	<u>1864.3</u>

Placed end to end these cases would extend for

about 50 yards and would require dry storage accommodation.

26. The practice of paying suppliers strictly on a monthly account basis happily continued until the 1950's
27. GMC Sales Books 1912-1914
28. Ibid.,
29. GMC Purchase Book 1914
30. The content of Tables 3.20, 3.21 and 3.22 was drawn from GMC Sales Books 1914-1918
31. Rove bobbins in particular, were more liable to damage than the smaller type of bobbin due to the weight of the yarn they carried.
32. P.Stephens, British Vessels Lost at Sea 1914-1918 (Cambridge, 1977).
33. The information as to the importing of raw materials during the First World War was drawn from the GMC Purchase Books 1914-1918
34. GMC Trading Accounts 1914-1918
35. GMC records
36. Excess Profits Duty was introduced in 1915 at 50 per cent on any excess of profits over a standard amount based on pre-war earnings plus £200 or on a formula related to the capital employed at the outbreak of war. The rate was increased to 60 per cent in 1916 and to 80 per cent in 1917
37. See Table 3.21 p.128
38. " p.114 with regard to the use of a multiplier.
39. W.Ashworth, An Economic History ... op. cit., pp.275-276
40. This account of the misfortunes of White, Child and Beney during the First World War was based on a slim volume produced by the firm in 1943 for private circulation entitled A Century of Trading, 1843-1943

41. Ibid.
42. R.Floud and D. McCloskey, op. cit., p.265
43. R.S.Sayers, op. cit., p.166
44. G.P.Jones and A.G.Pool, op.cit., p.372
45. R.Floud and D.McCloskey, op. cit., p.257
46. Ibid., p.257
47. R.S.Sayers, op. cit., pp.90-91
48. G.P.Jones and A.G.Pool, op. cit., p.376
49. S.Pollard, op. cit., pp.224-229
50. R.Floud and D.McCloskey, op. cit., p.299
51. V.Anstey, op. cit., p.507
52. R.Floud and D.McCloskey, op. cit., p.300
53. Ibid., p.300
54. Ibid., p.303
55. Ibid., pp.265-266
56. Ibid., p.301
57. Ibid., pp.301-302
58. S.Pollard, op. cit., p.217
59. G.P.Jones and A.G.Pool, op. cit., p.397
60. Report of the Scottish Economic Committee,  
Scotland's Industrial Future (SEG publication,  
1939), p.18
61. Ibid., p.28
62. Ibid., pp.97-98
63. Ibid., pp.74-75
64. Ibid., pp.76 and 65-66
65. Ibid., pp.127-128
66. R.Saville, The Economic Development of  
Modern Scotland 1950-1980 (Edinburgh, 1985)  
p.3

67. Report...Scotland's Industrial Future,  
op. cit., p.86
68. Ibid., p.67
69. Ibid., p.66
70. Ibid., p.67
71. Ibid., p.49
72. R.Saville, op. cit., pp.9-10
73. Report...Scotland's Industrial Future,  
op. cit., 27-37
74. R.Saville, op. cit., p.13
75. Report...Scotland's Industrial Future,  
op. cit., p.23
76. Ibid., p.29
77. R.Saville, op. cit., p.11
78. Ibid., p.11
79. Report...Scotland's Industrial Future,  
op. cit., pp.79-80
80. Ibid., p.35-36
81. Ibid., p.80
82. T.C.Smout, A Century of the Scottish People  
1830-1950 (London, 1986), p.115
83. R. Saville, op. cit., p.3
84. See also p.142
85. GMC Purchase Books 1914, 1919, 1921, 1925  
and 1931
86. R.S.Sayers, op. cit., p.50
87. See also p.18
88. " " pp.92-95
89. " Table 3.33 p.154
90. Sea coal was a poor substitute for mined  
coal; it was gathered on the shores of Fife
91. See Fig.23 pp.46-47
92. This failure probably led to the appointment  
of Simpson and Munro as the Company's agents  
in Calcutta.

93. This practice is also evident in Table 3.31 p.141
94. Content of Tables 3.45, 3.46 and 3.47 drawn from accounts lodged with the Registrar of Companies, Edinburgh

Chapter 4.PROBLEMS IN WAR AND PEACE, 1939-1950Introduction

The Dundee Courier and Advertiser of the 27 April 1939 published the following report:-

"One of the most disastrous fires in Cupar district for some years destroyed Gateside Bobbin Mills in the early hours of the morning.

The fire was discovered about midnight but by that time it already had a good hold. When the Cupar Brigade arrived on the scene about half-an-hour later the entire mill was involved.

All they could do was to endeavour to prevent the flames reaching the engine house and the large stocks of timber surrounding the main building. With an ample supply of water from the Eden, which runs close by the mill, they were successful in this effort.

The main building however could not be saved and in a short time the entire roof collapsed. The building contained a considerable amount of machinery and wood, which was easy prey to the flames.

By two o'clock in the morning Perth Fire Brigade which had also been summoned was on the spot and assisted the Cupar brigade in pumping water through several lines of hose into the blazing interior.

After a two hour fight the brigade was confident they would prevent the fire reaching the engine house and timber supplies but there was nothing that could be done for the affected part of the mill.



The blaze, which could be seen for many miles around attracted motorists from a large area and practically every one in Gateside village watched the mill which is the only source of employment in the village, being destroyed."

"At one time the flames leapt many feet into the air. The employment of close on 80 people will be seriously affected as a result of the fire.

Early this morning it was impossible to estimate the damage.

In the first part of this chapter, (i) 1939. A fire and its consequences, the questions which faced the management of the Gateside Mills after the serious fire, described above, are considered. The second part (ii) The Second World War 1939-1945 includes an analysis of the accounts of the Gateside Mills Co. Ltd. and of McGregor and Balfour Ltd. in order to discover how this vulnerable industry overcame the problems of the war years; the third (iii) The Indian Tariff Board Inquiry into the bobbin industry, 1948, is devoted to the Report of this inquiry and questions its findings. The Board sat in 1948 and the response of the Indian Government to its Report made an almost immediate impact on the Scottish industry. In conclusion, part (iv) Post-war problems for the Scottish bobbin and shuttle industry 1946-1950 describes the post-war boom and the fundamental changes in the commercial prospects for the Scottish bobbin and shuttle manufacturers which followed the Tariff Board Inquiry.

(i) 1939. A fire and its consequences.

According to the records of the Company, the fire at Gateside in the spring of 1939 was judged to have destroyed 91 per cent of the main buildings and 87 per cent of the plant and machinery.<sup>1</sup> In view of the scale of destruction the first question to be faced by the management was whether the mill should be re-started - providing, of course, that the insurance settlement and other financial considerations allowed a choice to be made. From a commercial viewpoint the industry, by this time, had emerged from the inter-war depression and certainly in the case of Gateside, had returned to a modest level of profitability. Production was still well below that of 1914<sup>2</sup> and therefore, given a strong demand from Calcutta, there was the prospect of increased output and higher financial returns from a unit of roughly the same size as that now in ruins. Also the Scottish industry had displayed over the years a considerable resilience, weathering the storms of the First World War and the world-wide depression which followed, without a casualty of importance.

A further source of encouragement was the principal market - the jute manufacturers in Calcutta who from 1914, had in terms of production, led the world and since that date had added thirty-five mills to the seventy then operating.<sup>3</sup> British interests still dominated the industry and the ties with the east of Scotland continued to be a significant factor.

Another important consideration was the effect on the community should the mill close. There was little chance of other employment in the area and much poverty and deprivation would have resulted.

There were also family matters; the elder son of the proprietor was already established in the business and the younger was completing a degree in mechanical engineering in Glasgow with a view to joining the firm at which time, it was envisaged, the father would retire. For the management, re-building the mill from its foundations was an exciting challenge in that it would allow the plant and machinery to be laid out to conform more closely to modern mass production techniques and the provision of up-to-date heating, lighting and power facilities. Furthermore the structure of the building could incorporate fire prevention features which together with a sprinkler system would virtually ensure that such complete destruction by fire could never occur again.

But there were other worrying aspects; the prospect of war in Europe was growing day by day - a major threat to an industry importing raw materials and exporting its products and in the event of war governmental restrictions might prevent the completion of the project, a situation which would be financially disastrous. The greatest danger to the whole trade however, could scarcely have been foreseen at that time; within eight years India would become an independent nation and within twelve months thereafter, would prohibit the importing of wooden bobbins for the jute industry.

Whatever the fears for the future apparently the management, by deciding to re-build and modernise, saw some encouraging features in the situation; the combination of a modern well-equipped factory, a young and highly-trained management and a local workforce which included many with a high degree of woodworking skill would surely have a good chance of commercial success.

There were pressing problems to be resolved immediately after the fire; it was most necessary that outstanding orders should be met to ensure that customers did not suffer from a shortage of supplies due to the ceasing of production at Gateside and to achieve this objective assistance had to be sought from other firms in the industry.

In the week following the fire a substantial quantity of raw materials, including bobbin blocks, sawn wood and shuttle accessories, was sold to other firms in the trade and arrangements agreed whereby they would undertake to supply Gateside with the finished products so that deliveries to customers could be maintained by the Company. The goods were to be shipped f.o.b. by the suppliers f.o.b. and invoiced at a discount of 5 per cent. All the firms concerned were members of the Association and therefore prices presented very little difficulty. As noted earlier, it was not unusual for members to trade in this way but, in this case, the need to act urgently and to re-arrange their production plans undoubtedly demanded co-operation of a high order. Nevertheless the arrangement agreed after the fire was of benefit to all parties in the longer term; the extra orders were welcomed particularly as Gateside was able to supply stocks of seasoned material from the kilns and storage sheds which had escaped the fire - it was a common feature of the industry that manufacturing capacity generally exceeded the supply of seasoned raw material.

For Gateside it meant a continued service to their customers thus preserving important relationships, all too easily broken should there be a failure in the supply of these crucial components.<sup>4</sup>

In order to retain the valuable workforce and also to assist in the production of outstanding orders the Company offered a number of employees - on a temporary basis - to the firms participating in the operation until the re-construction and re-equipment of the mill at Gateside was sufficiently advanced to allow their return.

The scheme was successful; at first the workers were transported each day in a lorry from Gateside to Dundee but later lodged in the city during the weekdays; it ended in March 1940.<sup>5</sup>

The new arrangements began to take effect with remarkable rapidity; in the month following the fire goods to the value of £1597 were sent to Calcutta for the Company's customers, all supplied by other firms; and for the seven months to November the sales were:-

Sales from Gateside resources	£10,979
Sales from goods manufactured by other members	£10,335. <sup>6</sup>

At this time production at Gateside was restricted to hickory picking arms, solid spinning bobbins and shuttle covers. Given stocks of hickory, the production of picking arms required only a woodworking lathe and a skilled wood turner. Solid spinning bobbins were made within a month of the fire as stocks of seasoned bobbin blocks had survived and fortunately four turning machines were rescued from the debris and rapidly refurbished by the machine-makers in Glasgow.

The blacksmith shop also escaped damage and therefore it was possible to manufacture shuttle covers for other shuttle-makers and for sale to the mills as spares.

Due to the prompt action of the management and the helpful response from the other members of the Association the loss for the

financial year ending in November 1939 was restricted to £2223 and apparently the greater part of the loss could be attributed to wages paid to employees retained to clear debris and to recover any machinery which could be repaired. Also, although the agreement with the other members was crucial, in that it prevented the loss of customers and helped to retain the skilled part of the workforce, the 5 per cent discount earned from the sales was largely absorbed by the cost of transporting workers and other administrative expenses.<sup>7</sup> In the early months of 1940 the Company was still purchasing finished goods from other manufacturers but by May of that year their contribution had been reduced to 10.6 per cent of the monthly sales<sup>8</sup> and had petered out - almost completely - by the end of November.

The claim from the insurance company was settled at £6085, £1930 of which related to the buildings and £4155 to plant and machinery; a Loss of Profits policy yielded a further £742.<sup>9</sup> The total expenditure by the Company on the re-construction of the mill and its equipment was far in excess of the settlement as the new building was designed to ensure that a fire of such destructive proportions could not occur again.<sup>10</sup> The specification included brick and steel construction, asbestos roofing and re-inforced concrete floors supported by steel beams capable of bearing the heaviest woodworking machinery in general use. A concrete staircase and an electric goods lift served the two floors and each department was provided with metal fire-proof doors and a generous supply of extinguishers. The exterior of the mill and all the interior accommodation were protected by a modern sprinkler system.<sup>11</sup>

To the modern eye one omission was a comprehensive waste extraction system but the amount and character of the woodwaste generated in a plant of this size was probably outwith the capacity of the equipment available at the time. It was not until 1970 that a fully automatic extraction plant was installed. The two storey design was also, in the long term, a disadvantage in that a single storey layout would have allowed the maximum use of modern methods of handling goods; for example, forklift trucks. There were, however, severe constraints due to the nature of the site, which could not have been overcome without the expenditure of a considerable amount of capital.

The major departure from previous practice was the change to a three phase power supply available from the Fife Power Company. The new machinery purchased was equipped with individual motors and those belt-driven machines, which had survived the fire, were likewise converted. In certain circumstances, and for technical reasons, some line-shafts were retained to serve several belt-driven lathes and fitted with a single motor thus combining the benefits of belt-drive and electric power. The modern building, electrically powered plant and machinery, an efficient steam-heating system and a high standard of lighting provided much improved conditions for the workforce.

Two points worthy of note emerge from the foregoing account of these difficult years for the Company. First, the re-construction of the mill and the modernisation of the plant and machinery were to prove to have been both prudent and enterprising in that the new main building formed a particularly suitable basis for further

development in 1948, prompted by a less serious fire; by 1949 the enlarged plant was equipped to undertake more sophisticated items required not only by the textile industries but also by others using mass-produced woodware components. Secondly the Association, although its members were in daily competition, showed a remarkable capacity to co-operate in support of one of their number in considerable difficulty after a major fire, particularly when all those assisting would have benefited to a marked extent from the closure of the plant at Gateside.

(ii) The Second World War 1939-1945

Due to the fire the Company was obviously in poor shape at the outbreak of war - four months later - to deal with the problems which would inevitably arise from the necessity to import raw materials and to export most of the goods it produced, at a time of national emergency. The sales figures, when read in conjunction with the upward trend of selling prices in this period, point to a low level of production throughout the war. In fact, the amount produced in 1943 was only a little more than that produced in 1931 in the depths of the depression, as shown in Table 4.2. Overleaf, the sales figures and selling prices are compared:-



Table 4.1

Sales and selling prices of the  
Gateside Mills Company Limited 1939-1945<sup>12</sup>

<u>Sales</u>	<u>£000's</u>						
<u>Year</u>	<u>1939</u>	<u>1940</u>	<u>1941</u>	<u>1942</u>	<u>1943</u>	<u>1944</u>	<u>1945</u>
	33.7	42.9	42.2	42.3	27.1	36.7	44.0
<u>Selling prices</u>	<u>£'s per gross</u>						
<u>Product/Year</u>	<u>1939</u>	<u>1940</u>	<u>1941</u>	<u>1942</u>	<u>1943</u>	<u>1944</u>	<u>1945</u>
Rove bobbins 10" x 5"	4.76	6.04	6.36	7.28	7.65	8.04	11.05
Spinning " 6" x 3 1/2"	1.76	2.44	2.56	2.95	3.10	3.25	3.57
Solid " "4 x 2 3/4"	1.11	1.91	2.14	2.46	1.27	2.99	3.88
Ends for 10" x 5"	1.24	1.71	1.89	2.17	2.29	2.40	2.90
Persimmon shuttles,							
<u>each</u>	0.16	0.21	0.26	0.31	0.31	0.32	0.32

Bobbins and shuttles, together with other traditional machinery accessories supplied by the Scottish industry, continued to be the principal products of the Company in these war years. Changes in the original specifications became more frequent as spinning techniques in the jute trade advanced; rove bobbins were increased in size to carry a greater weight of material and therefore to be of a more robust construction and bobbins for the new self-doffing frames replaced some types of spinning bobbins the design of which had remained virtually unchanged for over fifty years. Only one departure from the traditional products occurred during the war; in 1944 38,000

tent pegs to the value of £1319 were delivered to the Ministry of Supply.<sup>13</sup> The specialised nature of the machinery used in the industry prevented its employment in the production of a wider range of wooden goods (apart from the rare instance quoted above) otherwise wartime demands might have offered new opportunities. The limited versatility of bobbin-making machinery also posed considerable problems when, after the war, lost markets and shrinking demand required a rapid diversification into other products and markets.

To return to the low level of production in 1943, (in this respect the worst of the war years) the Table which follows compares the output of 1943 with 1918, the year of lowest production in the First War and with 1931, again a low point for the Company in the inter-war depression.

Table 4.2

The Gateside Mills Company Limited, volume of production  
in 1943 compared with that of 1918 and 1931

	<u>000's</u>		
	<u>1918</u>	<u>1931</u>	<u>1943</u>
Rove bobbins	166	75	112
Spinning "	232	178	455
Solid " "	102	442	102
Spools	95	90	171
Ends for repair	581	182	165
Shuttles	47	21	11

Nevertheless the Company was able to make a profit in 1918 and in 1943; because in each war prices for its goods rose steadily, whereas in 1931 the poor output and falling prices resulted in a loss.<sup>14</sup> (Table 4.4).

As in the first War exports to Calcutta from 1940 to 1944 tended to decline:-

Table 4.3

Exports to Calcutta of the Gateside Mills Company Limited,  
expressed as a percentage of total annual sales value  
in 1914-1918 and 1940-1945<sup>15</sup>

	<u>Percentage</u>		<u>Percentage</u>
1914	92.1	1940	85.2
1915	90.2	1941	84.8
1916	83.0	1941	80.3
1917	78.0	1943	70.0
1918	81.5	1944	71.7
		1945	74.7

In each case the UK featured more prominently as an alternative market in the later years of each war, particularly in 1943 when the UK share rose to 27 per cent. Yet Indian jute manufacturing was heavily involved with military requirements throughout the Second War and, immediately after it had ended, resumed importing bobbins and shuttles from the UK. Shipping restrictions therefore appear to have been the major difficulty for the Scottish industry; after 1940 the normal service of three or four ships loading in Glasgow and bound for Calcutta

was reduced to one ship per month and long delays became commonplace. In 1942 Gateside was able to ship only in eight of the twelve months and in one case, a consignment invoiced in December 1942 did not leave Glasgow until July 1943 and the situation was made more complex and the documentation even more complicated, by consignments being divided at the docks and loaded, when the opportunity offered, on several different vessels.<sup>16</sup>

Freight and insurance charges inevitably rose; in September 1941 these charges added 24.4 per cent to the cost of the goods shipped whereas the prewar addition was 6 per cent; by 1944 the charges had increased to 33.3 per cent.<sup>17</sup>

Shipping difficulties also affected the raw materials required by the bobbin and shuttle manufacturers; the import of bobbin blocks needed for the making of the smaller spinning bobbins ceased in the spring of 1940. Thereafter, until 1945, the sole source of such material was a small mill at Drumnadrochit in the north of Scotland which for many years had maintained a modest output of blocks shared by the members of the Association.<sup>18</sup> Any major expansion of this resource however, was considered impractical due to the limited quantity of birch of the required high quality, available in the area.

A shortage of such timber was even more marked in Fife and Angus thus preventing any major production by the bobbin-makers themselves.

The price of the last Swedish consignment delivered in 1940 was £1.05 per gross and the current selling price of the finished article £1.91 per gross f.o.b. Glasgow, already a significant increase on the prices current immediately before the war when the blocks

cost £0.66 per gross and the finished price £1.11 per gross f.o.b. Glasgow. When the trade re-opened in 1945 at the end of the war, the respective prices were £1.71 and £3.87, an even more favourable margin for the manufacturers, and indicative of post-war prosperity for the bobbin- and shuttle-makers.<sup>19</sup>

The importing of persimmon blocks for shuttles in contrast, continued throughout the war but again, as in the First War the high cost of freight and insurance added greatly to the price. The pre-war cost of one of the more common sizes had, by 1942, more than doubled:-

1940	6.6p	1943	8.7p
1941	6.9p	1944	8.7p
1942	8.7p	1945	8.7p

The selling price of the finished shuttle increased likewise and rose from 16p in 1939 to 32p in 1945.<sup>20</sup>

As to the other raw materials necessary to the business, the price of beech roundwood increased from a pre-war figure of £1.20 per ton to £2.10 in 1945; the intake of timber by the industry did not appear to be restricted, the tonnages purchased by Gateside for example, matching the pre-war levels:-

1939/40	1901 tons
1940/41	1821 "
1941/42	2023 "
1942/43	2585 "
1943/44	2151 "

The purchase of sawn materials from other sawmills declined during the war due probably to the lower level of output by the mill.

