MERIONETH WOOLLEN INDUSTRY FROM 1750 TO 1820.

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INDUSTRY in the county at the opening of this period was in the same stage of development as in Tudor times, and it was very gradually that the series of changes which are usually described by the term "Industrial Revolution" penetrated into this district. Up to the first years of the nineteenth century the distinctive industries of this county had been little affected by that quickening of industrial enterprise so marked in other regions.

The various occupations associated with woollen manufacture and agriculture—spinning, weaving, and farming—were inter-related, and these activities typify that organisation of a communal society which was based on the soil and on local production.

Specialisation of trades had occurred, but was not sufficiently organised to have broken all relations between the various crafts, while the units of industry were small and were dominated by their pastoral and agricultural environment. Masters and men alike in the fulling mills, the weaving sheds, and the yarn factories were able to turn their hands to agricultural work when orders for their particular craft were slack. It is this rural organisation of industry that marked the economic activity of Merioneth up to the first two decades of the nineteenth century.

INTRODUCTORY.

The woollen industry was the most extensive and the oldest established in Merioneth in 1750. The manufacture of wool into cloth was an industry common enough in Wales ; and in the counties of Montgomery and Merioneth the manufacture

grew from a widely diffused cottage activity to a well-organised industry producing for the market.

Evidence of the industry in Merioneth before 1750 consists largely of the presence of fulling mills located in various parts. Fulling was the final process in the manufacture of wool into cloth—the process of "dressing" the cloth, of thickening and felting the woollen fabric. Fulling mills appeared in Wales in the fourteenth century, as early as the reign of Edward II, just at the time when they were being introduced into Lancashire. The fulling mill represented the first step in the gradual transition of the cloth-weaving industry from being purely an activity of the homestead to being a more centralised activity in the hamlet or village. It has played a significant part in the economy of the Welsh countryside. By performing work for the district in which it was located, it represented the first development of the cloth-making industry in its social aspect.

The fulling mill is also significant in the evolution of the industry in that fulling represents the first instance of motive power being used. Up to the end of the eighteenth century, the process of fulling, both in Merionethshire and Montgomeryshire, was the only one not performed by hand in the manufacture of woollen cloth. The two wooden hammers that beat the cloth were worked by water-wheels. In Merioneth, references to fulling mills are numerous from the sixteenth century onwards. In the sixteenth and seventeenth centuries, the industry was sufficiently developed in the three counties of Denbigh, Montgomery and Merioneth for their names to appear alongside the English counties in Acts of Parliament and in the decrees of the Privy Council. From these and other sources, some idea can be formed of the nature and extent of the industry at this early period.

The word "pandy" (fulling mill) is frequent in the names of farms and dwellings scattered throughout Merioneth from an early period. A farm, Tyddyn-y-Pandy, in the parish of Maentwrog, appears in a case of the Court of Star Chamber in the year 1596. By the end of the sixteenth century, the wage assessments of the county justices in the county extended to

weavers as well as to farm servants. Details are available, in records of the period, of several fulling mills at work during the early seventeenth century,[1] and particularly in the neighbourhood of Dolgelley where the manufacture was greatest. One record, dated 1610, speaks of a fulling mill at Plas-yn-Brithdir. (This farm-house is situated near Dolgelley, near what is now known as the Arran Walks, where traces of an old mill can be seen.) The agreement contained therein was between a Lewis Gwin [Gwyn] of Llanegryn, a "gent," and John Richard, of Dolgelley, a "yeoman" for the use of a "water" corn mill and a fulling mill, the annual rent being £7. Both the corn mill and fulling mill were on farm premises—a significant fact as will be seen in the later stages of the industry's development.

A record of 1621 gives details of the transfer of a farm—a "Messuage and tenement of land commonly called Wenallt." On the premises of this farm were "one water corne mille and fullinge or walk mill thereunto belonging and adjoining." (Up to quite recently the ruins of an old mill were in existence at Wenallt ; since then, the site has been taken over for a power house, from which the town of Dolgelley obtains its supply of electricity.)

The existence of these and other fulling mills, of which these records speak, indicates that the manufacture of cloth was sufficiently flourishing in the district to keep these mills at work. Evidence exists of fulling mills at work in other parts of the county in the early eighteenth century.