The cost of softwood, from which packing cases were made, rose from £5.75 to £11.70 per 1000 square feet during the course of the war.

Metal items increased in cost but less severely - shuttle tips from £2.48 to £3.58 per cwt and strip steel for shuttle covers from £18.70 to £25 per ton.<sup>21</sup>

From the foregoing review of prices of finished goods, and of raw materials, together with the expenditure on wages and oncosts, (Table 4.4), it was clear that the industry was able to maintain its selling prices at levels which offset the worst effect of these difficult years, and to earn, at least, a modest profit.

Table 4.4

Extracts from the trading accounts of the Gateside  
Mills Company Limited 1939-1945

	<u>£000's</u>						
<u>Year</u>	<u>1939</u>	<u>1940</u>	<u>1941</u>	<u>1942</u>	<u>1943</u>	<u>1944</u>	<u>1945</u>
<u>Sales</u>	<u>23.6</u>	<u>38.3</u>	<u>42.3</u>	<u>42.2</u>	<u>27.2</u>	<u>36.7</u>	<u>44.0</u>
Purchases	11.0	16.8	19.6	19.5	8.8	12.1	17.0
Wages	5.2	7.2	8.4	9.3	9.0	9.3	11.0
Oncosts	9.6	9.9	11.2	10.3	9.0	10.4	10.9
Profit	(2.2)	4.4	3.1	3.1	0.4	4.9	5.1
<u>Total</u>	<u>23.6</u>	<u>38.3</u>	<u>42.3</u>	<u>42.2</u>	<u>27.2</u>	<u>36.7</u>	<u>44.0</u>

It was also apparent that most of the workforce was retained in 1943 despite the reduced production as the wages costs was only marginally lower than that in the more fruitful years. Further evidence in this regard was provided by the entries relating to National Insurance contributions which at £234 were slightly higher than the two succeeding years and only £16 below 1942.<sup>22</sup>

A regular entry in the trading accounts was the commission paid to Simpson and Munro recently appointed as the Company's sales representatives in London and Calcutta. The agency operated from an office in London which maintained a close relationship with the UK headquarters of the managing agents - generally in the City - and an office in Calcutta which kept in close touch with the managers and senior personnel in the mills as well as the managing agents in India.

Simpson and Munro also controlled the stocks of standard items which Gateside sent to Calcutta as a means of satisfying any urgent demand for bobbins or shuttles.

The balance sheets of the Gateside Mills Co. Ltd. for this period, Table 4.5 show, in the assets for 1940, entries relating to the new buildings and machinery; the total expenditure on these items following the fire was £11.5 thousand giving a net cost to the Company, after insurance payments, of £5.4 thousand, in all the circumstances a bold investment.

Excess Profits Tax at 60 per cent was introduced in September 1939 shortly after the outbreak of war and in 1940 was increased to 100 per cent; the tax was applied to all profits earned above a standard pre-war level and was imposed on all industries. Later concessions were made including a 20 per cent post war tax credit;<sup>23</sup> the post-war accounts give details of the amount of tax paid by the Company

Table 4.5

The Gateside Mills Company Limited. Balance sheets 1939-1945.

<u>Liabilities</u>	<u>£000's</u>						
<u>Capital</u>	<u>1939</u>	<u>1940</u>	<u>1941</u>	<u>1942</u>	<u>1943</u>	<u>1944</u>	<u>1945</u>
Shares	10.0	10.0	10.0	10.0	10.0	10.3	10.0
Trade creditors	4.3	3.4	2.5	3.2	2.6	2.3	2.6
Sundry "	0.4	1.9	1.7	1.5	1.1	1.9	2.4
Due to GCL	1.2	0.7	1.0	0	0.3	1.3	-
Due to WGL <sup>24</sup>	1.4	0.6	1.7	1.4	2.0	1.1	-
Fire account	3.6	4.4	-	-	-	-	-
P & L "	0.6		7.3	8.4	6.5	11.5	10.4
Provision for EPT							2.5 <sup>25</sup>
<u>Total</u>	<u>21.5</u>	<u>21.0</u>	<u>24.2</u>	<u>24.5</u>	<u>22.5</u>	<u>28.1</u>	<u>27.9</u>
<u>Assets</u>							
Ground and buildings	0.2	4.3	4.1	3.9	3.7	3.5	3.3
Machinery	1.2	3.6	3.4	3.1	2.7	2.4	2.5
Motor cars	0.3	0.3	0.2	0.1	0.1	0.1	0.1
Stock	7.0	7.5	7.8	6.7	7.	7.8	12.4
Book debts	1.9	2.2	2.4	2.2	4.5	2.2	4.4
Bills receivable	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Loan	0.2	0.1	0.2	0.2	0.1	0.1	0.0
Cash	8.3	2.8	3.9	8.1	3.8	11.8	2.6
Investments			2.0				
Advance payment	2.2						
Due by GCL				0.1			2.4
<u>Total</u>	<u>21.5</u>	<u>21.0</u>	<u>24.2</u>	<u>24.5</u>	<u>22.5</u>	<u>28.1</u>	<u>27.9</u>



It was apparently the custom not to pay dividends on the share capital, the directors who were the shareholders drew salaries.

Another insight into the bobbin and shuttle trade was provided by the published accounts of McGregor and Balfour of which an abstract follows (Table 4.6) together with a statement showing the net profits declared, the dividends paid, and the Debtors figure from which an approximate indication of the value of annual sales can be drawn by applying a multiple of 10. <sup>26</sup>

Table 4.6McGregor and Balfour Ltd.A comparison between the balance sheets of 1939 and 1945

<u>1939</u>	<u>£000's</u>		
	<u>Liabilities</u>	<u>Assets</u>	
Issued capital	16.9	Cash	14.4
Creditors	23.1	Investments	9.4
Reserve	27.1	Debtors	28.9
Tax reserve	9.8	Stocks	40.9
P & L balance	36.1	Buildings, machinery and plant	24.8
Profit	5.4		
<u>Total</u>	<u>118.4</u>		<u>118.4</u>

1945

Issued capital	16.9	Cash	18.9
Creditors	53.8	Investments	8.2
Reserves	28.9	Debtors	79.0
Tax reserve	56.3	Stock	51.6
P & L balance	38.6	Buildings, machinery and plant	27.8
Profit	6.0	Tax reserve	15.0
<u>Total</u>	<u>200.5</u>		<u>200.5</u>

£000's

<u>Year</u>	<u>Nett profits</u>	<u>Dividend paid</u>	<u>Debtors</u>
1939	5.4	0.57	28.9
1940	6.6	0.61	11.9
1941	6.3	0.60	14.2
1942	6.3	0.60	15.2
1943	7.8	0.60	44.5
1944	5.9	0.60	68.4
1945	6.0	0.60	79.0

In contrast with the Gateside Mills Co. Ltd., McGregor and Balfour Ltd. appeared to have boosted sales strongly in 1943, the Debtors figure rising from £15.2 thousand in 1942 to £44.5 thousand in one year and continuing to increase in 1944 and 1945. In view of the shipping situation in the UK the Company's operations from their Calcutta office were, probably, responsible for these developments.

The Scottish bobbin and shuttle manufacturers emerged from the Second World War to encounter a massive demand from Calcutta and a worldwide shortage of bobbins and shuttles. Scarcely had the firms got to grips with this situation, however, than the future of the Calcutta market - particularly with regard to bobbins and other similar spinning machinery accessories - began to appear threatened in the light of early moves towards Indian independence. Should this come to pass it was likely that the new Government would be obliged for political and financial reasons to nurture and protect its indigenous industries and to restrict imports to only the most vital of its needs. Furthermore, there had become established in Calcutta a bobbin-making trade which had helped to supply the mills when the imported article was in short supply during the war and which now felt confident that it could cope with the total demand given protection.

The next section deals with the events leading to the Indian Tariff Board Inquiry and the substance of its Report.

(iii) The Indian Tariff Board Inquiry into the Indian  
bobbin industry, 1948.<sup>27</sup>

The question of India's long-standing demand for independence had been a matter of some concern to the Scottish bobbin and shuttle trade, particularly in the Second World War, when the Cripps Mission in 1942 demonstrated the British Government's firm intention that India should be self-governing after the war. In general however, the considered view of the Scottish industry was that the importance of the jute industry in Calcutta would preclude an Indian Government from taking any precipitate action which might jeopardise jute manufacture, such as reducing or banning the importing of vital machinery accessories, including bobbins and shuttles. It was also firmly believed that the indigenous manufacturers of these components could not possibly cope with the demand of the mills either in respect of quality or quantity. These assumptions were based on discussions with Scottish mill managers from Calcutta, many of whom spent their home leave in the east of Scotland and took the opportunity to visit their suppliers.

In 1945 a newly-elected Labour government in the UK took urgent measures to honour past promises with regard to Indian independence and early in 1946 another mission was sent there to accelerate the constitutional processes necessary; an India Independence Act received the Royal Assent in July 1947 and two new dominions, India and Pakistan came into existence on August 14 1947.

Matters also began to move more swiftly with regard to the interests of the Scottish bobbin and shuttle trade; on the 26th of April 1947 a case was referred to the Tariff Board by the Government of

India which had arisen from an application for the protection of the bobbin-making industry in India, submitted in 1945. It was made by the All-India Bobbin Manufacturers Association to the Department of Commerce and was supported by the Technological Institute of Textiles, Bhiwani. In such cases the Tariff Board was required to satisfy itself

- i. that the industry was established and conducted on sound business lines:
- ii. (a) that, having regard to the natural or economic advantages enjoyed by the industry and its actual or probable costs, it is likely within a reasonable time to develop sufficiently to be able to carry on without protection of State assistance:  
or
- (b) that it is an industry to which it is desirable in the national interest to grant protection or assistance and that the probable cost of such protection or assistance to the community is not excessive.

Where the Board found the claim to be established and the conditions satisfied, it could recommend the rate of duty to be imposed, any additional or alternative protective measures, and the period, not exceeding three years, they should remain in force. Finally the Board, in making its recommendations, was obliged to give weight to the interests of the consumer and to consider the effect on the industries using the articles.

On the 6th of May 1947 the Board issued a press communique invit-

ing firms, associations and persons interested in the industry either as producers or importers or consumers to submit their representations if they so wished; in addition a detailed questionnaire was issued to known producers, importers consumers and associations. The President, members and officers of the Board visited 12 factories producing bobbins for the jute and cotton industries as the inquiry covered both sectors. However the following account of the proceedings of the Tariff Board is confined to the production of jute bobbins, this aspect being of the greatest importance to the Scottish trade.

The public inquiry originally to be held in August 1947 did not take place until the 13th and 14th of July 1948 due to changes in the membership of the Board and the Government requiring other inquiries to be taken earlier. The Scottish Bobbin and Shuttle Manufacturers Association sent Mr W.G. Leburn, of the Gateside Mills Co. Ltd., to India to plead the case of the Scottish bobbin-makers and to visit the appropriate Government departments in that country with a view to enlisting their support. The substance of this case and other representations made in opposition to the application are included in this review of the Report of the Board published in 1948.

The Report opens with a brief history of the Indian jute bobbin industry:-

Jute mill bobbins were manufactured in Calcutta by a few small factories during the first World War when imports of bobbins from the UK were totally stopped. But when the war was over jute mill bobbins began to be imported again in large quantities, and this led to the collapse of the indigenous bobbins industry.

With the outbreak of World War II there again was a heavy reduction in the import of bobbins from the UK and the jute mills approached a few enterprising manufacturers to start production of bobbins in the country and offered to purchase the entire output. Further the Department of Industries, Government of Bengal, at the request of the Indian Jute Mills Association, encouraged the development of the indigenous industry and assisted it by giving technical advice.

Early in the inquiry evidence had been sought as to the capacity of the indigenous industry and the demand it was expected to meet, as the objectors to the application claimed that the Indian industry was neither large nor efficient enough to service the jute mills.

The applicants stated that there were 21 jute mill bobbin factories in Calcutta with a capacity of about 73,500 gross of bobbins per annum, but Government sources advised that the maximum production was achieved in the year 1946-47 when the total output was 13,500 gross of roving bobbins and 26,400 gross of spinning bobbins, a total of 39,900 gross. Another 23 factories, all but 3 in the Calcutta area had been named to the Board but no information was available as to their productive capacity and actual output.

As to the question of demand the Indian Jute Mills Association gave two estimates, one based on indigenous bobbins only and the other on imported bobbins. The figures submitted were 78,500 gross indigenous and 41,600 gross imported, excluding bobbin ends. The Indian manufacturers disputed these estimates as they were unable to accept the opinion of the jute mills as to the comparative durability of the two types of bobbins. The Priority Assistance Advisory

panel for the jute industry provided another estimate based on the figures supplied by the jute mills themselves for the year 1944; this was accepted by the Board:-

Rove bobbins	10,000 gross	
Spinning "	40,000 "	
Bobbin ends	25,000 "	
<u>Total</u>	<u>75,000</u> "	(10.8 m.)

With regard to the proportion of indigenous bobbins used by the jute mills the Jute Mills Association had in the course of discussion, informed the Board that, due to the inferiority of these bobbins, only one third of the jute mill machinery was serviced during wartime despite the supply reaching 50 per cent of the needs of the jute mill industry, whereas the same number of imported bobbins had serviced the remaining two thirds of the machinery. In response, the representatives of the Indian bobbin-makers stressed the fact that the estimated combined output of the 21 firms for which figures were available i.e 73,500 gross was only slightly below the agreed estimated annual demand and that the indigenous industry could therefore cope with the jute mills requirements if only they (the mills) would adopt a more sympathetic purchase policy and enable the local manufacturers to expand to their full potential. The Board in its findings agreed that the Indian industry had ample capacity to meet the entire demand for jute bobbins in the country.

Despite their findings with regard to the capacity of the jute bobbin-making firms in Calcutta the Board members were critical of the machinery and plant available to meet the increased output envisaged:-



Since most of the bobbin factories in the country sprang up during wartime, they have been using improvised machinery. Many of them are not equipped with a modern kiln for seasoning the timber which is important in the manufacture of quality bobbins. The Representatives of the jute and cotton mills stated before us that indigenous bobbins were defective in many respects and hence inferior to imported bobbins. In the course of discussion at the public inquiry it was found that many of the defects of indigenous bobbins could be remedied by the installation of modern kilns and more up-to-date machinery.

The Board took the view that, whereas the manufacturers of cotton bobbins were trying to modernise their plants, the manufacturers of jute bobbins were rather reluctant to follow suit, as they felt a complete lack of assurance about the future of the industry due to the unhelpful policy of the jute mills regarding the purchase of bobbins. In the Report the Board concludes that the development of the bobbins industry was largely due to the stimulus imparted by the last war and most of the units required to be equipped with modern machinery and tools, and the Government should give them assistance to import these items.

The suitability for bobbin-making of the timbers available in India and the standard of workmanship required to produce a bobbin of the quality and precision needed were considered next by the Board. Both aspects were crucial to the case presented by the objectors. The Scottish bobbin-makers in opposing the application for protection had, in their submissions to the Board made much of the importance of their use of Scottish home-grown hardwoods, particularly beech,

which on account of their slowness of growth were extremely durable; bobbins made from them had a worldwide reputation for long life under the most trying conditions. On the other hand it was claimed that the species of Indian timber used by the Indian trade were much inferior as borne out by tests carried out in the UK on samples sent from India, which had found the materials to be quite unsuitable for bobbin-making. Therefore improvements in plant and machinery would not overcome the deficiencies of which the mills complained which largely arose from the lack of suitable indigenous raw materials.

For their part the Indian bobbin-makers stated that they had used three timbers with success, mango, haldu and kalam and their view was supported by the Technical Adviser to the Board, a timber development officer from the Industries and Supplies Department of the Government, and also by the wood seasoning officer from the Research Institute for forestry in Dehra Dun. Nevertheless, many of the jute mills stated that indigenous bobbins were definitely inferior to the imported ones; the deficiencies cited included the nature of the timber used and poor seasoning as well as the low standard of workmanship and inaccuracies in dimensions. The Hukumchand Mills, for example, advised that the home-produced bobbins lasted only half as long as the imported bobbins and the Gourepore Co. Ltd. claimed that 50 per cent of the deliveries had to be rejected.

The All-India Jute Mill Bobbin Manufacturers Association admitted that there was still scope for improvement but the bobbins produced by their member firms were in no way inferior to imported bobbins and the mills should buy direct from their factories and not from mill store suppliers. If ordered well in advance their members could

purchase the right quality of timber and season it properly. A contribution to the debate by the official from the Industries and Supplies Department, was to the effect that many of the bobbin factories did not always get the right type of timber and that most of them had no facilities for seasoning the timber.

From the evidence placed before it, the Board came to the conclusion that there were good factories producing the right type of bobbin using the best timber and the correct method of manufacture who had been receiving repeat orders and good certificates. On the other hand there were other ill-equipped factories which did not take proper care as to the materials they used or their method of manufacture:-

It would there be as wrong to say that no quality bobbins are made in India as to say that all indigenous bobbins are as good as imported ones. India possesses a large variety of timber suitable for the manufacture of bobbins. The technique of manufacture is also not at all difficult. With proper care in the selection and seasoning of the timber and the use of the right type of machinery and tools, Indian factories should be able to turn out bobbins which would compare favourably with the imported article

The Board stressed also that the bobbin industry was still at an early stage of development and that much work required to be done in the testing of suitable varieties of timbers, their grading and seasoning; the right type of machinery and tools would have to be used and, most importantly, standard specifications evolved and followed with care. The Board regarded the adoption of standard

specifications as a way of resolving the difference of opinion between the mills and the bobbin-makers as to the suitability of indigenous bobbins.

and so long as this difference of opinion persists the jute mills will continue to want imported bobbins while the indigenous bobbin manufacturers will go on complaining that they are not receiving a square deal from the jute mills."

The cost of production and fair selling prices were the next subjects to be examined. During the course of the investigations the All-India Bobbin Manufacturers Association had provided the names of three firms for the purpose of costing; the background of these enterprises gave an interesting picture of the bobbin industry in Calcutta. The first concern, the Hindustan Bobbin Factory was a private partnership which started production in January 1947 with a capacity of 2400 gross of rove bobbins and 3600 gross of spinning bobbins per year. Particular attention was paid to the cost data of this firm as it had the highest production during the first five months of 1948 the period selected for the costing exercise; the figures were 612 gross of rove bobbins and 482 gross of spinning bobbins with 1892 gross of rove ends for repairs, well below the capacity claimed.

The second firm, the East India Bobbins Ltd., was registered as a private limited company in 1943. Its machinery was originally purchased in 1916 and had worked for 2 1/2 years in the first World War. The machines had been idle for over 20 years owing to the lack of demand for indigenous bobbins but production was re-started in 1942. The capacity of the plant was said to be 1800 gross of rove bobbins per annum.

The remaining firm was Bobbin Manufacturers Ltd. of Calcutta a private limited company registered in 1947 with a capacity of 3600 gross of rove bobbins per annum. The factory commenced production in July 1947 but was closed from November 1947 to March 1948 due to labour troubles.

The records of the first firm were kept in Hindi script, the second in Bengali and the third in English; furthermore, none of the factories could furnish adequate production or cost data for 1947 due to the communal disturbances of that year. However, the Cost Accounts Officer and the Technical Adviser to the Board made efforts to build up estimates confining themselves to three common products:-

- (a) rove bobbins 10" x 5" inches, (b) ends for these bobbins
- (c) spinning bobbins 4" x 2 5/8" inches.

The fair selling prices for indigenous bobbins finally presented to the Board were:-

	<u>Fair selling price</u>
	<u>£'s per gross</u>
Rove bobbins 10" x 5"	13.6
Ends for " "	3.2
spinning " 4" x 5/8"	3.8

In the case of the imported bobbins the Board finally decided to accept the quotations given by the Scottish Bobbin and Shuttle Manufacturers Association for the landed costs of these three products:-

	<u>£'s per goss</u>			
	<u>C.I.F.</u> <u>price</u>	<u>Customs</u> <u>at 10%</u>	<u>Clearing</u> <u>Charges</u>	<u>Landed</u> <u>Cost</u>
Rove bobbins 10" x 5"	17.9	1.8	1.1	20.8
Ends for " "	5.3	0.5	0.5	6.1
Spinning " 4" x 2 5/8"	5.5	0.5	0.3	6.3

After noting that even without the Customs Duty the landed costs of the imported articles would be definitely higher than the fair selling price of Indian-made bobbins the Board decided that the indigenous bobbins did not require the support of a protective import duty.

However, despite the difference in cost, the jute mills showed a definite preference for the imported article the main reason being that of quality.

In the view of the Board part of the solution to the problem was in the hands of the bobbin-makers in that they should try to achieve higher standards of production with the help of up-to-date machinery and the right quality of timber; but the Government too, in view of the importance of the jute industry, should offer direct assistance by way of technical guidance and by improving facilities for the supply of suitable timber.

The Board concluded that:-

It will, however, take some time before the industry is placed upon a stable basis so as to compete with imported bobbins on an equal footing . . . We recommend that, as long as the licensing of imports of bobbins is continued for balance of payments

considerations, the desirability of maintaining and expanding the indigenous production should be kept in view and the quantum of imports regulated accordingly. We must also emphasise that the jute and cotton mill industries, which occupy such an important place in the economy of the country, have a duty to encourage the development of an accessory business like bobbins and we recommend that these two industries should buy their requirements of bobbins, as far as available, from the "approved" factories, as defined.

However, even at the time of the inquiry the importing of jute mill bobbins was subject to restrictions; no licences were granted for imports from the dollar and hard currency countries and those from sterling or soft currency countries were limited to monetary ceilings. The Board were advised at the Inquiry by the representatives of the Jute Mills Association that for the licensing period July-December 1948 imports of jute mill bobbins had been cut down by about 63 per cent of the total value requested.

Briefly, the objections to the application came from three sources, the importers of bobbins, the Scottish bobbin-makers and the textile machinery manufacturers, and amounted to four basic complaints:-

- (i). The Indian jute bobbin manufacturers had neither the capacity nor the plant, machinery and technical knowledge to meet the needs of the jute mills
- (ii) the timbers used by the Indian bobbin-makers were unsuitable for the quality of bobbin required by the mills

- (iii) it was the experience of the jute mills that the indigenous bobbin had only half the life of the imported article and was inferior in general quality and finish.
- (iv) it was the opinion of the textile machine manufacturers that new types of spinning and winding machines under production which demanded special type of bobbins in design, quality and precision, could not be serviced in India as the skill and the specialised machinery required to make the bobbins was not available there.

In their response to the objections the Board was confident that the industry in India had ample capacity to meet the entire demand for jute bobbins in the country, but it also appeared to find the industry very ill-equipped in plant, machinery and seasoning facilities. In fact, a somewhat confusing picture emerged of the Indian jute bobbin industry; although non-existent at the beginning of the Second War, by 1947 over 40 firms claimed to be bobbin producers, but only 10 returned the questionnaire circulated by the Tariff Board in preparation for a public inquiry of much importance to the trade. Of all the firms listed in the appendices to the Report, nothing was known of the capacity or production of 23. It seems probable that many of the firms were small, with only a passing interest in the industry, as any woodworking establishment equipped with a lathe could produce the more simple patterns should trading conditions be sufficiently encouraging. The highest production figures recorded for 21 firms in Calcutta was, in total, equivalent to half the annual consumption of the jute mills; yet it was claimed by the mills that this quantity, due to its poor quality, serviced only



one third of the plant. The Board was also required to satisfy itself that the industry was "conducted on sound business lines" but, when so employed, found it impossible to obtain valid details of costings of the most basic products from firms especially selected by the All India Jute bobbin Manufacturers Association for this purpose, and was compelled to accept estimates compiled by their own technical advisers.

A crucial factor at the Inquiry was the evidence submitted by the Technical Advisers to the Board together with that from the Indian Forest Research Institute that certain indigenous timbers were suitable for manufacture of jute bobbins, given careful selection, handling and seasoning. This advice was accepted by the Board and consequently demolished the argument from the objectors that, however efficient the industry would be with new plant and machinery, the lack of suitable indigenous timbers would prevent the Indian bobbin-makers from supplying, in full, the needs of the jute mills.

For the Scottish Bobbin and Shuttle Manufacturers Association there was little chance of a satisfactory outcome, the Indian bobbin-makers in 1946-47 had produced nearly half of the jute industry's requirements and had convinced the Board that they had enough capacity to cope with the balance; the mills had been able to operate using indigenous bobbins and although the Scottish bobbin lasted longer the Indian version was decidedly cheaper. As to the fears of the textile machinery manufacturers, a leading company in Belfast was making plastic bobbins for their machines, which were not subject to the ban; McGregor and Balfour also designed bobbins for the new high speed machines, based on components of vulcanised fibre, aluminium

and wood, which were assembled in India and thus escaped the ban

The jute mills for their part had built up, since the end of the war, large stocks of Scottish bobbins so that total dependence on the indigenous article was unlikely to arise for some considerable time.

As reported during the Inquiry, the Government had already been compelled to take urgent action for financial reasons and licences for the second six months of 1948 had been severely cut. Within months the ban on imports of wooden bobbins for the jute mills was total.

In its conclusions the Board gave an indication of the economic philosophy of the 'New India':-

The jute and cotton industries, which occupy an important place in the economy of the country, have a duty to encourage the development of an accessory industry, like bobbins.

(iv) Post-war problems for the Scottish bobbin and shuttle industry 1946-1950

When the war in the East ended in 1945 and jute mills in India ordered large quantities of bobbins and shuttles. As a consequence, by 1947 the order books of the Scottish firms in that industry were filled for years ahead; for example, the Gateside Mills Co. Ltd. had orders from Calcutta representing a programme of full production for at least three years. The orders, however, were subject to the granting of import licences which were, in the event, refused by the Indian authorities leaving the jute mills no alternative but to cancel their instructions; by the end of 1948 it was clear that the outstanding work for the Scottish firms had been reduced to the equivalent of a few months on full production. The completion of old orders already licensed and minor relaxations of the ban, extended the bobbin connection with Calcutta until 1950, by which time the export of all spinning bobbins had ceased, and the shipment of rove bobbins, ends for repair and other similar accessories had been reduced to a trickle. In broad terms the industry enjoyed busy and prosperous times after the war until 1948 after which the Indian situation provoked a serious decline as made clear in the detailed examination of the Gateside records which follows.

The sales figures for these years show the general trend:-

Table 4.7The Gateside Mills Company LimitedValue of annual sales 1946-1950<sup>28</sup>

	<u>£000's</u>				
<u>Year</u>	<u>1946</u>	<u>1947</u>	<u>1948</u>	<u>1949</u>	<u>1950</u>
<u>Annual sales</u>	<u>64.6</u>	<u>118.7</u>	<u>157.7</u>	<u>130.8</u>	<u>98.0</u>

Apart from Calcutta an analysis of the sales show a growing involvement with other centres of the textile industry stimulated, no doubt, by the uncertainties of the traditional markets. For example, shuttles for the cotton industry were exported in substantial quantities to South America responding to a strong demand in Brazil, Uruguay, Argentina and Chile, from where White Child and Beney's representatives sent orders.

Table 4.8The Gateside Mills Company Limited,

Sales to export markets and to the UK expressed as percentages of total annual sales 1946-1950<sup>29</sup>

<u>Year</u>	<u>1946</u>	<u>1947</u>	<u>1948</u>	<u>1949</u>	<u>1950</u>
	<u>%</u>	<u>%</u>	<u>%</u>	<u>%</u>	<u>%</u>
<u>Calcutta</u>	69.4	67.8	74.1	60.3	27.6
<u>Other markets</u>	15.2	14.9	12.2	18.0	19.1
<u>UK</u>	15.4	17.3	13.7	21.7	53.3
	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>

The restrictions in the Indian market in these years were directed towards accessories for spinning machinery; as regards the products of the Scottish industry, shuttles and picking arms were less affected. At this stage the Indian shuttle-makers also seeking protection were principally concerned with the cotton industry, leaving the jute mills dependent on the imported article. Fortunately, elsewhere in the world the demand for bobbins and shuttles was strong in a post-war boom and the traditional suppliers were hard-pressed; consequently, due to the reduced demand from India Gateside Mills Co. Ltd. and others in the Scottish industry Scottish industry were able to offer quick deliveries and thus gain footholds in new markets. More attention too, was paid to the UK market and to the demand for accessories from the cotton and woollen sectors in the North of England. Nevertheless, so great a loss of trade in India in a comparatively short time could not be re-couped easily, products for other markets often required- as in the case of cotton shuttles - extensive re-tooling, re-stocking and new skills.<sup>30</sup>

Reverting to Table 4.7 the sharp increases in sales in 1947 and 1948 arose in part from a substantial increase in prices in 1947 as described<sup>31</sup> stimulated by a strong demand from Calcutta at this time and also by the pressure of rising raw material prices; added to these factors might well have been a determination to "make hay while the sun shone" as, certainly, dark clouds were already gathering on the horizon. Higher production also contributed to the level of annual sales:-

Table 4.9

Annual production of principal items manufactured at  
Gateside 1946-1950<sup>32</sup>

<u>Year</u>	<u>000's</u>				
	<u>1946</u>	<u>1947</u>	<u>1948</u>	<u>1949</u>	<u>1950</u>
Rove bobbins	136.7	212.7	208.8	239.9	137.3
Spinning "	567.4	541.7	520.9	317.2	169.4
Solid " "	682.0	877.1	957.7	373.4	14.7
Ends for repairs	341.0	536.1	453.9	351.5	4.7
Hickory picking arms	9.1	5.9	16.4	25.9	23.7

The effect of the Indian importing restrictions is particularly noticeable on the output of solid spinning bobbins and ends for repairs as these two items were specially connected with the Calcutta mills and rarely sold elsewhere in any quantity. The figures for shuttles also include cotton and woollen types of which many thousands were made for overseas markets. In 1949, for example, the individual quantities were:-

<u>000's</u>					
Jute	22.2	cotton	28.7	Woollen	10.2

One of the common practices which contributed to the prosperity of the earlier years of this period was that of accepting orders only on a "price ruling" basis i.e. at the price current at the time of delivery; in this way suppliers protected themselves from having

to bear unforeseen increases in their own costs. It was an arrangement which could only apply in times of great demand in the markets when consumers had little option but to accept the increases passed on by the suppliers. Certainly after the Second World War there was a scarcity of certain raw materials resulting in frequent changes in prices; wage levels were also difficult to predict with any confidence. Consequently this type of provision was very necessary in the Calcutta trade and, in fact, in most distant markets where several months could elapse between the time the orders were negotiated and shipment made; licensing procedures common in most countries were often the cause of delay as well as the complicated documentation which accompanied any monetary transaction. An example of the use of the price ruling system is seen in the Minutes of the Scottish Bobbin and Shuttle Manufacturers Association when on the 26th February 1947 the members agreed to inform their customers in India and elsewhere of increases of 33 1/3 per cent in the prices of spinning bobbins and spools, 25 per cent in the case of rove bobbins and 23 per cent in that of shuttles. The increases were to apply to all goods invoiced on and after the 10th March 1947. Such were the delays which could occur for various reasons that there were instances where more than one increase was applied before the goods in question were shipped; shuttles were increased again in September of that year and even less notice given, as the customers were advised that the new prices would apply from the date the decision was taken in the UK.<sup>34</sup>

The manufacturers in their turn suffered from the same conditions applied by their suppliers, the price of raw materials often being unknown until they had been delivered.

The rise in prices decided on the 26th of February and quoted above, was the last to be applied to bobbins, bobbins ends, and similar spinning accessories, for the jute mills in Calcutta; the Scottish bobbin-makers considered that it would be imprudent to apply further increases while the Inquiry was collecting evidence. Once the Indian Government's decision had been taken and there was clearly no hope of relaxation there was little point in altering the prices already established.

Returning to the subject of raw materials, the importing of persimmon and hickory in the form of stock sawn to specified dimensions was controlled, until 1947 by the Hardwood Dimensions Concentration Council operating under the Timber Control Department of the Board of Trade. This war-time organisation was made up of Ministry officials, pre-war importers of these materials and delegates from the various trade associations representing the consumers. Apart from shuttle-making and the production of picking arms, this dimension stock was used in very substantial quantities by the turnery trade for tool and brush handles; the golf club manufacturers were also interested in the highest quality of persimmon for club heads. In 1947, the supply position in the US had improved after the constraints of the war years and had reached a level which encouraged the interested industries to ask the Government for a return to peace-time practices. This was finally agreed, the Board of Trade however, setting ceiling prices and quantities;<sup>35</sup> the effect can be seen in this Table and also the impact of devaluation in 1950. The doubling of the price in 1947 was due to an increase in the cost of persimmon and the removal of a Government subsidy.



Table 4.10

Increases in the cost of persimmon shuttle blocks  
for jute shuttles 1946-1950 <sup>36</sup>

	<u>1946</u>	<u>1947</u>	<u>1948</u>	<u>1949</u>	<u>1950</u>
Standard jute shuttle blocks	8.7p	17.4p	15.3p	14.9p	21.30
each					

The other imported material of consequence, bobbin blocks from Sweden, rose in price by 25 per cent over these years reaching £2.70 per gross in 1948 and 1949. Very few were required after 1948 but the contracts with the suppliers could not be terminated abruptly and the bobbin-makers were left with large stocks of blocks.<sup>37</sup>

With regard to earnings in the industry in these post-war years, wage rates and conditions of service were the subject of negotiation between the Scottish Bobbin and Shuttle Manufacturers Association and the Municipal and General Workers Union. The Gateside Mills Co. Ltd. and the firm of John Ireland in Dundee were not directly involved as neither had employees who belonged to this or indeed any other union. Nevertheless both concerns took a keen interest in any settlement so that they could maintain their own wages and conditions on a par with, or slightly in advance of, the agreement and thus remove any advantages the workforce might see in union membership.

According to the records of the Association, the conduct of the negotiations was formal and restrained and if the employers could so arrange, prolonged. In 1947, the Union wrote to the Association seeking a reduction in the working week, their letter dated 17th February read as follows:-

I am instructed by our members employed in your industry to request that negotiations be opened for a 40-hour week, without reduction in earnings to be worked on five days of eight hours each Monday to Friday. It is felt by our members that this step is necessary and we would be pleased to discuss same with a view to an agreement being reached. We are willing to consider this being done on a progressive basis of stages and we would suggest that the first stage be 44 hours be worked on five days in the week.<sup>38</sup>

The Secretary of the Association was instructed to write in reply that in view of the Government White Paper, published since the letter was written, requiring additional production throughout the country, the time was not opportune for a reduction in hours.<sup>39</sup>

In fact the members were anxious to retain the 48 hour week - 47 at Gateside - as business activity was at a high level in the trade particularly from Calcutta where the mills were re-stocking after the war and perhaps making provision should import restrictions under an independent Indian Government be imposed.

The Union in their reply avoided any reference to the Labour Government's appeal but stressed that conditions elsewhere in the bobbin industry in the UK were based on a reduced working week. Their letter suggested a meeting to which the Association agreed - which was held on the 28th March.<sup>40</sup>

At the meeting after much discussion, the employers offered an increase in the weekly rate of wages in lieu of a reduction in the hours worked. After consulting their members the Union then requested an increase of one shilling on the six shillings offered and

a further two days in addition to the current four statutory holidays in return for their agreeing to withdraw their request for a shorter week. More negotiations followed until a final agreement was reached whereby the extra shilling was granted but no extra holidays.<sup>41</sup>

The final minute in the records, referring to this settlement reads:-

Messrs Ireland intimated that as they have no Union workers they would be faced with a walkout unless they granted their workers a forty-five week with no work on Saturday, and with no change in wages, and that they intended putting this into operation immediately<sup>42</sup>

The Gateside Mills, the other non-union member continued to work a 47 hour week over 5 1/2 days until 1949 when a 5 day week was adopted and the hours reduced to 43 3/4.<sup>43</sup>

By way of example wages at Gateside, which were traditionally slightly ahead of those agreed with the union, were:-

Table 4.11

Hourly rates and weekly wages 1946-1950<sup>44</sup>

1946	(47 hours, 5 1/2 days)	10.6p per hour	£4.98 per week
1947	" "	11.25p " "	£5.29 " "
1948	" "	12.1p " "	£5.68 " "
1949	(44 hours, 5 days)	12.9p " "	£5.68 " "
1950	" "	" " 2	" " "

The damaging effect of the Indian importing restrictions is again evident in the trading accounts of the Gateside Mills Co. Ltd. abstracts from which appear below. It should be noted in relation

to these figures an increase in production in 1947 was accompanied by a rise in selling prices of, in broad terms, 25 - 33 per cent..

These prices remained unchanged until the end of the bobbin connection with Calcutta. Shuttles on the other hand as already noted were much influenced by the cost of persimmon which, in fact, doubled during this period.

Table 4.12

Extracts from the trading accounts of the  
Gateside Mills Company Limited 1946-1950

	<u>£000's</u>				
<u>Year</u>	<u>1946</u>	<u>1947</u>	<u>1948</u>	<u>1949</u>	<u>1950</u>
Sales	64.4	118.7	157.7	130.8	98.0
Purchases	28.8	49.9	91.8	64.0	39.8
Wages	14.3	18.1	20.1	20.7	20.1
Salaries	2.7	3.7	4.5	4.7	4.8
Oncosts	14.8	16.1	21.9	17.0	17.5
Profit	3.8	30.9	19.3	24.4	15.8
<u>Total</u>	<u>64.4</u>	<u>118.7</u>	<u>157.7</u>	<u>130.8</u>	<u>98.0</u>

The most profitable year, 1947, benefited from the increase in selling prices applied early in the year whereas other rises in raw materials and wages made a more gradual impact. The purchases in 1948 are far larger in relation to sales than in the other years, indicating a greater involvement in merchanting finished goods manufactured by fellow members of the Association. The need for this action arose from the loss of raw materials in a fire in 1947, which affected production at a time when customers were pressing for deliveries; fortunately the fire was confined to outbuildings and the

re-built main mill escaped damage.<sup>45</sup> Apart from finished goods there was also a shortage of sawn material which had to be made up by purchases from outside sources. Merchanting normally realised a margin of only 5 per cent to cover profit and administrative expenses, hence the lower annual profit as measured against the record sales figure. The effect of merchanting can also be deduced from the total wages for the year which are only slightly higher than those for 1947 despite the sales figure achieved.

For McGregor and Balfour the years 1946-50 were, according to their accounts<sup>46</sup> a period of high profits and considerable growth.

The available figures for the trading profits show:-

1948	£80.7 thousand	
1949	£116.0	"
1950	£88.3	"

after which a decline occurs to reach a low point in 1953,

1951	£64.7 thousand	
1952	£69.3	"
1953	£35.2	"

The full effect of the ban on imports to Calcutta was perhaps masked by the investment in the erection and equipment of a large modern sawmill, changing the direction of the Company's major production interest to the conversion of all types of timber for the hardwood and softwood markets. It will be seen from a comparison of the balance sheet for 1945 (Table 4.6, p.197) with that of 1950 overleaf that the written-down value of the buildings, plant and machinery rose from £27.8 thousand in 1945 to £57.9 thousand in 1950.

Nevertheless the manufacture of traditional products for the remaining markets was continued.

Table 4.13McGregor and Balfour Ltd.Balance sheet 1950

		<u>£000's</u>	
<u>Liabilities</u>		<u>Assets</u>	
Share capital, capital reserves		Property, machinery	
and surpluses	195.5	and plant	57.9
Current liabilities	160.6	Motor cars	3.4
Provisions	25.9	Current assets	320.7
<u>Total</u>	<u>382.0</u>		<u>382.0</u>

As evident in the balance sheets of the Gateside Mills Co. Ltd., Table 4.14, the Company in these years also pursued a policy of investment in buildings, machinery and plant despite the trading difficulties with India. It began in 1946 when an effort was made to remedy the shortage of sawmilling facilities which for many years had compelled the Company to buy sawn material from other sawmills. The plan involved the construction of a new road on the north side of the river, building a loading bank and weighbridge and erecting on the other side a crane with a 120' jib which could span the river. This scheme ruled out the necessity of a bridge which, with turning space for lorries, would reduce the area available for the storage of logs. Once complete, timber could be brought from the woodlands by road and the dependence on rail transport ended. A sawmill was constructed from a Nissen hut built on concrete foundations and equipped with machinery, all electrically powered. By the end of 1947 the sawmill was producing beech planking and squares, raw material for bobbins destined for Calcutta, a market, unfortunately, soon to be closed.

Table 4.14The Gateside Mills Company Limited.Balance sheets 1946-1950

<u>Liabilities</u>	<u>£000's</u>				
<u>Capital</u>	<u>1946</u>	<u>1947</u>	<u>1948</u>	<u>1949</u>	<u>1950</u>
Shares	10.0	10.0	10.0	10.0	10.0
Creditors	2.7	8.9	8.3	3.0	1.8
"    sundry	9.7	3.0	3.7	3.0	1.8
Provision for EPT	2.5	0.6	0.6	0.6	0.7 refund 0.6 provision
Deferred repairs	1.3	1.3	1.3	1.3	1.3
Provision for I.T.		1.9	14.6	12.6	20.3
P & L account	11.3	39.5	44.2	49.0	54.0
Overdraft	0.8				
Due Director	1.1	0.9			
<u>Total</u>	<u>39.4</u>	<u>6.1</u>	<u>82.7</u>	<u>79.5</u>	<u>90.5</u>
<u>Assets</u>					
New buildings				4.4	9.0
Ground and buildings	4.4	5.7	7.2	6.3	5.6
Machinery	2.3	7.1	7.0	14.1	14.5
Motor cars	1.0	1.3	1.5	3.8	3.8
Stock	25.7	28.4	22.8	16.7	26.1
Book debts	2.2	6.3	11.2	14.5	6.0
Receivable	0.2	0.1	0.1	0.1	0.1
Insurance pre-paid				1.3	2.2
Loans	3.5	2.0	2.1	-	0.1
Cash	0.1	15.2	29.9	18.2	22.1
<u>Total</u>	<u>39.4</u>	<u>66.1</u>	<u>82.7</u>	<u>79.5</u>	<u>90.5</u>

This increased production of green sawn timber added to the pressure on the seasoning facilities, which comprised outdoor storage and a limited amount of heated accommodation to finish the process. The problem was made more acute by a fire which, in February 1948, destroyed a building near the main mill used as a seasoning kiln. As it had been filled to capacity with timber the kiln burned with considerable intensity and, but for the sprinkler system on the outer walls of the main mill, would have certainly damaged that building and some of the machinery it contained.

It so happened that in these early post-war years the Forest Products Research Laboratory<sup>47</sup> was endeavouring to persuade the wood-working industry to season timber in accordance with scientific principles rather than the traditional and lengthy air-drying/ warm chamber processes. To this end the Laboratory organised a series of courses to train kiln operators to handle the modern equipment, which comprised brick-built chambers where the temperature airflow and humidity could be controlled, enabling any timber to be seasoned more speedily and with less degrade and, above all, to a final common moisture content. Members of the Company attended these training courses and as a consequence it was decided to construct a building 100' x 40' incorporating four seasoning chambers of the most modern design and a large storage area to ensure that the seasoned material was kept in the appropriate conditions to maintain the moisture content. This battery of kilns was only the second to be installed in Scotland and was unique in the bobbin and shuttle industry in the the UK.

Parallel with the provision of sawmilling and seasoning plant, designed not only to increase production but also to improve the



quality of the items manufactured, the Company invested in new machinery which increased its capabilities to compete in the markets for shuttles, for the cotton industry and for the more sophisticated bobbins required for the cotton, woollen and man-made fibre industry in England and overseas. By 1950 therefore, the plant at Gateside was far more versatile than any other in the bobbin and shuttle making industries in Scotland, unequalled in its seasoning techniques and well equipped to grapple with the problems arising from the loss of so much of its trade to India. This substantial investment was carried out despite the most discouraging situation in the Company's market in India. The total embargo on bobbins and similar items was, however, a severe blow at this time as it was generally believed that the Indian Government would not endanger the jute industry - still a vital part of the Indian economy - by acting precipitately; moreover the mills had signalled their support by ordering large quantities of these accessories in the post-war years to make up depleted stocks and to cope with a very strong demand for jute goods.<sup>48</sup>

The principal consequences of the embargo were clearly evident in the schedules of sales and production extracted from the Company's records, Tables 4.8 and 4.9. There was, however, another problem of some significance to those bobbin-makers who had supplied solid spinning bobbins to Calcutta; the swift application of the ban gave the manufacturers little time to halt their intake of bobbin blocks from Sweden. The contracts could not be cancelled at short notice due to the considerable time scale of the supply operation. For example, the producers in Sweden required to purchase birch in the forests, the felling of which was a seasonal business; thereafter,

the conversion of the material into bobbin blocks was followed by weeks of seasoning before the goods were packed and shipped to the UK. Once delivered the Scottish manufacturers were obliged to allow further months for seasoning before the blocks were fit to be machined and finished. To ensure a reliable supply, substantial stocks had to be held by the bobbin-makers who were therefore left with a great deal of material when the ban was imposed, stock which was of little interest to any other sector of the industry.

The firms concerned, including the Gateside Mills Co. Ltd., deferred offering the blocks to the only possible users - the Indian bobbin-makers - until August 1955, at which time the total stock in Scotland amounted to at least 8500 gross (1.2 millions); the cost price was £2.70 per gross but they were offered at £1.67 to encourage a bulk sale. A trial shipment revealed that the Indian manufacturers found the blocks difficult to machine and no further consignments were sent; it was thought that the long storage period had caused some degrade in the quality of the birch.<sup>49</sup>

Various attempts were made after the closure of the Calcutta market to find another use for these part-made items. The Gateside Mills produced a range of high quality wooden toys as a sideline to their main production but the idea foundered due to marketing problems.<sup>50</sup> No firm was successful in finding an alternative outlet for the stocks and eventually they were used as fuel.

With further reference to the effect of the ban on imported bobbins, the claims voiced by the bobbin-makers and other interested parties that the production of the mills would be impaired proved, in the event, to be of little substance. Since the end of the war

the jute mills had been ordering large supplies of bobbins in anticipation of restrictive measures on imports and although some orders were never fulfilled due to the ban, stocks had been built up; the agencies representing various manufacturers also carried stocks.

The jute mills were able, in addition, to conserve their bobbins by taking more care with regard to their handling, and by adopting more stringent measures to combat theft. Furthermore, the postwar boom however had eased by 1950 and consequently the likelihood of serious disruption became more remote.

In contrast, the bobbin-makers of Scotland were severely harmed, particularly those firms which manufactured only bobbins, spools and the like and which were strongly committed to the Calcutta market.

The Scottish industry faced difficult choices; other markets for bobbins in the textile world generally demanded higher skills and a wide variety of raw materials. Advancing techniques in spinning increasingly required the use of plastics and light metals in bobbins, coupled with a high degree of precision.<sup>51</sup> Another option was to remain in the field of mass-produced wood turnery but to concentrate on the markets for tool and brush handles, lawn mower rollers etc.

In both cases however, considerable re-equipment and re-training would be required, as unfortunately, the machinery used for the making of jute bobbins was of little use in these more common trades. The faint-hearted clung to the hope that India would be forced to import bobbins again when the Indian bobbin-makers failed to cope with the demand in Calcutta, a situation which never came to pass.

## Chapter 4

### Footnotes

1. GMC Balance Sheet for the year ending  
30 November 1939
2. Table 3.20 and Table 3.43 pp.128 and 175
3. Appendix 3
4. From the standpoint of the Calcutta mills  
it was of utmost importance that their  
sources of supply were reliable and  
delivered on time, particularly in  
the case of bobbins and shuttles a  
shortage of which would immediately  
affect production.
5. The change in the arrangements was due  
to the lorry carrying about 20 workers  
overturning on an icy road and landing  
on its roof in a field; fortunately  
nobody was seriously injured. The  
accident occurred in the early hours  
of Christmas Day, 1939
6. GMC Sales Book 1939
7. These expenses are included under "Oncosts"  
in the abbreviated version of the Trading  
Account, Table 4.4 p.193
8. GMC Sales Book 1940
9. GMC Balance Sheets 1939 and 1940
10. See also p.194
11. The building described is still in use. See  
Fig. 27 pp.60-61
12. GMC Sales Books 1939-1945
13. " " Book 1944
14. See Tables 3.19 p.127  
3.33 p.154  
4.4 p.193

15. GMC Sales Books 1914-1918
16. " " " 1940, 1942, 1943
17. " " " 1941-1944
18. GMC Purchase Books 1940-1945
19. " " " " "
20. GMC Sales Books 1939-1945
21. GMC Purchase books 1939-1945
22. GMC Trading Accounts 1939-1945
23. S. Pollard, op. cit., p.325 also  
Tables 4.5 and 4.14 pp.195, 226
24. W.G.Leburn was the son of the Managing  
Director
25. First reference in the accounts to Excess  
Profits Tax
26. From accounts lodged with the Registrar of  
Companies, Edinburgh
27. Report of the Indian Tariff Board on the  
Bobbin Industry, Ministry of Commerce,  
Government of India, Bombay, 1948. This  
account of the proceedings concentrates  
on that part dealing with jute bobbins
28. GMC Trading Accounts 1946-1950
29. GMC Sales Books 1946-1950
30. In the case of cotton shuttles re-stocking  
involved the importing of substantial quantities  
of the appropriate sizes of persimmon and  
cornel shuttle blocks
31. See pp.217-218
32. GMC Sales Books 1946-1950
33. " " " " "
34. Scottish Bobbin and Shuttle Manufacturer's  
Association, Minute of meeting 26 February 1947  
and 2 September 1947

35. Scottish Bobbin and Shuttle Manufacturer's Association. Minute of meeting 2 October 1947
36. GMC Purchase Books 1946-1950
37. See pp.228-229
38. Scottish Bobbin and Shuttle Manufacturer's Association. Minute of meeting 26 February 1947
39. Ibid., " " " "
40. Ibid., " " 8 April 1947
41. Ibid., " " 30 " "
42. Ibid., " " " "
43. GMC records, Notices to Employees
44. GMC " " "
45. The modern sprinkler system installed in the new building at the time of its re-construction proved to be most efficient. Although the fire occurred only about 10 metres from the main mill the outside sprinklers provided a cascade of water which protected the windows so effectively that no pane of glass was broken. A mild criticism came from the firemen who were subjected to this continuous downpour while attacking the adjoining fire. The building destroyed was a small brick-built kiln which had been filled with beech plank-ing; this material burned with such intensity that the fire brigade were forced to limit their efforts to protecting storage sheds in the vicinity which were not fitted with sprinklers.
46. From accounts lodged with the Registrar of Companies, Edinburgh
47. Forest Products Research Laboratory, Princes Risborough, Bucks.
48. See also pp.212-213

49. The de-grade of the bobbin blocks caused much fine dust to be generated during the turning operation to the great discomfort of the machinist
50. The toy market was still in the throes of the plastic revolution and a re-newed interest in wooden toys was slow to develop. Small firms have neither the resources to await a change in taste or to influence a market of this size.
51. High spindle speeds and the pressures exerted on the flanges and barrels of bobbins by man-made fibres gradually moved the bobbin trade away from woodworking to light engineering.

Chapter 5.

THE INDUSTRY 1950-1960

Introduction

The first part of this concluding chapter examines the events during the years 1950-60 which hastened the decline of the Scottish bobbin and shuttle industry in its traditional form. For the most part the account of this period is derived from the minutes of the monthly meetings of S.B.S.M.A.\* and includes a description of the attempts by the member firms to retain an interest in the Indian and Pakistan markets; negotiations with the NUMGW\* and the problems of diversification are among the subjects considered.

Finally, further questions are raised relating to this period and the years covered in the preceding chapters.

\* The Scottish Bobbin and Shuttle Manufacturers Association.

\* The National Union of General and Municipal Workers.



(i) The course of events

The Scottish Bobbin and Shuttle Manufacturers Association  
and developments in India and Pakistan

1950-1960

From 1947 to the early 1950s the bobbin and shuttle industry in Scotland had suffered mixed fortunes. For those firms principally concerned with bobbin making only, the closure of the Calcutta market had been a severe setback; on the other hand those manufacturing shuttles were more fortunate as these items, together with other loom accessories, were still admitted. The political situation in India in these years had also given little cause for confidence; in 1947 widespread and violent civilian disorders had followed the creation of the two new dominions, India and Pakistan, causing much industrial disruption; the partition had also separated the jute mills from their main source of raw material in Bengal. There were however, openings for the more versatile Scottish bobbin and shuttle makers in other textile centres in Europe, South America, South Africa, the Middle East and Australia for example, which together with a buoyant home market, enjoying a post-war boom, could offset to some degree the full impact of the loss of the Calcutta market for bobbins. Northern Ireland in particular, was the source of a substantial flow of business from the linen trade which, at this time, was diversifying into man-made fibres.<sup>1</sup>

In all these circumstances the monthly meetings of the Scottish Bobbin and Shuttle Manufacturers Association were concerned with

a wide variety of important problems affecting the trade, as well as keeping a watchful eye on prices. At the beginning of the 1950's the Scottish industry comprised:-

<u>Association members</u>	McGregor and Balfour Ltd.	
	Bobbin and shuttle manufacturers	Dundee.
	The Gateside Mills Co. Ltd.	" Gateside, Fife.
	John Ireland and Sons, Ltd.	
	Shuttle manufacturers	Dundee.
	John Howe and Sons Ltd.	
	Bobbin manufacturers	Dundee.
	J. & J.L. Brebner.	
	Bobbin manufacturers	Aberdeen.
	James Jones and Sons Ltd.	
	Sawmillers.	Larbert.

Outwith the Association but having a continuous business relationship with the member firms were:-

T.C. Keay, Ltd. of Dun dee, textile machinery manufacturers with a shuttle department.

Peter Macfarlane and Sons,  
Stanley, Perthshire, shuttle-makers.

James Wyllie and Sons, Montrose,  
shuttlemakers.

By the end of the decade John Howe and Peter Macfarlane had closed down due to the poor state of their trade and James Jones had resigned as their connection with the industry, the production of bobbin ends for repairs and planetree rollers for the jute trade in India, was no longer relevant.

After India had achieved independence and the ban on the import of bobbins had been imposed, the Association was faced with the problem of the manufacture of bobbins in India and Pakistan.<sup>2</sup> Members were anxious lest one of their number would be tempted to set up a plant to make bobbins in Calcutta or even in Pakistan, where a new centre of jute manufacturing was being established. It was feared that this would give rise to further competition in other markets and once established the plant might well be extended to undertake the production of shuttles, picking arms and other items still being imported from the UK thus depriving the Scottish trade of the remains of the Indian market. A well-operated plant based in India having the benefit of cheap labour would indeed be a threat to the Scottish industry in any of the world's markets. Much stress was laid on the necessity to preserve the unity of the Association and to tackle such problems as a united body; resolutions to this effect were prompted by the fact that McGregor and Balfour Ltd. was already operating a small factory in Calcutta, making reeds and cams, and also had a long-established selling agency in that city staffed, in part, by personnel from the UK. In 1954,<sup>3</sup> however, the Association did agree to McGregor and Balfour's Calcutta office selling indigenous bobbins in India and other articles which could not be imported from the UK; more reluctantly an application to make their patented Spinrite bobbin in India was approved in 1956,

a move which some members viewed as the thin edge of a considerable wedge.<sup>4</sup>

As already noted, the importing of shuttles, picking arms and a few other items had escaped the Indian restrictions imposed in 1948 but in 1954 James Stewart, a director of McGregor and Balfour advised the shuttle making members of the Association that in his view, following a recent visit to India, jute shuttles and the like would shortly be manufactured in that country.<sup>5</sup> Two companies there had already been granted licences to the value of £7000, each to import shuttlemaking machinery and a small quantity of persimmon shuttle blocks had been imported. He estimated that within eighteen months the members would be faced with greatly reduced import licences for shuttles. This disturbing news prompted the most urgent discussions between the firms principally affected, McGregor and Balfour, Ltd., the Gateside Mills Co. Ltd. and John Ireland and Sons, as the export of jute shuttles to India was still an important part of their business. The options considered were:-

- (a) to quit the Indian market and dispose of the stocks of raw materials held by members
- (b) to allow individual firms to make their own arrangements should they wish to manufacture in India or co-operate with an Indian enterprise.
- (c) to partake in some joint venture to preserve a foothold in the market.

The minutes of the meetings reveal a marked preference among the members for joint action in that the alternative (b) would almost certainly lead to the break-up of the Association and would foster

competition between members as well as with the Indians. As to abandoning the market, the members were convinced that the Indians would find it very difficult to make jute shuttles without the guidance of the Scottish shuttle-makers; certainly the indigenous<sup>trade</sup> had been successful in producing bobbins but shuttles were considered to be beyond its capabilities, a view re-inforced by the fact that a member company had already been approached to make shuttles in India in co-operation with a firm in Calcutta.

A proposal was therefore examined whereby the three shuttle-making firms would jointly set up a plant in Calcutta to make jute shuttles; however, it was soon apparent that current regulations in India would cause considerable difficulties. The Indian Government required a company having a capital of five lakhs of rupees or more (£37,500) to be 51 per cent Indian-owned and dividends to be limited to 6 1/4 per cent capital so that surplus profits could be allotted to employees; furthermore, even if the capital employed was below that level the company would have little hope of being allowed to compete with Indian firms setting up in the same trade.<sup>6</sup>

The plan was therefore abandoned.

It so happened that at this time (March 1954) Mr S.N. Khaitan the proprietor of Shalimar Wood Products Company of Calcutta was visiting the UK; this company was one of the leading bobbin-making enterprises in India and well regarded in the jute industry. It was known that Mr Khaitan was interested in adding a shuttle-making plant to his present operation and he was therefore invited to meet the shuttle-making members of the Association. At this meeting a measure of agreement was reached and arrangements made for another

discussion within a few days as Mr Khaitan's visit was coming to an end. The next meeting made sufficient progress to allow the preparation of a memorandum recording the basis of an agreement in principal the major points of which were:-

- (i) A plant would be set up in India by Shalimar with a capability of producing 60,000 jute shuttles per annum.
- (ii) The first 160,000 persimmon shuttle blocks (the existing stocks in Scotland) would be supplied by the Scottish shuttle-making firms at a fixed price based on the current cost plus carriage and freight and delivery in India.
- (iii) Machinery would be made available at agreed prices and technical assistance in the form of a skilled shuttle-maker provided, all expenses being met by Shalimar apart from the return fare to the UK.
- (iv) The Scottish manufacturers would undertake to accept no further orders from the jute mills or their agents as from a date to be fixed unless it proved subsequently that Shalimar were unable to cope with the demand at a particular time.
- (v) A selling agency would be organised in Calcutta and a commission of 12 1/2 per cent on the sale of jute shuttles and 10 per cent on other types would be credited to the Association members and shared equally between the three concerned. It was also noted that if T.C. Keay, a non-member, agreed to join the enterprise the commission would be raised to 15 per cent.

- (vi) The agreement would be for 20 years.
- (vii) Mr. Khaitan would be required to deposit a sum in rupees equivalent to £8000 as a security against non-fulfilment of the contract and the last quantities of shuttle blocks delivered to the value of £8,000 would be made available to Mr. Khaitan without charge.
- (viii) Sales would be restricted to India unless otherwise agreed. <sup>7</sup>

Whatever the merits or flaws in the memorandum, the organisation of the meetings, appears from the minutes, to have been ill-considered in that Mr Khaitan with little experience of this country, was unaccompanied on the first occasion and had only his legal adviser at the second, whereas the Association mustered nine representatives from three firms at each, an imbalance scarcely conducive to creating an intimate and friendly atmosphere in which to negotiate an agreement satisfactory to both parties.

Mr Khaitan took a copy of the memorandum back to Calcutta in order to discuss the project with his office there; on the 28th April 1954 it was reported to the Association that Mr Khaitan had indicated that he was no longer interested in concluding a manufacturing agreement with members of the Association and that he proposed to go ahead on his own account. <sup>8</sup>

The member firms involved in these negotiations were disappointed at this outcome believing that the memorandum recorded the agreement of both parties to the principal issues, and an official disclaimer was sought from Mr Khaitan's legal adviser. Perhaps Mr Khaitan's natural reticence and linguistic difficulties were mistaken for

acquiescence; he was not an aggressive negotiator, and his time was limited; whatever the reasons, his response invited no further discussions and the project was abandoned. In fact, Mr Khaitan was undoubtedly right to reject these restrictive proposals; he had nothing to fear from the competition of the Scottish manufacturers as he would receive his Government's support in the form of a ban on imports as soon as two firms, as a minimum, were producing shuttles in sufficient quantity to cope with the demand from the jute mills. Certainly technical assistance in the early stages would have been welcome, but guidance of this kind was available from the makers of the specialised machinery used in the trade, who were based in the UK. The Agreement moreover, would have hampered his own competitiveness in Calcutta, the commission was high as compared with the normal five per cent for selling services, and the raw material, drawn from stocks in the UK for the first three years, would probably have proved more expensive than persimmon shipped direct from the US. The Association members offered nothing of real advantage to Shalimar but they persisted in negotiating as if from a position of strength when, in fact, their market in Calcutta would be totally lost unless they could, by co-operation with the Indians, retain a modest foothold. Some members still believed that it would take many years before the Indians would be able to make acceptable jute shuttles and the Government would be compelled to keep the market open; a director of McGregor and Balfour remembers that this theory, when explained to Mr Khaitan after the meetings, brought a smile to his face. A minute of an Association meeting in November 1956, reads:-



Shuttle prices - India and Pakistan.

Mr. McGregor reported that Shalimar Wood Products (Private) Limited were receiving good orders for shuttles in Calcutta and Pakistan and that no orders for shuttles were coming home from these places. It was understood that the price being quoted by Shalimar Wood Products (Private) Limited was some Rs 2 less than Association prices and in view of this it was decided to discuss this matter more fully at the next meeting.<sup>9</sup>

Thus, Shalimar, within two years of the ending of the negotiations with the Scottish shuttle-makers, had made considerable inroads into the Calcutta and Pakistan markets; in addition, the position of the firm had been strengthened by the Indian Government's policy of refusing the granting of import licences for shuttle-making machinery. In order to clarify the situation regarding these licences, the Calcutta office of McGregor and Balfour had applied early in 1955, and had received the following reply:-

Office of the Chief Controller of Imports and ExportsNew Delhi

I write to say that the domestic demand for jute shuttles can be met fully from the indigenous production and that there is no need for any new manufacturer to start production of shuttles. It is therefore regretted that import licences applied for by you cannot be granted."<sup>10</sup>

In view of this decision and the general situation in the Calcutta market, Douglas Hackney, manager of McGregor and Balfour's office in India reported to the Association in the UK that in his judgement nothing further could be done to ensure the continued import of shuttles into India.<sup>11</sup>

Throughout this decade the Association persisted in its efforts to either keep open or re-open those parts of the Calcutta market of relevance to its members by seeking help from the British Board of Trade, the Textile Machinery and Accessory Manufacturers Association, and by briefing parliamentary or government officials prior to their visits to India but with little success. An effort was also made to improve the products and to revive the interest of the mills in Calcutta, by experimenting with flame-proof materials to make a fire-proof bobbin; each year the industry in India lost large quantities of bobbins, particularly the smaller types which could be more readily concealed, due to workers taking them home for fuel. It was thought that the problem could be solved by impregnating the wooden bobbin with a substance which would reduce its combustibility, but no process could be evolved which was at once practical, effective and economic.<sup>12</sup> A final attempt to re-enter the market was made in 1961 when it was found that the Association prices for shuttles were below those being quoted by the indigenous makers in Calcutta. At this time British firms were being pressed by the Government to export as much as possible of their production and therefore the assistance of the Board of Trade was sought to prevail upon the Indian Government to allow the entry of a cheaper article which would be of benefit to the jute mills. Yet again the response was discouraging, the Board of Trade indicating that nothing further could be done to re-open this market for the Scottish shuttle-makers due to India's sterling shortage which overruled any question of a disadvantage to Indian mills having to pay a higher price for the indigenous article.<sup>13</sup>

In fact, throughout this decade, the Indian jute manufacturing industry's share of a rather dull world export market had declined; as shown in Table 5.1 world exports failed to reach the pre-war level and the Indian share fell from 97.2 per cent to 73.3 per cent.<sup>14</sup> Partition in 1947 left India with the jute mills but divided from their principal source of raw material; the massive transfer of population and the civilian unrest generated, caused so much dislocation in industry, that trade, between the two new dominions, was at a standstill by 1949. In 1951 India embarked upon the first Five Year Plan which restored some stability to the economy, but the Indian jute industry appeared to have received little help when Pakistan began to emerge as a serious competitor in 1954; the reaction of the Indian Government to the threat from Pakistan was, according to one account, "passive acquiescence", avoiding aggressive competition or mutually beneficial co-operation.<sup>15</sup>

Table 5.1

The volume of exports of jute manufactures by India  
compared with the total world exports 1937-1960

<u>Year</u>	<u>Indian exports</u>	<u>World exports</u>	<u>India's share</u>
	<u>Volume</u>	<u>Volume</u>	<u>(%)</u>
	<u>000's metric tons</u>		
1937	1,048.0	1,181.1	88.7
1948-50 average	825.7	849.3	97.1
1951	789.2	921.1	85.7
1952	746.0	840.2	88.8
1953	759.3	901.2	84.3
1954	855.7	989.5	86.7
1955	891.1	1,044.4	85.3
1956	876.8	1,068.7	82.0
1957	873.5	1,056.7	82.7
1958	806.2	1,023.4	78.8
1959	874.0	1,166.7	74.9
1960	810.4	1,105.2	73.3

Establishing a jute manufacturing industry was one of the principal objectives of the new Pakistan Government; in a Statement of Industrial Policy (April 2 1948) it was noted that:-

The most striking feature of Pakistan's present economy is the marked contrast between its vast natural resources and its extreme industrial backwardness. A country producing nearly 75 per cent of the world's production of jute does not possess a single jute mill.

The Government therefore decided to manufacture, in its own territories, the products of its raw materials for which there was an assured market at home or abroad and jute was an early choice.

The enterprise was stimulated by an increase in the world consumption of jute goods which according to the United Nations Food and Agriculture Organisation, rose from 2.21 million tons in 1953-5 to 3.17 in 1963.<sup>16</sup> Jute manufacturing became an important part of the national economy contributing by the mid-sixties more than 50 per cent of the total export earnings of goods made in Pakistan and was second only to cotton textiles in its importance to the Government's plans for the economy and employment.

The following table depicts the expansion of this industry from its founding, only three years after the partition of India, to the middle of the 1960's:-

Table 5.2

The growth of the jute manufacturing industry  
in East Pakistan 1951-1965.<sup>17</sup>

<u>Year</u>	<u>Number of mills</u>	<u>000's</u>
		<u>Number of looms</u>
1951	1	-
1955	8	4.8
1960	14	8.1
1965 (mid)	23	12.3

As compared with Calcutta (105 mills and 67,000 looms) the industry was small but it had the advantage of being equipped with the latest machinery; the orders for bobbins, shuttles and similar accessories generated by this growth were indeed welcomed by the Scottish producers of these items, afflicted by the diminishing Calcutta market.

Some members of the industry in Scotland continued to view the situation with some misgivings in that they felt that McGregor and Balfour, well-established in Calcutta, might be tempted to set up a plant to make accessories in East Pakistan; consequently in 1955 a resolution was minuted re-affirming the associations attitude:-

That no Member would manufacture or co-operate in the manufacture of any item contained in the Association Price List in India or Pakistan, nor would any Member enter into negotiations or even have discussions on this subject with any person or firm outside the Association with this end in view.<sup>18</sup>

However, in the next year, further information was brought to the Association which had some relevance to this subject; in June the Trade Commissioner, representing the British Government in Pakistan visited Dundee before his return to that country and told members that Pakistan was in a difficult position financially and advised against any business investment in that country in the meantime.<sup>19</sup> Another source of information told of the successful entry of Shalimar Wood Products (Private) Ltd. into the East Pakistan market to the detriment of the Scottish manufacturers. A shortage of orders had been apparent for some months and in February 1957 only the Gateside Mills had an outstanding contract on its books.<sup>20</sup>

Prices were reduced in an effort to meet this competition but to no avail as the next substantial order for shuttles was placed with a non-member, J. Wyllie of Montrose, who had offered a price yet lower, and an order for bobbins was lost to the Belgians.<sup>21</sup>

It was not until 1958 that the first report came that two firms in Pakistan had applied for licences to import bobbin and shuttle machinery to a total value of £38,000 and that, if granted, the machinery would be supplied under the scheme for American Aid.<sup>22</sup>

However, Shalimar Wood Products (Private) Ltd. continued to operate so successfully that, by the end of 1959, two firms of shuttle-makers in the Association had received no orders for a year from India or Pakistan and McGregor and Balfour's total input of shuttles in that time had amounted to only 5350 pieces.<sup>23</sup> By the late 1960's the export of jute shuttles to the Indian sub-continent had been reduced to an undertaking of minor importance.

Negotiations with the National Union of General and  
Municipal Workers

Negotiations with the National Union of General and Municipal Workers regarding the pay and conditions of the employees in the bobbin-making trade featured regularly in the meetings of the Association. During the 1950's it was customary for the Union to request each year an increase in wages and on occasion, a reduction in the hours of work or the granting of more paid holidays. The declared and oft repeated objective of the Union was to raise the wages of the Scottish bobbin-makers to the level of those current in the same trade in England; for its part the Association resisted the presumption that the employees in each case could be adjudged equal in terms of skill. Certainly the range, diversity and the standard demanded of the English products gave some substance to that argument. On the other hand the English bobbin-makers were never able to match the productive skills of the Scots, which allowed their products to be marketed at prices which could not be challenged from south of the Border. Whatever the merits of either case, the Association also argued that the loss of the Calcutta market made bobbin-making unprofitable and the members could not afford anything but the most modest of increases in pay or conditions; the reply of the Union to this plea was to advise Members to close their plants if they could not pay a "living wage".

The Union normally referred the matter to the Industrial Relations Department if a negotiated settlement could not be reached and usually fared reasonably well in the Tribunal awards which followed.



In the examples now quoted the claims and awards refer to the skilled grade only in order to avoid a surfeit of detail arising from the many adult and juvenile grades affected.

In 1954 when the Scottish skilled rate for a 45 hour week was £6.69 and the English £7.03 the Union asked for 35p but the Association offered 20p; on this occasion the Tribunal award was 15p which prompted the members to express some satisfaction with the outcome; however, the Union secured a further 25p in the following year without difficulty.<sup>24</sup>

In 1957 another Tribunal award gave 30p to the skilled although the employers were operating their plants on short time or as in the case of J. & J.L. Brebner of Aberdeen, paying off bobbin-makers.<sup>25</sup> The award in 1959 was 35p, in response to the claim for 40p and the counter offer from the employers of 20p, as a result of which the Scottish skilled rate had reached £8.09 as against £8.85 in England.<sup>26</sup> Thereafter, the annual settlement was agreed, apparently with little difficulty at 25p but a reduction in hours was not achieved until 1961 when the working week was reduced to 42 hours.<sup>27</sup> As to the traditional holidays apart from the two weeks in summer, i.e. one day in the Spring, one in the Autumn and the two at New Year (all paid) an agreement was reached in 1958 to include Christmas Day but only if it occurred on a weekday; a week-end Christmas brought neither money nor time off in lieu.<sup>28</sup>

In Scotland the firms employing shuttle-makers followed the bobbin-maker rates and conditions but in England, the shuttle-makers had their own unions and negotiated independently.

Diversification

The period 1950-60 was one of great difficulty for the bobbin makers in Scotland; having lost their main market in India there was little left elsewhere in the traditional trade to occupy their considerable capacity. Certainly they could be accused of a lack of foresight as the independence of India had been pledged in 1942 by the British Government and there was little doubt that an independent Indian Government would be obliged to follow a policy of industrial self-sufficiency wherever possible, for political as well as for economic and financial reasons. In the event the Scottish industry misjudged three aspects, the speed of the transference of power to the Indians in 1947, the abrupt closure of the market for jute bobbins which followed, and the capacity of the indigenous industry to meet the requirements of the jute mills.

One option discussed within the Association, was the merging of all the resources available and forming one unit designed to cope with the estimated demand still remaining. There were, however, great difficulties to be overcome in bringing together these family firms all with their own domestic problems. It was clear that the industry in its present condition had too many buildings, many in poor shape, too much machinery of little worth in the open market, too many employees and too many people at management level. With hindsight, it could be argued that a radical solution of this kind might have extended the life of the industry in Scotland for perhaps two decades but, in fact, the day of the wooden bobbin was fading fast giving way to new materials and standards necessary to meet the strength and precision demanded by new spinning techniques. 29

A major restraint for the manufacturers of wooden bobbins was the highly specialised machinery which had been developed solely for their needs and was unsuitable for manufacturing other items of mass-produced turnery, which might have afforded other outlets; moreover, in recent years, such items as tool and brush handles were turned on rotary lathes with automatic feeds, an entirely different approach to high volume production of turnery from that practised by the bobbin makers. A conversion to this method would have involved a considerable capital investment, a move scarcely encouraged by the difficulties of the handle trade which was becoming increasingly vulnerable, at this time, to the use of plastics.

The firms in the Scottish bobbin industry re-acted in different ways to their common problems. McGregor and Balfour developed their sawmilling activities and became prominent in the Scottish timber merchanting scene; they also retained their Calcutta office which operated several rewarding agencies selling goods, which could still be imported into India, on behalf of British companies. This office also undertook to represent Indian firms supplying the jute mills who found the Scottish rapport with the mills of advantage.

J. & J.L. Brebner of Aberdeen and John Howe of Dundee, both solely bobbin makers, endeavoured to reduce their resources and operations to match a reduced demand but both eventually closed in the 1960's. The Gateside Mills were fortunate, as were all the shuttle makers, that shuttles were still imported by the Indian mills in the early 1950's and the Company had, as described, also extended its shuttle-making into the cotton sector, making plain and automatic types for the home and overseas markets. Furthermore, the Company expanded its involvement in the Northern Irish linen trade and in the tyre

cord spinning industry in the north of England. The modern kilns at Gateside and the introduction of rotary machines also allowed the mass production of wooden lawn mower rollers, a trade which continued for several years until a suitable plastic material was developed and introduced. Yet, despite these efforts, the results in terms of profit were scarcely encouraging; sales fell from a peak of £118,991 in 1952 to £67,566 in 1959. Profits were at their highest level in 1951 at £10,108 but losses followed in 1953 (£8,895) and in 1956 (£3,794) although the latter figure included fees incurred for the services of management consultants of £2746 for their work in connection with the introduction of a bonus incentive scheme.<sup>30</sup>

However, other diversification projects, illustrated overleaf, and the Company's ability to produce bobbins and shuttles for other sectors of the textile trade enabled it to survive. By the early 1980's all the other firms involved in the original trade with Calcutta had closed, leaving little trace of their former activities. Likewise in England, these years saw the end of bobbin-making as a woodworking craft and shuttle production reduced to a mere fraction of post-Second War levels.<sup>31</sup>

Fig. 41

Wooden toys based on bobbin blocks.

The wheels and axles were turned from bobbin blocks and the cabs and platforms from surplus bobbin wood.

The enterprise achieved only a modest success, the toy trade at that time (1960's) being largely obsessed with plastics.

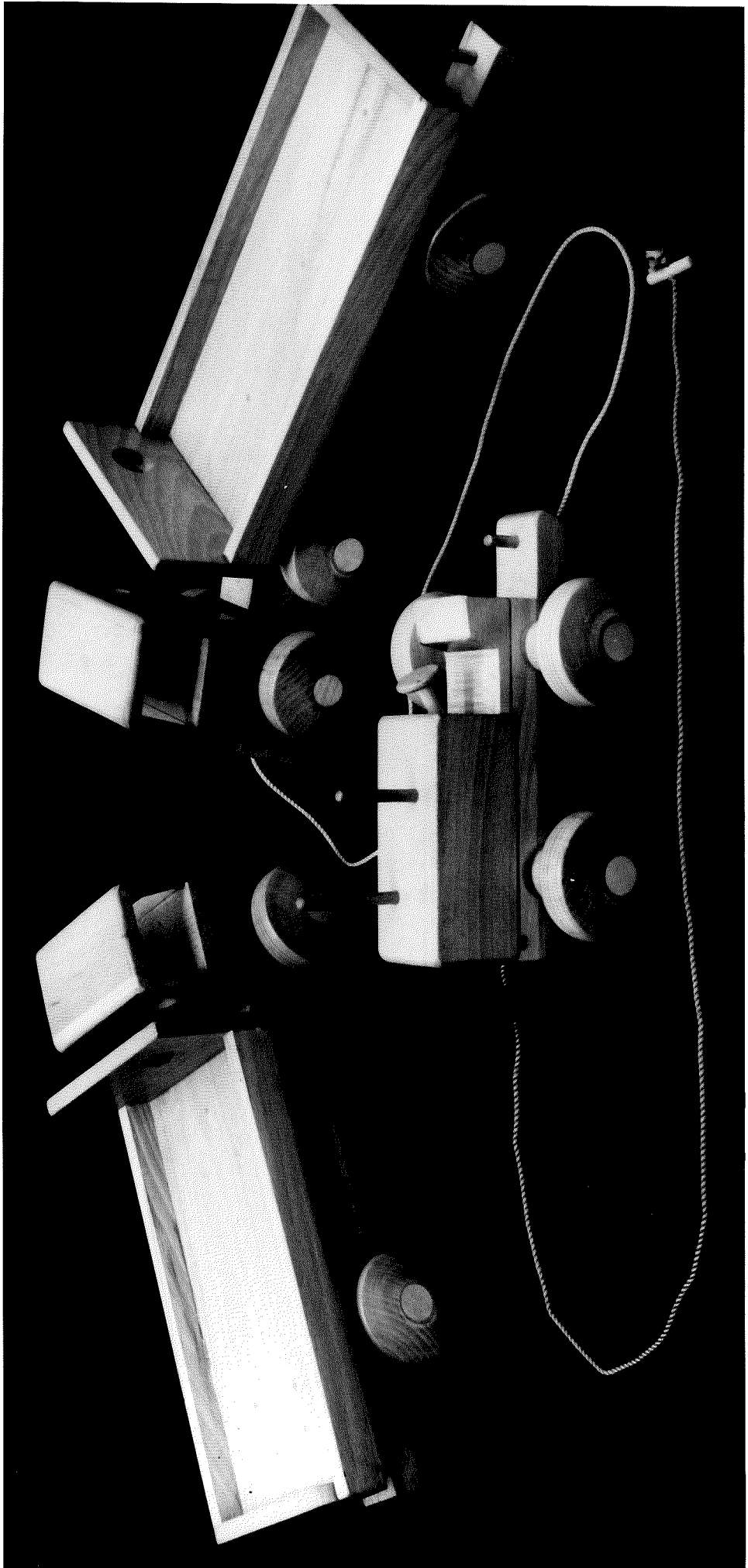


Fig. 42

Hand-made reproduction furniture.

The high skills in woodworking, a feature of the bobbin and shuttle trade, are demonstrated by these examples of faithful reproductions of Regency pieces made at Gateside in the 1970's. A cabinet maker was employed to supervise the work but all the hand-dove tailing and French polishing was carried out by former shuttle-making personnel, men and women, after brief tuition.

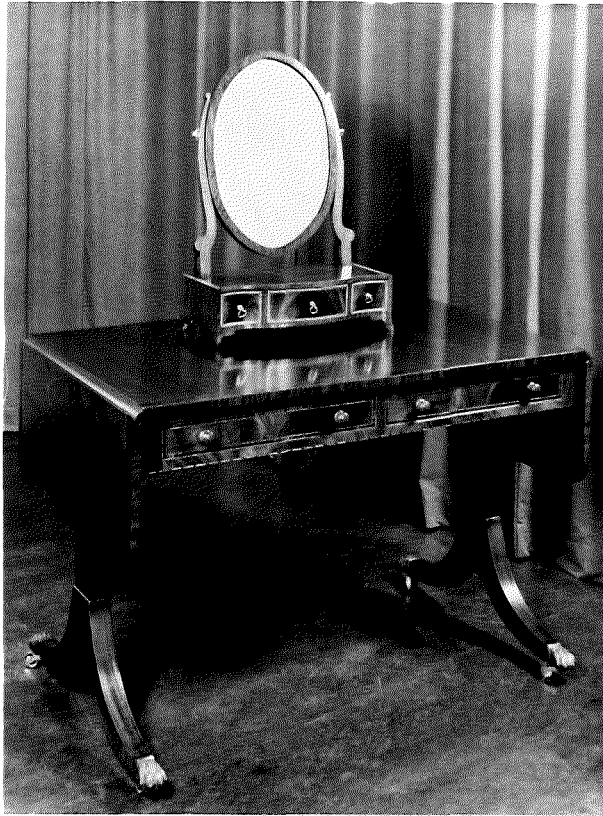


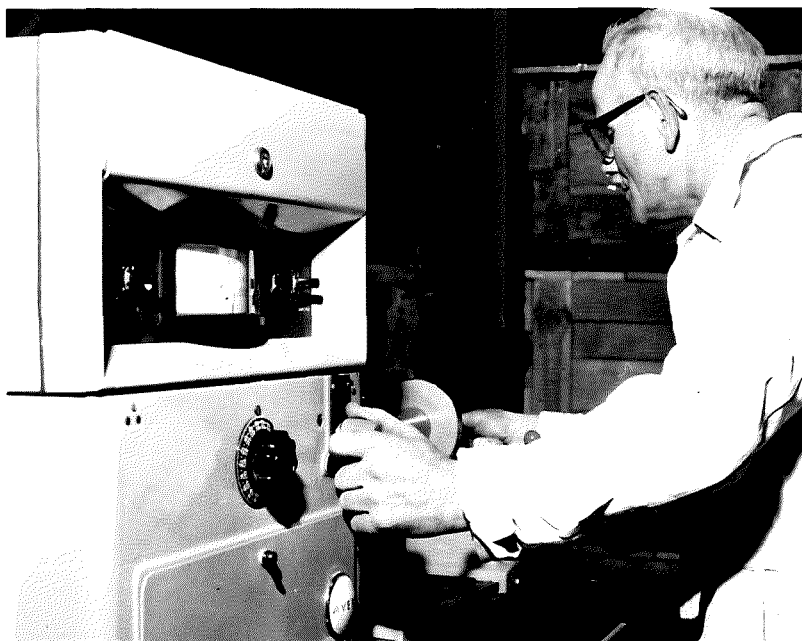
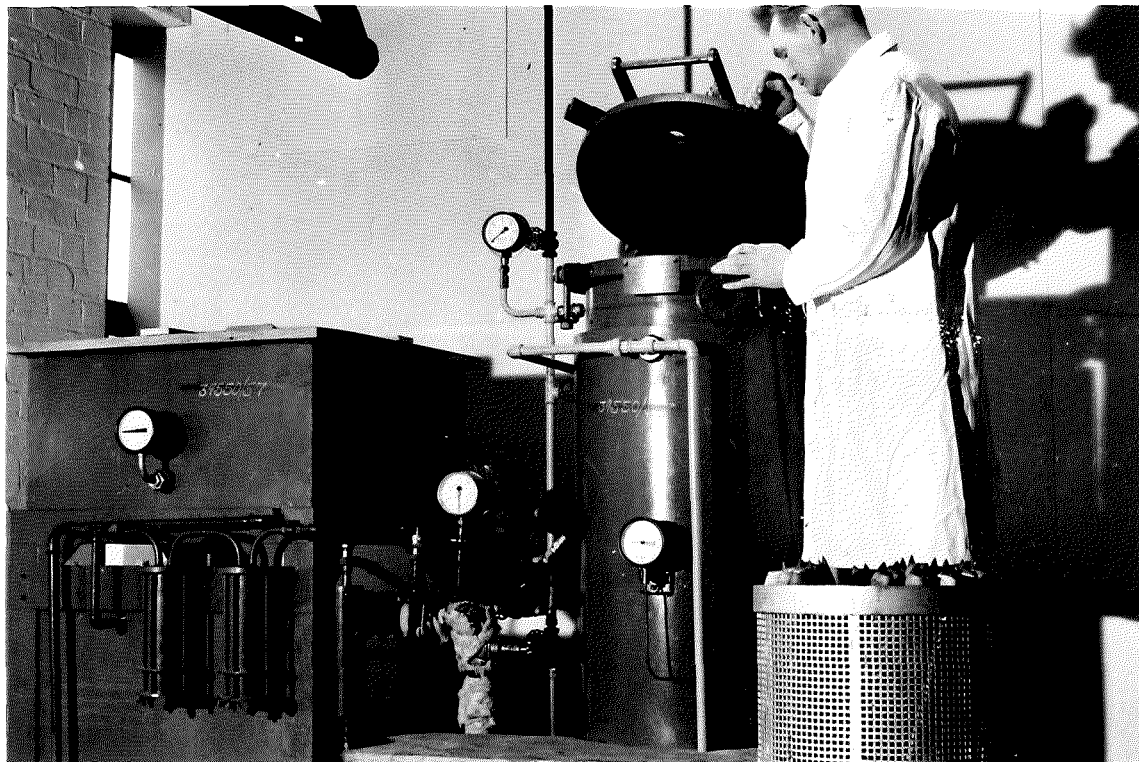


Fig. 43

Advanced techniques.

The upper photograph shows the impregnating process (designed to prolong the life of a shuttle) developed by the Gateside Mills Co. Ltd. in co-operation with the Linen Research Institute

In the lower photograph a bobbin designed for use in tyre cord production is being balanced to ensure true running at high speed. These bobbins were also required to withstand the great pressures exerted by man-made fibres.



(ii) FURTHER QUESTIONSA question of vulnerability

One striking feature of this small Scottish industry was its apparent vulnerability, for the greater part of its existence, due to its reliance on a single market in India and its need to import a substantial portion of its raw materials from Sweden and the US, both countries being potential competitors.

Certainly there were many compensating features which stemmed from a major commitment to the Calcutta market. As noted earlier for firms of modest size and resources there were considerable advantages; the volume of goods required favoured the use of mass production methods, the narrow range of products required only a modest variety of raw materials and orders were of a size to allow long runs of particular items reducing the time spent on machine settings etc. Furthermore the industry in Calcutta was funded with British capital, managed by British companies employing personnel trained in Dundee, and equipped with machinery of British origin; thus the Scottish bobbin and shuttle makers enjoyed the benefit of a close relationship with their customer, a situation often difficult to achieve in overseas trading. Again for small firms, it was a considerable help to have much of the administrative work relating to the shipment of goods, undertaken by the London offices of the Managing Agents who were also of such high repute that bad debts were inconceivable - another important consideration.

However, the wisdom of such a concentration of interest and effort by the Scottish trade in this narrow sector of the textile industry might be questioned on two counts. First, jute manufacturing was notorious for its fluctuating fortunes due to its dependence on a highly unpredictable harvest for its raw material and on the uncertainties of the worldwide grain harvests for the sale of its products. Secondly, the volume of demand generated by the mills in India necessitated the suppliers importing, well in advance of demand, large quantities of bobbin blocks from Sweden and persimmon shuttle blocks from the US, when that timber became the preferred species early in the 20th century. In terms of value these imports became a major part of the total expenditure on raw materials. Thus by the beginning of the First World War this Scottish trade had developed from its original rôle of serving the local flax and jute manufacturing industries with products made from homegrown hardwoods to operating in a new and highly vulnerable exporting trade. As noted both countries supplying raw materials to the bobbin and shuttle makers were potential competitors; fortunately the low level of wages which persisted throughout the life of the industry kept these possible competitors at arms length as well as the superior skills and experience of the Scots gained from their relationship with the jute industry in Dundee.<sup>32</sup>

However, the vulnerability of the Scottish bobbin and shuttle trade was exposed when, in the course of two World Wars, the importing of raw materials was disrupted and the shipment of the finished goods to Calcutta much reduced, circumstances which might well have

proved disastrous to the industry had it not been possible to secure agreement between members of the Scottish Bobbin and Shuttle Manufacturers Association to raise prices to a level which at least partially offset the reduction in sales volume. Finally the loss of the bobbin market in Calcutta in 1948, and thereafter the reduction in the import of shuttles, marked the beginning of the end for much of the industry in its traditional form, due to its substantial commitment in India and its inability to withstand the sudden reduction in its principal overseas market. Although the Scottish bobbin- and shuttle-makers could not have been unaware of the dangers of their major involvement in Calcutta, it was firmly believed that the jute mills there could not operate efficiently without the Scottish product, a view supported by the mills, who did little to encourage the indigenous bobbin makers. It was also assumed that in the unhappy event of an independent Indian Government contemplating a ban on the importing of bobbins, the change would be gradual to avoid any disruption to one of India's principal exporting industries.

Although highly vulnerable for much of its existence, the Scottish firms had nevertheless maintained the supply of bobbins and shuttles and kindred products in the quantities and quality required at a competitive level of prices, a service which was the key to its survival; its mistaken belief in its indispensability to the Indian jute manufacturers, the key to its rapid decline.

Another danger to the traditional industry became apparent before the Second World War due to new methods of spinning and the use of plastic materials and aluminium for bobbins. These new

processes reduced the number of bobbins required and the increasing use of other materials undermined the long established woodworking practices. In the two decades following the Second War it became abundantly clear that hardwoods were no longer suitable materials for large sectors of the spinning industry where technical advances demanded tolerances of precision and strength difficult to achieve in wood.<sup>33</sup> Therefore the manufacturers were faced with the problem of either remaining as woodworkers and seeking other markets for products in wood or re-equipping and raising their skills in order to produce bobbins and shuttles in whatever pattern or material the textile industry demanded, or, of course, closing down.

The Relationship with India

In considering the vulnerability of the Scottish bobbin and shuttle making industry, mention was made of the benefits it enjoyed from its close relationship with the Calcutta mills. The question therefore arises as to the special features of the trade which distinguished it from normal exporting operations. The evidence provided by the many thousands of sales book entries examined, demonstrates that the business with Calcutta was conducted with a high degree of efficiency and followed a system which remained unchanged from the beginning of the 20th century. These apparently trouble-free procedures were in sharp contrast with the difficulties experienced in export trading due to language barriers, currency fluctuations, importing regulations and often complicated documentation.

The Indian jute industry with its close links with the east of Scotland, its British management, its bases in the UK and Calcutta and the location of the Scottish bobbin- and shuttle-makers in the Dundee area, gave rise to easy communications between supplier and customer; there were few signs in the peace-time records of any administrative difficulties hindering the smooth flow of a very substantial trade.

The distinctive nature of the relationship was made clear when the jute and cotton industries in India were compared. Both were founded in the mid-19th century but whereas jute manufacturing was concentrated on the Hooghly river close to its source of raw material in Bengal, the production of cotton goods, although mainly centred on Bombay, was also widely scattered over the whole country; hence

the jute mills were more conveniently located for marketing and other commercial purposes, a situation of some advantage to suppliers. More importantly, the cotton mills in contrast to the jute mills were of Indian origin, established by Indian investors and largely managed by Indians who pursued a policy, through their training of personnel, of the greater 'Indianisation' of all aspects of the industry. This style of management was much less expensive than the all-British staff policy of the jute mills which was based on the theory perhaps, that British investors would feel re-assured that their interests were best protected in this way.

Another feature of the relationship was the system of agency management whereby the control of the scores of mills in the jute industry was vested in less than a dozen managing agents of British origin, with offices in the UK (most in the City of London) where negotiations as to orders or contracts were conducted. Again such convenient channels of communication were uncommon in exporting practices.

The trading bond between Scotland and Calcutta was further strengthened by the success of the British machinery makers in this market. Virtually all the equipment used in the various processes of jute manufacture was of UK origin - a powerful influence in directing the substantial trade in accessories and spare parts to the home country, thus enabling suppliers to establish a firm and lasting connection in the market. In short the Scottish bobbin and shuttle manufacturers were fortunate to be so closely involved with a large British controlled industry which, by 1914, was the world leader in jute manufacture and which was free from so many of the commercial hazards and risks which burdened the export trade.



Naturally there were drawbacks, the industry of jute manufacturing was subject to severe fluctuations due to its dependence on the outcome of world harvests and the market was also affected by the over-capacity in the industry which, had persisted from its early days. Nevertheless Calcutta remained for over half a century the major outlet for the products of the Scottish bobbin- and shuttle-makers. Unfortunately the system divorced the home suppliers from any contact with the Indian business community and from any real understanding of their capabilities which led to serious misjudgements after the Second War.<sup>34</sup>

How important was the bobbin and shuttle industry  
to the Scottish economy?

Certainly in terms of exports the bobbin and shuttle manufacturing industry in Scotland, despite its modest size, was of some significance. Based on the information drawn from the Report of the Indian Tariff Board of 1948 and from company accounts the annual turnover of the trade in terms of the value of the pound in 1988 would probably reach £20 m.<sup>35</sup>

As to the other sectors of the home economy the bobbin- and shuttle-makers were important customers of the timber trade in that they consumed an estimated 15,000 tons of hardwoods annually and also used large quantities of softwood for packing cases all of which were purchased from Scottish sources.<sup>36</sup>

With regard to employment, although the number of men, women, and boys working in the industry in Scotland at any one time would seldom exceed a thousand as compared with seven or eight thousand

in England, the jobs provided were particularly welcomed in Dundee where male unemployment was usually at a high level; in the rural areas too, these woodworking mills provided an alternative to the rigours of farming life.

Bobbins and shuttles were a popular cargo in the shipping world, the consignments were well-packed in wooden cases and in relation to their weight occupied a great deal of space. In the case of the Gateside Mills Co. Ltd. the value of exports never fell below 70 per cent of total sales and as the rest of the industry was probably as highly committed to the export trade the special interest of the shipping companies can be understood.

For over fifty years the Scottish industry preserved this close and enduring relationship with the jute manufacturers in Calcutta but despite the close links between Dundee and Calcutta in matters of management and expertise, the Scottish dominance in the market for bobbins and shuttles was sustained only by producing a high standard of product, at a competitive price as compared with other foreign suppliers, and by the ability to fulfil the enormous demand generated when the mills were busy. It was equally important for the Scottish industry to have the resilience to withstand sharp reversals in the level of demand and to maintain the stocks and retain staff in readiness for the next upturn in trade.

In these respects the industry could be proud of its record and certainly in a later era it would have gained considerable acclaim for its impressive exporting achievements.

Special features of the bobbin and shuttle making trade

Both major items produced by the trade were crucial to cloth making, bobbins to the spinning process and shuttles to weaving in that both carried yarn and operated as an integral part of the frame or loom. Because they were made from hardwoods, they were robust, hardwearing and comparatively cheap and for these reasons remained one of the few moving components made from wood used in high speed machinery. For jute and flax machinery these accessories, produced in this form, remained unchallenged until the late 1940's.

As previously noted the annual requirement of the Indian jute mills as identified by the Indian Tariff Board in 1948 amounted to 75,000 gross of bobbins (10.8 m) and therefore mass production techniques combined with a flow line system were essential to ensure the continuing removal of the substantial volume produced, to the point of despatch. The methods employed in bobbin making were unique in the field of woodworking and as a consequence much of the machinery used was specially designed for the trade which proved to be a severe constraint when diversification became necessary.

Again, due to its distinctive character the bobbin and shuttle making trade bred its own specialised skills, in the case of shuttle-making, skills of a very high order quite foreign to the general woodworking crafts, features which made difficult any fundamental change of product.

Another unusual aspect of this trade was the nature of the stocks of raw material it was obliged to maintain. In the sawmill,

the timber once cut from the log was of little use in the open market as the dimensions were applicable to bobbin making only. Likewise the imported bobbin blocks from Sweden were produced in a fashion which made them unsuitable for any other purpose than the manufacture of one particular type of bobbin. Persimmon shuttle blocks were also imported as dimension stock i.e. cut to the precise size required to make one type of shuttle; for example, the sawmills in the US offered approximately 800 different sizes of persimmon blocks in lengths from 250mm to 625mm reflecting the value of the material and the need to avoid waste. In the case of persimmon it was also necessary to stock sufficient numbers of blocks to allow for the seasoning period of about two years and birch blocks from Sweden also required six months in storage before use.<sup>37</sup>

It was therefore a matter of some concern to the trade that the closure of the Indian market left expensive stocks on its hands which commanded little value outwith the industry.

Although it could not be claimed that all these constraints and difficulties were unique in the world of woodworking nevertheless it is difficult to identify any other sector of the industry where these problems were as acute. The specialist machinery, skills, raw materials and methods of production involved in bobbin- and shuttle-making placed these trades on a level far higher than that of the craft in general; consequently its decline to virtual extinction left little evidence of its former importance.<sup>38</sup>

Was the bobbin and shuttle manufacturing industry in  
Scotland responsible for its own decline?

In the last quarter of the 19th century the growth of the jute manufacturing industry in Calcutta provided an exporting opportunity for the bobbin- and shuttle-makers in the east of Scotland which was firmly grasped. As a result of their dominance in this market they enjoyed periods of prosperity, suffered the strains of times of poor trade, survived the First World War, battled through a world-wide depression in the inter-war years and thereafter through another World War and yet were reduced to virtual extinction by the 1960's, in part due to the loss of this single market in a narrow sector of the textile industry. To what extent were the bobbin and shuttle-makers responsible for this decline?

As already established, the industry could be commended for its success in maintaining a close hold on the Calcutta market from the late 19th century to 1948 but by specialising mainly in accessories for jute and flax machinery, the bobbin and shuttle manufacturers limited their exporting potential, as other outlets, apart from Calcutta, were of minor significance. As to the home market, jute manufacturing had long suffered from the success of its counterpart in India and even when busy, generated only a very small demand as compared with the industry in Calcutta. Consequently the advantages which accrued from trading in the Indian market encouraged the firms in the Scottish bobbin and shuttle trade to place most of their eggs in this particular basket and as a consequence the ban on imports of bobbins when applied in 1948 was a very severe blow.

It was also apparent, from the proceedings of the Indian Tariff Board Inquiry in this connection, that the major share of the market in Calcutta enjoyed by the Scottish firms for many decades and their close relationship with the managing agents and jute mills there, had fostered the belief that they were indispensable to the jute manufacturing industry in India. They were therefore quite unprepared for the prompt closure of the bobbin market, and, incidentally, were also ill-informed as to the potential of the indigenous trade and the abilities of the Indian business community.

At this time the Indian bobbin-makers showed a willingness to co-operate with the Scottish manufacturers which might have paved the way for the latter to gain a foothold in the protected market, the Scots however, adopted a policy of strict non-co-operation in the belief that the Indians would be unable to cope with the demand from the mills and the Indian Government would be obliged to allow bobbins to be imported again.<sup>39</sup>

This ignorance of the Indians and their capabilities undoubtedly stemmed from the all-British lines of communication between the Scottish manufacturers and the mills in India and the existence of the UK offices of the managing agents which provided the suppliers with a convenient contact with their customer. Apart from McGregor and Balfour, who maintained an office in Calcutta, staffed by their own employees from Dundee and Indian clerks, the Scottish bobbin makers had little knowledge of conditions in India and had no need to visit the country. In any case firms of modest size could scarcely afford the three or four month absence of their proprietor which the trip by sea would entail.

The concentration on one narrow sector of the textile industry, the theory of indispensability and the under-estimating of Indian capabilities, were serious misjudgements which inevitably took their toll.

Turning now to working conditions in the industry, the picture which emerges of dilapidated buildings lacking the most basic facilities, scarcely suggested caring and progressive managements. <sup>40</sup> It was probable, however, that the lack of investment, particularly in buildings, was a consequence of limited resources in the early years when craftsmen endeavoured to set up their own businesses. The cost of machinery and the high level of stock required in this particular trade would necessarily take priority over buildings and as the business grew the need for more machinery and even larger stocks of raw materials would place yet a greater strain on resources, relegating the improvement of buildings and facilities again to a low priority; only a major fire encouraged the provision of better conditions for the employees.

In its favour, on the other hand, the industry could claim to be one of the earliest in woodworking to operate mass production methods enabling the throughput of large quantities of bobbins. Although shuttles, due to their intricacy, could not be handled in this way, the procedures employed in their production were commended when examined by independent work study analysts after the Second World War. Also to their credit the <sup>b</sup>obbin and shuttle manufacturers adopted in the inter-war period, when resources permitted, the automatic machines which had been designed to undertake certain drilling ~~and~~ sandpapering tasks. <sup>41</sup>

With regard to the industry's record in labour relations, one redeeming feature was the necessity to retain in employment at all times the skilled and most of the semi-skilled of the workforce; the specialist nature of the work made it difficult to replace personnel should they be lost to the trade. Wages were traditionally influenced by those current in the jute industry, which were the lowest paid in the textile trade in the UK, and Trade Union activities were confined, in the main, to a struggle to increase rates, reducing the hours worked and extending holidays. As shown, conditions before the Second World War were harsh and the work ill-paid, nevertheless those involved, although far from satisfied with their lot, regarded themselves more fortunate than the miners or fishermen of Fife whose work was considered physically more demanding and more dangerous. However, after the Second World War, when unemployment was low, there was little inducement for the young to join an industry which was in decline, where the wage rates were poor and where the working conditions were, in some firms, still primitive; consequently recruitment was difficult.<sup>42</sup>

As to financial matters there was little evidence of borrowing, firms tended to be self-financing and plant and machinery were purchased when resources allowed. It was also recognised that the profits from one period might well be required in the future to support the firm in difficult times; however, in long-established family firms, the profits available for distribution had often to be widely spread as generation succeeded generation.



As might be expected there was also a strong streak of paternalism in an industry made up in the main of small firms where the proprietor would know his workers individually, and probably their families also. Generally in daily contact with his workforce, and possibly of craftsman stock himself, he could recognise and understand their problems. In the rural areas this paternalism extended beyond the mill gates; in the village of Gateside for example, the mill owner joined with the farmers in the locality to promote the welfare of the village by maintaining the church, the village hall, serving on the School Board and raising funds for worthy causes.

Doubtless paternalism in this industry was also nurtured by the value and importance of the skilled grades in firms of modest size. The loss of a single worker at this level could have a marked effect on production. Therefore the relationship between employer and employee was delicately balanced, each party having strengths and weaknesses. The skilled worker knew his contribution to be vital but also realised that, particularly in rural areas, he had little opportunity to offer his skills elsewhere; for his part the proprietor knew that his powers were constrained by the fact that if he lost a craftsman he would almost certainly suffer financially and would have great difficulty in finding a replacement.

Another feature of paternalism in management was the interdependence of the proprietor and his workforce on the shop floor. Working with wood on a mass production line required constant vigilance on the part of the worker due to the constant variation in this natural raw material. Mistakes on a flow line could result in a considerable rejection at the despatch point and therefore care had to be exercised

at each stage. Moreover should a customer refuse to accept a consignment on account of faulty workmanship its replacement would be costly and might still result in the loss of further orders from a mill or even a group of mills.

A major influence from the turn of the century was the Scottish Bobbin and Shuttle Manufacturers Association founded in order to fix the level of selling prices between members, thus confining competition to matters of quality, delivery and service. The prices were fixed at a level based on costs but also with due regard to those offered by competitors. Naturally price fixing agreements invited criticism from the consumers, particularly the jute mills in Calcutta, despite their membership of the Indian Jute Mills Association, a body with similar objectives. The main reason for maintaining a price list was to avoid a damaging price war between suppliers stimulated and encouraged by the consumers. It was important that this small industry should present a common front in its dealings with the immensely powerful association of jute mills in Calcutta, the principal outlet for their products, and the first requirement, in order to attain this close co-operation, was to agree prices. There is little doubt that the ability of the Scottish trade to maintain their standing as a reliable source of supply to the Calcutta market would have been irreparably damaged by fierce competition. The fact that the price-fixing arrangement survived for fifty years indicates that it was accepted, albeit reluctantly, by customers as a necessary evil although efforts were made on occasion to tempt suppliers to offer reduced price or terms. Again, from the standpoint of the Scottish firms it was imperative that they should co-operate in order to fend off attempts by foreign manufacturers to enter this market.

Another function of the Association was to maintain contacts with other bodies, for example, the English bobbin- and shuttle-manufacturers' Associations, Government departments and the important Textile Machinery Export Group.<sup>43</sup> It was also useful when members wished to organise purchases on a group basis or to arrange a fair distribution of any commodity in short supply.

The non-members in the industry were often the smallest firms anxious to preserve their independence in matters of prices and terms; on the other hand they traded freely with the members whose price list was available for their guidance. In times of busy trading the non-members could be useful to the larger firms by undertaking sub-contract work but when orders were scarce their entries into the market were an irritant and the normal policy of the members - live and let live - became strained.

One remarkable feature of the Association was the speedy and efficient aid given to members by their fellows in the event of fire or breakdown, as demonstrated by the help given to the Gateside Mills in 1939. On a less dramatic level there was a continuing trade between companies and co-operation with regard to bulk purchasing.

These praiseworthy attitudes were, perhaps, a recognition that the real dangers to the industry came from the increasing competition from many parts of the world and from the considerable power and influence of the jute manufacturers.

The Restrictive Practices Act of 1956 had only a marginal effect on the industry and the Association. By the time it came into operation the products on which the price lists were based had diminished

in importance. Most items were closely linked with the Indian market which had been closed to the UK suppliers. The Constitution of the Association was amended to comply with the Act and members continued to meet but the subject of prices was officially excluded from their discussions.

So how far was the industry responsible for its own decline?

In common with many industries which had suffered the wars and depressions of the 20th century the jute bobbin and shuttle manufacturers presented a woebegone appearance in the 1950's and 1960's. Indian independence and the gradual shift of the management of the jute mills into Indian hands closed the market and severed the highly beneficial relationship between the Scottish trade and the jute industry in Calcutta. Certainly serious errors were made at the time of Indian independence, as already described, but it is also clear that this traditional trade had no place in the commercial world after the Second War. The lengthy and uneconomic procedures whereby persimmon imported from the US was processed in Britain before being shipped to India and bobbin blocks from Sweden treated in like manner, could not survive when India was continuing to industrialise and anxious, in the early days of independence, to restrict her foreign expenditure. This trade was a prime target and in all the circumstances deserved to be attacked.

The products of the Scottish bobbin and shuttle trade, tailored to the needs of Calcutta were of little consequence elsewhere, new methods and machinery demanded more sophisticated bobbins made from materials other than hardwood and the traditional shuttles had been

overtaken by patented versions. To remain in the bobbin trade meant the abandoning of woodworking and the adopting of skills relating to metals and plastics. The shuttle-makers were likewise beset by the rapid advance of the shuttleless loom and world-wide competition. In its original form the bobbin and shuttle industry in Scotland had survived for about 100 years but by the end of 1970's was of little relevance. Now virtually nothing of the industry remains in this country, no plant, no machinery, no specialist skills. For similar reasons the far larger and versatile English trade suffered the same fate, for now in 1988 only a few dozen workers make shuttles and none make wooden bobbins.

(iii) Conclusion

In pursuing the original objective - an investigation into the Scottish bobbin and shuttle trade - several remarkable aspects came to light. The industry, now extinct in Scotland, was large enough to be of some significance to the Scottish economy and for the first half of this century was closely involved with jute manufacturing, a major Scottish industrial achievement first in Dundee and later in Calcutta. At first sight the Scottish bobbin and shuttle industry would appear to have been singularly fortunate to have survived for nearly 100 years as, for the greater part of that time, it depended on the shipment, every year, of many millions of wooden bobbins - of simple design and construction - to India a country rich in timber resources, renowned for its wood-working skills and possessing an abundance of cheap labour in close proximity to the mills. This unlikely trade, together with the supply of shuttles, was sustained on the suppositions that Scottish beech could not be matched by any indigenous timber for its suitability for bobbin-making and that the Scottish manufacturers supplied the products of the highest quality and provided a reliable service. As this business developed it became all the more remarkable in that the manufacturers were compelled eventually to import a considerable part of their raw materials from the US and from Sweden to meet the demand from India.

As for the mills in Calcutta, their preference for the imported - and more expensive - components stemmed from the importance of the bobbin and shuttle in the manufacturing processes. The efficiency of the bobbin had a direct bearing on the quality and quantity of yarn produced and likewise, the performance of the shuttle in the cloth woven. However, this strong commitment to jute manufacturing

in India, a narrow and unpredictable sector of the textile industry, gave rise to difficult problems for the Scottish bobbin- and shuttle-makers after the Second World War.

Another remarkable feature of this trade was the rare and often unique methods and techniques employed, most have now been abandoned and it was therefore important that these processes should be recorded in some detail not only for their relevance to this craft but also to woodworking in general. The skills involved were also of a high order: for example the making of a shuttle, bearing in mind its function in the loom, demanded a standard of craftsmanship rare in industrial woodworking.

The search yielded another facet of Scottish commercial life in the late 19th and early 20th centuries, as revealed in the detailed analyses of the records of one family firm, typical to some degree of those that made up the industry. The period covered the two World Wars and a world-wide economic depression which gave rise to severe problems for a business dependent on importing much of its raw material and exporting the greater part of its production. It is evident that only the most prudent financial policies and the retention of cash reserves in the firm kept the enterprise in being. Also worthy of note was the ability of the firms within the industry to co-operate in good times and bad over matters of common concern. Although the price-fixing arrangements were open to criticism it would appear that they gave some stability to the trade and, of course, the threat of foreign competition was ever present.

It has also been made clear that the commercial practices linking customer and supplier in this particular industry worked smoothly

and efficiently due to the all-British lines of communication between the east of Scotland, London and Calcutta.

Other benefits to the Scottish industry were the technical and commercial links between the British jute machinery manufacturers and the jute mills in Dundee and Calcutta. Unfortunately these comfortable procedures, all in marked contrast with the hazards of export trading in general, masked the realities of Indian capabilities and aspirations from the suppliers in the UK and gave rise to serious errors of policy when India gained its independence. For example, it was surprising to discover that this experienced and apparently level-headed Scottish industry held fast to the firm belief that it was indispensable to the jute manufacturers in India and would continue to be so after the granting of independence. Although events proved otherwise, the Scottish firms persisted for several years in following a policy of non-co-operation with the Indian bobbin and shuttle manufacturers, an attitude which only hastened the decline of their own trade

Where there is no vision . . .

Behind the description of an industry, its methods of production, its commercial practices and financial procedures lies, as always, the story of those who spent their working lives in the trade, and whereas some indication of the performance of the management can be gained from annual accounts, that of the workers is largely left to the imagination. In the case of the Gateside Mills, however, the research brought to light evidence of a workforce of considerable skill, with a capacity for innovation and for maintaining impressive



levels of production despite an environment which for many decades gave little comfort or encouragement. Furthermore, all the records examined revealed that despite the vast volume of goods manufactured a complaint from a customer was extremely rare; happily this study provides the opportunity to pay tribute to the remarkable competence and achievements of the craftsmen and those of more modest ability, who worked in this industry.

Chapter 5

Footnotes

1. GMC Sales Books 1947-1950
2. Scottish Bobbin and Shuttle Manufacturers Association, Minute of meeting 21 January 1955
3. Ibid., " " 28 April 1954
4. Ibid., " " 11 September 1956
5. Ibid., " " 20 January 1954
6. Ibid., " " 4 March 1954
7. Ibid., " " 12 " "
- 15 " "
- 18 " "
- 22 " "
- 23 " "
- 24 " "
8. Ibid., " " 28 April 1954
9. Ibid., " " 21 November 1956
10. Ibid., " " 16 " 1955
11. Ibid., " " 25 January 1956
12. Ibid., " " 14 December 1955
13. Ibid., " " 24 May 1961
14. J.N.Bhagwati and P.Desai, India. Planning for Industrialisation (London, 1970), p.374
15. Ibid., pp.380-381
16. India and Pakistan, Wool, Hosiery, Fabrics Directory (Bombay, 1967)
17. Ibid., p.20
18. Scottish Bobbin and Shuttle Manufacturers Association, Minute of meeting 14 December 1955
19. Ibid., " " 27 June 1956
20. Ibid., " " 19 February 1957

21.	Ibid.,	"	"	26 June 1957
22.	Ibid.,	"	"	22 January 1958
23.	Ibid	"	"	16 December 1959
24.	Ibid.,	"	"	14 April 1954 16 March 1955
25.	Ibid.,	"	"	17 April 1957
26.	Ibid.,	"	"	13 March 1959
27.	Ibid.,	"	"	30 June 1961
28.	Ibid.,	"	"	11 October 1957 4 December 1957

29. Wooden bobbins in the larger sizes - 8 to 10 inches traverse were constructed to withstand a pressure of nearly two tons on the flanges before the joint between barrel and flange was damaged but even this capability was insufficient in the case of some man-made fibres.
30. The consultants also advised on machinery layout with a view to the reduction of handling costs.
31. Most of the bobbin-making machinery was sold as scrap being of little use to other wood working trades.
32. Often the bobbin and shuttle manufacturers were the first to be summoned to a mill when difficulties arose on the frames or looms with regard to the quality of yarn or cloth.
33. See also 29 above
34. See also Chapter 1, footnote 23
35. Of necessity a rough estimate which includes home and overseas trade and other components, picking arms, box backs and lay races etc regularly supplied.

36. See also Chapter 3, footnote 25
37. At Gateside the normal stock level of shuttle blocks would be 100,000-150,000 pieces and in the case of bobbin blocks 500,000-750,000 pieces.
38. See also 31 above
39. Due to the large stocks of imported bobbins held in Calcutta and the improving standard of the Indian product the transition apparently caused little disruption.
40. See also Chapter 2
41. W.A.Fell of Windermere specialised in bobbin and shuttle machinery production
42. Many contractors building new roads or the like offered attractive rates of pay for labourers on short-term engagements.
43. This association also had a sub-group for accessory manufacturers on which the Scottish bobbin and shuttle firms were represented. After the Second World War, particularly when textile machinery was a major exporting item the Group was well regarded in Government circles.

APPENDICES

1.           Reproduced by courtesy of Crossley Shuttles  
              Ltd. Todmorden, Lancs.
2.           Reproduced from D.R.Wallace, The Romance  
              of Jute 2nd ed. (London, 1928)
3.           Reproduced from H.G.Porter and M.R.Cooper,  
              Statistics on Jute and Jute Manufacturing  
              with a brief survey of the industry  
              United States Dept. of Agriculture,  
              (Washington, 1945)
4.           Reproduced by courtesy of Mr John Dixon,  
              Steeton, Yorkshire
5.           Reproduced from the Forest Products Research  
              Laboratory Wood Technology Course, April 1967
6.           Gateside Mills Co. Ltd.'s records
7.           Ibid.
8.           Ibid.
9.           Ibid.
10.          Reproduced from the Board of Trade, Working  
              Party Reports - Jute (London, 1948)

VARIETIES OF BOBBINS.CONTENTS LIST REPRODUCED FROM WILSON BROTHERS' CATALOGUE.CONTENTS

Page.	
3.	Long and Short Collar Tubes.
4.	Short Collar Roving Tubes.
5.	Long and Short Collar Skewers.
6.	French Roving and Slubbing Tubes and Skewers, Comber Block.
7.	Skewers, various, Swift Arm, Picking Band Pegs and Warping Creel Steps.
8.	Rabbeth Bobbins. Painted and Varnished.
9.	Rabbeth Bobbins. Enamelled.
10.	Rabbeth Bobbins. (For Shirley Doffer).
11.	Universal Weavers Pirns.
12.	Automatic Weaving Pirns.
13.	Woollen Pirns.
14.	Ring Weft and Rabbeth Weft Pirns. Painted and Varnished.
15.	Ring Weft and Rabbeth Weft Pirns. Enamelled.
16.	Weavers Pirns. (For Silk Trade).
17.	Splicer and Cone Bobbins (for Hosiery and Knitwear Trades), and Winding Tubes and Winding Cone (for Cotton Trade).
18.	Ring Doubler Bobbins. Varnished.
19.	Ring Doubler Bobbins and Cap Spinning Bobbin. Enamelled.
20.	Cabler and Jointed Doubler Bobbins.
21.	Ring Doubler Bobbins. (Long Lift).
22.	Ring Doubler Bobbins.
23.	Drawing, Finisher and Roving Bobbins (for Woollen Trade).
24.	Taper Winding Bobbins.
25.	Winding Bobbins (for Silk).
26.	Winding Bobbins (for Silk).
27.	Braid, Lace and Silk Winding Bobbins.
28.	Magnum Twisting Spool and Bobbin, Cap Spinning Bobbin and Worsted Spool.
29.	Warping Bobbins (for Cotton and Silk) and Flyer Doubler Bobbin.
30.	Shuttles (for Cotton).
31.	Shuttles (for Cotton).
32.	Shuttles (for Silk and Cotton).
33.	Plastic Covered Pirns.

CALCUTTA JUTE MILLS IN 1927.

Mills.	Agents or Proprietors.	Sackings.	Hessian.	Looms, G. Total.	Mills.	Original Mill Erected.
Albion	Andrew Yule & Co. Ltd.	300	40	340	Albion	1910
Alexandra	Begg, Dunlop & Co. Ltd.	108	288	396	Alexandra	1905
Alhance (2 Mills)	Do.	328	674	1,002	Alhance	1897
Anglo India (4 Mills)	Duncan Brothers & Co.	928	1,672	2,600	Anglo-India	...
Angus	The Angus Co. Ltd.	308	888	1,196	Angus	1912
Auckland	Bird & Co.	300	450	610	Auckland	1909
Balbaghatta	Jas. Luke & Sons	76	105	180	Balbaghatta	1875
Bally	George Henderson & Co. Ltd.	260	675	935	Bally	1895
Bansberia	Macneil & Co.	252	252	504	Bansberia	1910
Barnagore (3 Mills)	George Henderson & Co. Ltd.	625	1,119	1,744	Barnagore	1879
Belvedere	Andrew Yule & Co. Ltd.	210	431	650	Belvedere	1906
Birla	Birla Bros. Ltd.	300	600	900	Birla	1921
Budge-Budge (2 Mills)	Andrew Yule & Co. Ltd.	410	372	782	Budge-Budge	1911
Caledonian	Do.	300	50	350	Caledonian	1910
Champdany	James Finlay & Co. Ltd.	231	292	523	Champdany	1873
Cheviot	Andrew Yule & Co. Ltd.	60	350	410	Cheviot	1910
Clive (2 Mills)	Bird & Co.	472	398	865	Clive	1875
Crug	Begg, Dunlop & Co. Ltd.	85	185	250	Crug	1921
Dalhousie	Bird & Co.	221	480	701	Dalhousie	1909
Delta	Bird & Co.	400	210	610	Delta	1899
Empire	Andrew Yule & Co. Ltd.	218	188	436	Empire	1913
Fort Gloster (3 Mills)	McLeod & Co.	692	1,108	1,800	Fort Gloster	1873
Fort William (2 Mills)	Kettlewell, Bullen & Co. Ltd.	358	512	870	Fort William	1871
Ganges (2 Mills)	Do.	702	708	1,410	Ganges	1875
Gondalpara	Macneil & Co.	180	200	380	Gondalpara	1865
Gourapore (2 Mills)	Gillanders, Arbuthnot & Co.	406	948	1,354	Gourapore	1862
Hastings (2 Mills)	Barry & Co.	493	581	1,077	Hastings	1875
Hoghtly	Birkmyre Bros.	254	200	454	Hoghtly	1883
Howard (3 Mills)	Gillanders, Arbuthnot & Co.	652	1,011	1,663	Howard	1871
Hukumchand	Jardine, Skinner & Co.	423	678	1,101	Hukumchand	1922
India (2 Mills)	Sir S. C. Hukumchand & Co.	472	501	1,033	India	1869
Kankarallah (2 Mills)	Mackinnon, Mackenzie & Co.	496	1,214	1,710	Kankarallah	1877
Kelvin	Jardine, Skinner & Co.	260	1,261	1,521	Kelvin	1881
Khardah (2 Mills)	Do.	340	290	630	Khardah	1905
Kinson (2 Mills)	McLeod & Co.	515	855	1,370	Kinson	1897
Lansdowne	Anderson, Wright & Co.	574	647	1,221	Lansdowne	1893
Lothian	F. W. Heilgers & Co.	317	523	840	Lothian	1917
Ludlow	Bird & Co.	304	400	704	Ludlow	1920
Magna	Do.	100	250	350	Magna	1922
Nabati	Andrew Yule & Co. Ltd.	80	404	484	Nabati	1907
Naroldanga	Ludlow Jute Co. Ltd.	392	616	1,008	Naroldanga	1901
National	Mackinnon, Mackenzie & Co.	299	401	700	National	1900
New Central	F. W. Heilgers & Co.	14	11	25	New Central	1879
Northbrook	Jas. Park & Co.	310	271	581	Northbrook	1921
Nudea	Andrew Yule & Co. Ltd.	198	256	454	Nudea	1920
Orient	Do.	392	616	1,008	Orient	1921
Prudency	Bird & Co.	60	400	460	Prudency	1921
Reliance	Andrew Yule & Co. Ltd.	151	221	375	Reliance	1908
Samsuggar (3 Mills)	McLeod & Co.	300	700	1,000	Samsuggar	1871
Scotch	Jardine, Skinner & Co.	510	1,412	1,952	Scotch	1874
Standard	Thos. Duff & Co. Ltd.	180	195	375	Standard	1896
Titagarh (2 Mills)	McLeod & Co.	278	362	640	Titagarh	1881
Union	Bird & Co. Ltd.	692	1,126	1,718	Union	1871
Union South	Thos. Duff & Co. Ltd.	204	300	504	Union South	1881
Victoria (2 Mills)	Do.	375	275	650	Victoria	1921
Waverley	Thos. Duff & Co. Ltd.	309	958	1,267	Waverley	1866
Wellington	Begg, Dunlop & Co. Ltd.	100	200	300	Wellington	...
	James Finlay & Co. Ltd.	281	410	691		

69 Companies.  
84 Mills.

Table 104.- Jute manufacturing in India: Number of mills, looms, spindles, and employees, 5-year averages 1879-83 and 1884-88, annual, 1888-1937

Year	Mills	Looms	Spindles	Average daily number of people employed	Year	Mills	Looms	Spindles	Average daily number of people employed
	Number	Number	Number	Number		Number	Number	Number	Number
1879-83	21	5,500	88,000	38,800	1915	70	39,890	812,421	254,143
1884-88	24	7,000	138,000	52,700	1916	74	39,697	824,315	262,552
1888	26	7,819	152,667	59,722	1917	76	40,639	834,055	266,038
1889	27	8,104	158,326	60,630	1918	76	40,043	839,919	275,500
1890	27	8,204	164,245	62,739	1919	76	41,045	856,307	280,431
1891	25	8,218	171,148	64,724	1920	77	41,588	869,879	288,401
1892	25	8,479	177,732	65,585	1921	81	43,025	908,359	288,450
1893	26	9,082	189,144	67,502	1922	86	47,528	1,003,179	321,296
1894	27	9,540	197,673	73,565	1923	89	49,038	1,043,417	330,408
1895	28	10,169	214,679	78,114	1924	90	50,359	1,067,633	341,723
1896	31	12,374	256,694	91,610	1925	90	50,503	1,063,700	331,326
1897	34	12,835	273,447	94,546	1926	93	51,061	1,083,816	333,659
1898	33	13,421	279,482	95,036	1927	93	52,221	1,105,634	335,804
1899	34	14,119	295,302	102,449	1928	95	52,409	1,108,147	343,868
1900	36	15,340	317,348	111,272	1929	98	53,900	1,140,435	343,257
1901	36	16,119	331,382	114,795	1930	100	61,834	1,224,982	307,676
1902	38	17,189	352,214	118,904	1931	103	61,426	1,220,586	276,800
1903	38	18,400	376,718	123,869	1932	99	60,506	1,202,183	263,400
1904	38	19,991	409,170	133,162	1933	99	59,501	1,194,405	257,100
1905	39	21,986	453,168	144,879	1934	100	61,387	1,221,786	1/
1906	44	25,284	520,504	166,895	1935	104	63,724	1,279,416	1/
1907	54	27,244	562,274	187,771	1936	104	65,273	1,300,077	1/
1908	56	29,525	607,358	192,181	1937	105	66,705	1,337,958	1/
1909	60	31,418	645,862	204,104					
1910	58	33,169	682,527	216,390					
1911	59	32,927	677,519	201,324					
1912	61	34,033	708,716	204,092					
1913	64	36,050	744,289	216,288					
1914	70	38,379	795,528	238,274					

1/ Published data not available.

Five-year averages are from Consular report; data for 1888-1937, from Statistical Abstracts of British India, except average daily number of employees for 1931-35 which are from a Consular report.



The following account of his family business was contributed by John Dixon of John Dixon and Sons Ltd, bobbin manufacturers of Steeton in Yorkshire

John Dixon and Sons Ltd is a very old-established firm and the date which has been handed down indicates that the firm was founded in 1795. However, that was the year of the birth of the first John Dixon connected with the business, so possibly there was an earlier John Dixon who would be his father. This is not certain as the title of the firm before becoming a limited company in 1921 was John Dixon and Sons in the plural, and John Dixon had two sons in the business, William Dixon and his brother Thomas Ogden Dixon. There was a third brother, John Dixon who made steam engines in Keighley.

The firm started in the building which is now the Glusburn Corn Mill making cloth boards for wrapping cloth. Eventually there was a demand for wooden bobbins to be used on the newly invented spinning and weaving machinery which was being installed in factories, as opposed to the previous cottage industry, and when the Corn Mill became too small, the firm moved to its present site in 1844. The Mill had previously been a cotton spinning mill and then a worsted spinning mill and was bought from one John Davy who owned property in Steeton, even though the worsted spinning business had to close.

The business expanded in the second half of the 19th century along with the rapid expansion of the textile industry, when William's son John Dixon joined the firm. We still have the correspondence with Howard and Bulloch of Globe Works, Accrington, with the orders

for Rabbeth Ring Frame Bobbins as follows:-

500,000	5" lift	July 31	1881
500,000	5" lift	December 31	1881
500,000	5" lift	September 8	1882
250,000	5" lift	September 8	1882

However, it was not all plain sailing, and there was one period during the late 19th century when trade was so bad that it was said that the firm was on offer to anyone who would buy it, but no one offered, so they soldiered on.

Old John Dixon died in 1891 aged 96 and his son William in 1900 and in the meantime young John Dixon had been joined by his nephew Norman Dixon Walker and his elder son Arthur Dixon. Norman Walker had an inventive mind and along with the Manager, Jim Lee, produced a number of patents in connection with metal fittings for bobbins which could strengthen the bobbin and prolong its life.

Trade cannot have been too good in the early 1900's as it was always said that the bobbin industry was saved by two World Wars. However, there were bright patches, and before the first War, the industry was helped in its export trade when British managers went overseas to run new textile industries abroad. Wilson Brothers Bobbin Company Limited of Liverpool sent very large quantities of bobbins to Russia to run British factories, and we had a very good connection in the United States where British managers would come back to their own country for machinery accessories. At one time our orders for America were such that we kept a separate order book specially for our American Agent.

Norman Walker died in 1921 and the Company was formed into a private limited company with Arthur Dixon and his brother Hugh Dixon as Directors. The share capital was £40,000 but their father retained the buildings and charged the business rent in order to have some income after he retired. The firm was not in a position to buy its own buildings from the executors of John Dixon until after the Second World War. Trade flourished in the 1920's and the firm employed the maximum number of 426 in 1926. In 1930 the firm went on to short time and remained so on and off for six years until full time was resumed in 1936. Trade was still bad until the industry was saved again by war. One feature was the fact that India could no longer buy textile accessories from Japan and had to turn back to Britain for supplies.

After the war, Arthur and Hugh Dixon were joined by Arthur's son John and for a time the firm was extremely busy with a long order book building up to a work force of approximately 350 in 1953. Around this time, India, who had gained her independence after the War, no longer allowed its textile industry to import bobbins, presuming that they could manufacture their own. This had a very damaging effect on the bobbin industry in this country, as the cotton industry in India was much larger than our own home industry. Wilson & Co. (Barnsley) Ltd. closed almost immediately and Wilson Bros. Bobbin Company Limited found their trade halved at a stroke. They had always enjoyed a large export business to India, and had a resident director in Bombay. They kept going for a few more years but eventually closed at the end of the 1950's. Fortunately, we were not too heavily committed in India, although the loss of that market certainly made a difference. Another blow was the capture

of Shanghai by the Communists, when large orders for new plant and equipment had to be cancelled.

Gradually trade diminished through the loss of traditional markets and the alteration in methods of manufacturing yarn and cloth. In 1953 wages were negotiated for 3,000 operatives in England and this number was reduced to 600 in 1963, a reduction of 80%. By 1973 the figure was reduced to approximately 150 operatives, a further drop of 75%. To combat this serious reduction in markets, the 3 firms of John Dixon and Sons Limited, C. & J. Clayton Limited and Thorpe Johnson & Co. (1953) Limited came together in 1964 to form Textile Manufacturers Limited.

Finally a tale to illustrate the basic honesty which has always existed in the textile trade. In 1940 we sent an order for bobbins to a Dutch customer which arrived just before the Germans overran the country. It was with some surprise that in 1945 we received a cheque in payment with apologies for having taken so long to settle the account due to a little local difficulty.

## SEASONING

Timber in its green state contains a large amount of moisture. For most uses it is necessary to remove the greater part of the initial moisture in green timber to enable the wood to give satisfactory service. This drying process is called seasoning of timber and helps to render it lighter, stronger, harder, less susceptible to discolouration and deterioration, less likely to split or distort in use and a better material for painting or polishing. Timber may be air seasoned, or kiln seasoned, but the underlying principles and the drying medium employed are the same in each case.

Little drying takes place in the log and generally timber is converted into boards or planks for seasoning. In order to gauge the state of dryness of timber its moisture content is determined. This relates the weight of water present to the weight of dry wood, and can be found by actual test. A representative cross-section of the piece is weighed accurately immediately after cutting and again after all the moisture has been removed by oven drying. The weight of water thus determined is expressed as a percentage of the oven-dry weight. Sometimes other methods of moisture content determination are employed, and the electrical moisture meter enables results to be obtained quickly though often with limited accuracy.

As timber dries it shrinks and this shrinkage is much greater across the grain than longitudinally. Shrinkage differences often tend to cause distortion of the wood during drying, and checking and splitting may result from too rapid surface and end drying. In order to reduce seasoning degrade to a minimum in air drying it has been shown that good foundations and roof protection should be provided for the timber stacks; and the separating sticks should give adequate support to each layer of wood. Representative samples of the timber being seasoned should be incorporated in the stacks to give information on the progress of the drying. These sample pieces, which should be easily removable, are of particular importance when the timber is being kiln seasoned as changes in the kiln schedule are made in accordance with their drying rate.

Timber drying kilns should be capable of achieving uniform drying of timber and their design must provide for an accurate control of the temperature, relative humidity and circulation of the air. Instruments for indicating the actual conditions in the kiln are essential, and it is possible to incorporate devices to give automatic control of the temperature and relative humidity.

If kiln-dried timber is stored before manufacture it is essential that it is protected from re-wetting. Where control of the air conditions is not possible, bulk piling of the seasoned material helps to delay re-absorption of moisture from the air.

The moisture content to which timber should be seasoned for it to be satisfactory in use is largely dependent on the atmospheric conditions to which it will then be exposed. Ideally, the wood should be dried to the equilibrium moisture content of the species corresponding to the mean of the conditions in service. Since seasoned wood absorbs moisture fairly readily, care needs to be taken to ensure that any building into which it is to be introduced is itself thoroughly dried.

- Recommended reading: (1) *Kiln Operator's Handbook* by W. C. Stevens, M.A., A.M.I.Mech.E., and G. H. Pratt.  
Published by H.M.S.O., price 21s. 0d.
- (2) *F.P.R.L. Leaflet 21.*

Extracts from a letter written by David H. McGregor to his young relative, David D. McGregor. The writer was a shuttle-maker at McGregor and Balfour Ltd. and a nephew of the founder of the firm, David McGregor. The recipient, a grandson of the founder, started his apprenticeship in 1916 and in due course became Managing Director of the Company.

December 24th 1935.

The letter traces the founder's apprenticeship with a shuttle-making firm, Menzies of Ordie Mill at Stanley in Perthshire beginning in 1854 and his starting on his own account at Millhaugh, 5 miles from Methven and then at Knap Mill 9 miles from Dundee.

They got a pony and van and became prosperous.....  
but it became too small and the idea was to look for a bigger place;..... then they got word of Gateside and it was taken. But what a difference, the water wheel at the Knap would be about 3ft in breadth, Gateside would be 8ft, at any rate a huge iron monster and the Eden a good supply of water and the Railway Station at hand, so it was a grand change - but mind they did well at the Knap so near Dundee.

The flit would not be very heavy, the supply of wood would be small and the shuttle mountings small quantities from Stiven's of Castle Street. The flitting came about 1866 and I came to Gateside in '68 - a bonny place - and my first job was to build Shuttle Blocks in a braw new shed.

There was plenty of room in Gateside just the thing wanted. It was a great blessing to Gateside, the Handloom was dying out and he engaged a lot of apprentices. A friend of your Grandad, called Barnet, came with him, who was a Bobbin Turner, and they wrought together for some years, but latterly he flitted down to Sprigfield, but the Bobbins were carried on under a Foreman in Gateside. Of course then it was all hand-turning and a great quantity of Pirns required for Pirm shuttles in Dundee and Fife before the cop Shuttles came in. Of course, he was at a lot of expense, the place required big sliding doors and big windows and the roof supported by tree bodies being very high and long neglected, the sluices, the dam dyke, the leading the water into the wheel, a kiln to make and a lot of cleaning up, only I don't know the bargain made between him and the Laird, who would be mighty glad to get the lpace started again and would not be backward in assisiting I should think.

Then he got the Railway Company to put up a crane at the Station then carts and horses. I mind when I got there they had a Stallion, a great unwieldy brute and a man to manage him; but they caused a stir in the village and brought prosperity which has lasted ever since, a matter of 70 years, which ought to be remembered by the village to the honour of your Grandad - never forget this. Many thousand pound it has brought to that district. For one thing the pirns for linen shuttles used up the smallest waste wood. I am doubtful if you ever saw a sample of the old style of cop shuttle as it was made in 1868, when I began, it had to hold the cop and so it did roughly, but it meant a lot of work.

Then some Genius made them a perfect fit for any size of cop and in doing so let a fortune slip through his fingers. There was a rumpus among the Masters about it, but apparently none could lay a perfect claim. A grooved shuttle has never been improved upon.

After some years your Grandad and Barnet parted, he went down to Springfield making bobbins and shuttles. Finally he went to America. After a time things went badly and Mr Pile the Station Master at Gateside, came in as a Partner, but things did not improve and Bankruptcy ensued. Your Grandad and his two sons went off to Dundee and began to build a brick workshop (someone must have lent him money). Soon after John Howe saw the shop and wished to buy it and at the same time Mr Leburn could not get a man to manage Gateside, he wrote and asked Grandad to take the job with a tempting salary. He closed with the offer and we all returned on the 3rd of May 1871 and was I not glad to get back to the country. But when I got back I found myself a fully-fledged Journeyman, at either 12/- or 13/- a week, and thought myself a Carnegie. Two years and nine months a Journeyman, how often have I laughed at that and the wage went up mysteriously just a few weeks and aye the other 1/- now and then, so a friend in Court is not a bad thing- ay that was a happy time wi' me then.

When I was just started at 14 at Gateside yr Uncle had the job of driving Grandad to the various Stations, Bridge of Barn, Falkland Road, Milnathort and Kinross and other places. Missie, the pony was young and we two got on splendidly, we seemed to



understand each other and when we turned home empty and I said Now Miss she would do the two level miles in record time and then after climbing the hill from the Bein Inn and then came to the descent, the Jade went off and we were in the village in no time, then I would jump on her back and give her a walk in the Lade to clean and cool her feet, then dress her down give her something to eat and drink and we were great friends, both young. I enjoyed life at that period.

About this time we got the nine hour day, a big boon; trade was good and Mr Leburn was a good Master . I stayed there 'till April 1878 and by that time your Grandad was started in Gowan's Court, North Tay Street, and I promised him to come when he was ready.

On a visit to Dundee ere they got a start in Gowan's Court, George Bell a mechanic from a Strath factory, who had been working at Gateside was with your Grandad and they spoke of a new tool George Bell had invented but they jokingly agreed they better not let me see it till I came for good, lest I might let out the secret before I finally left Gateside. It was a good tool and did away with all the planes and made a good job and much quicker; the thing was a metal disk with three blades . It was a great advance when the Persimmon Wood came in which was almost impossible to dress with the planes. After a while, at the Edinburgh Exhibition, your Grandad bought the little dressing machine you now have and later the big machine, a superior machine, Mr Leburn said when he called than his.

Alec Balfour, our man, had a little jute factory in a lane running between Blackness Road and Hawkhill beside the Monastery, but did not succeed and went to Calcutta, came and went a few times, then finally became a Partner. I liked the man, but alas the Bouze, but he was clever, frank and kindly. He was a man I liked - I wished I had known his mind at the end or towards the end.

The letter ends:-

Its a long tale and soon to be ended, like all the rest, but Blessed thought we are a' just at the beginning.....may you have every success in your part of the play begun so many years ago.

My turn lasted 57 years- what of yours ?

D.H. McGregor.

Basic weekly wage rates for skilled bobbin-makers  
in England, 1904-1950.

£'s			
1904	1.50	1928	3.07
1913	1.75	1932	3.40
1918	1.88	1937	3.50
1920	4.22	1938	3.60
1921	4.72	1940	3.80
1922	4.49	1941	4.10
1923	3.64	1948	5.60
1925	3.64	1950	7.57
1926	3.07		

In 1948 the other grades were paid at the following rates:-

	Lesser skilled	5.17	
	Labourers	4.82	
	Women	3.50	
	Apprentices	Boys	Girls
Age 14	-	1.70	1.70
15	-	1.95	1.95
16	2.25	2.25	2.25
17	2.80	2.80	2.80
18	3.40	3.40	3.50
19	3.90	3.90	-
20	4.20	4.20	-

New plant and machinery purchased by the Gateside  
Mills Company in 1908

	£'s
One new 3 ton hand derrick crane with 40 ft jib (sawmill)	57
One 16 h.p. portable steam engine with 5'7" flywheel- 125 r.p.m.	350
90 yds of 3' gauge railway for the sawmill area.	35
One cross-cut saw machine for logs up to 4 ft diameter	57
Two machines for pressing on bobbin flanges	50
One vertical blocking machine for cutting bobbin flanges	41
One 30 cwt hand derrick crane 25 ft jib for sawmill	33
Three saw benches for sawmill	106
Steam pipes for drying kilns	159
Diagonal boring machine for dowel holes in bobbin flanges	37
One light finishing machine for turning spinning bobbins	40
One automatic barrel boring machine for bobbins	80

Exports to countries other than India by the GatesideMills Company 1915-18

As might be expected merchants were normally reluctant to reveal the final destination of the goods they ordered from manufacturers, in some instances, however, this information was available and allowed the compilation of the countries and the product involved.

1915

Brazil	Bobbins and shuttles
Denmark	Shuttles
Finland	"
France	"
Greece	"
Mexico	Bobbins
Norway	Shuttles
Russia	Bobbins and shuttles
Sweden	" "

1916

Brazil	Bobbins and shuttles
France	" "
Italy	Shuttles
Mexico	Bobbins
Russia	Bobbins and shuttles
Spain	Shuttles
Sweden	"

1917

Brazil	Shuttles
France	Bobbins
Italy	Bobbins and shuttles
Norway	" "
Russia	" "

1918

France	"
Italy	Bobbins and shuttles
Mexico	Bobbins

Board of Trade, Working Party Reports - Jute (London, 1948)An extract

## MACHINERY DEVELOPMENTS

In the early days of the industry, jute was processed over the flax machinery already installed in Dundee and other towns in the East of Scotland. Gradually special machinery for jute was introduced, but no spectacular developments in construction took place until after the 1914-1918 war. These developments, it should be noted, have been largely confined to machinery in the spinning section. Automatic looms so far produced for jute weaving have not proved entirely satisfactory for the production of the normal types of jute cloth.

Two important points about old type spinning machinery call for notice. First, the sliver, as delivered from the various machines, has to be packed by hand into cans or made into balls or rolls and then moved by hand to the next machine. Second, the spinning frame is so constructed that the flyers have to be removed from the spindles by hand to enable the full bobbins to be replaced by empties. This operation, known as "hand doffing," must be effected with speed so that the frame can be set in motion again as quickly as possible, and demands the employment of a squad of women operatives not required for the more modern types of spinning machinery.

The main developments after the 1914-1918 war centred round these two operations of can packing and doffing. A device was introduced by which cans (of larger size) were packed automatically and to greater capacity. A more recent improvement—the roll former—eliminates cans altogether at the early stage of the preparing process. On leaving the machines the sliver is wound automatically into a roll, which when completed is automatically ejected and so can be rolled to the next machine. This enables a large weight of sliver to be compressed into small space while abolishing the cost and upkeep of cans.

The process of hand doffing was rendered automatic by the introduction (in 1925) of the high speed automatic doffing rove spinning frame, followed (in 1934-38) by the high speed automatic doffing sliver spinning frame referred to throughout this report as high speed and sliver respectively. The doffing operation was now performed without removal of the flyers from the spindles. By having two sets of bobbins on separate rails, one is replaced while the other is being filled. When one set is filled the operator stops the frame, manipulates the rail of empty bobbins in place of the rail of full ones and restarts the frame with the loss of but a minute or two. Then with the frame still running, the full bobbins are replaced by empties and so all is ready for the next doff. The sliver spinning frame differs from the high speed frame in that spinning takes place direct from sliver. The rove frame with its rove bobbins is replaced by a high speed drawing frame which produces a crimped sliver ready for spinning. The sliver is then conveyed in cans (roll formers are not used at this stage) to the

spinning frame. The maximum speeds of both types of frame are similar and very much greater than that of the old type hand-doffed frame. Both effect great saving in labour since the hand-doffing squads are not required, while with sliver spinning there is a further saving in that rove shifting squads are not required and the sliver cans have a much larger holding capacity than the rove bobbins.

Concurrently with the introduction of the above devices and new type spinning frames, improved drawing and roving frames have been introduced. A further very recent and important development in the earlier processes is the combined jute spreader and softener. This machine performs the operation carried out on the old type of softener, and, in addition, combs the fibre into a rough sliver, thus carrying the preliminary part of the sliver formation process a stage further back to the bale. As a result, there are economies in labour and more regular feeding of the breaker cards with a consequent improvement in quality of yarn. A combined breaker-finisher card to work in conjunction with the combined jute spreader and softener has recently been introduced by one machinery maker to replace the two separate carding machines. This combined breaker-finisher economises in space and capital outlay.

New machines for winding yarn into cops (for the weft) and on to spools (for the warp) have recently been introduced. It is not claimed that they effect any savings in labour or production costs, but the spool machine occupies less space and, important from the point of view of the operatives, both reduce noise.

In the weaving section, while machinery for the preparatory processes of dressing, warping and finishing is of the greatest importance, the loom is the key machine. The type of loom generally in use in the jute industry shows little advance on that used last century. It is understandable that developments in spinning machinery, designed, among other things, to improve quality of yarn, took precedence, for increased mechanisation in weaving can only be successful if the yarn is of high quality. The main disadvantage of the ordinary jute loom is that it must be stopped by hand when the yarn on the cop is finished, so that a new cop can be inserted in the shuttle, or when breakages in yarn occur. Generally one weaver looks after two such looms.

Looms with automatic devices for refilling shuttles while the loom is in motion and for stopping the loom when the thread breaks are in common use in other textile industries, e.g., cotton and rayon. Experience has shown that they work satisfactorily on jute cloths made from fine counts of yarn. Before the war, an automatic loom of this type specially designed for the normal weights of jute cloth was produced, and a few were installed in the industry. Although the looms themselves show a great advance on the normal run of looms in the industry, and the warp and weft stop device has proved of advantage, there have been difficulties, the chief being that the weft yarn has to be supplied on pirns, thus involving an additional winding process and the use of a large number of pirns. Less ambitious than this loom has been the provision of attachments to existing looms, like the warp and weft stop motion which automatically stops the loom when breakages occur and which enables the weaver to manage three to four looms. A new automatic cop changing device (the Martin shuttle loader) has recently been on display in Dundee, and is just being put into production. These attachments were in common use on the Continent before the war, and the prototype displayed was in fact brought from

Germany.

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John Dixon and Sons Ltd, Bobbinmakers, Steeton, Yorkshire

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