Many fields in the Dolgelley neighbourhood and at Dinas Mawddwy bear names indicating a connection with a fulling mill. "Cae Dentir" is frequent, suggesting the presence in the field at some time of "Tenters"—the wooden frames upon which cloth was hung out to dry.

In 1748, a concise account of the woollen manufacture of Merioneth was published, in which it was stated that there were "Eighteen Walking Mills in constant employ" and which "dressed a kind of thick white woollen cloth—the principal Manufactory of this County."[2] The total annual value was estimated at £50,000 thus :—

	£
(i) Four webs per week being dressed at the 18 fulling mills give a total of 3,744 a year ; each web sold at £10 ; thus, the total annual value of webs sold becomes	37,440
(ii) Annual value of stockings sold at Bala ..	10,400
(iii) For "the fine white Flannel and common wearing Cloth, sold to the Neighbouring Counties"	2,160
	£50,000

Organisation of the Industry.

The woollen cloth manufactured in North Wales was of two kinds ; on the one hand, there was the manufacture that was distinctive of Montgomeryshire—that of flannel—what Aikin called "the grand and most important of Welsh manufactures." On the other hand, there was the manufacture of "webs" which was mainly confined to the neighbourhood of Dolgelley. "Webs" themselves were divided into two classes : the "strong cloth" or "high country cloth" and the "small cloth." It was "the strong cloth" that belonged to Merioneth. The Merioneth cloth was thus distinctive in texture. Lewis Morris, in 1748, described it as being "a kind of thick white woollen cloth." Pennant, in 1778, calls it a "kind of coarse cloth." To the London drapers it was known as "Welsh plains or cottons." The term "plains" indicates that it was cloth simply woven without any after-dressing, the finishing processes being done after it had left the hands of the manufacturer. The term "cottons" has no reference to the fabric of that name ; it refers to the process of "cottoning," i.e. raising the nap by teazels.[3]

A Dolgelley "web" contained from 180 yards to 200 yards. It was made up of two pieces, each piece or "end" being usually from 90 yards to 100 yards long. A web contained two "ends" in order to make conveyance to market easier.

The web-cloth was divided into two classes—the coarsest fabric, which was three-quarters of a yard wide and the finest fabric, which was seven-eighths of a yard wide.

In order to understand the organisation of the woollen manufacture in Merioneth, it must be observed that the fabrics produced here were "woollens" in the trade sense of the term. The woollen industry consists of two branches (1) the clothing branch, (2) the worsted branch.

In the "clothing" branch—that which was typical of Merioneth—the fabrics are made of short corded wool ; in the second, they are made of long combed wool. The term "cloth" is used where both the warp and the weft are spun from carded wool, whereas the term "stuff" or "tanny" denotes that the warp and the weft are made from combed wool. This distinction is important in that it affected the organisation of the industry in more ways than one. In particular, it explains the delay in adopting the power inventions of the early nineteenth century in the manufacturing counties of North Wales. For machinery was less easily adapted to the spinning and weaving of the short-staple wool, used in the manufacture of woollens proper, as distinct from the more tightly spun worsted yarns.

Two points of contrast between the woollen and worsted industries illustrate the differences in the organisation of each. In the first place, the scale of operations was generally much bigger in the worsted section than in the woollen ; and, secondly, specialisation had gone much further in worsted than woollen. Fewer processes occur in the woollen manufacture. Thus, statistics for the year 1899 show that in 1,918 woollen factories in the United Kingdom, 153,232 persons were employed—that is 80 persons to each factory. On the other hand, in 753 worsted factories, there were employed 148,324 persons—an average of nearly 200 to each factory.

Woollen manufacture was far more diffused and scattered as a result ; it could be carried on in the remote parts of the country. The worsted branch of manufacture had, on account of the greater complexity of its processes, to confine itself to definite manufacturing districts. Thus, *hand*-spinning was

almost defunct in the manufacture of Yorkshire *worsteds* by the year 1810, whereas in Norfolk—a *woollen* manufacturing county—the first yarn factory was not set up till 1834. In woollen manufacture the majority of the processes could be combined in the hands of one manufacturer and no process was specialised enough to justify concentration upon it. It remains true to-day that the combination of processes in the hands of a single firm is characteristic of the woollen industry.

This characteristic structure of the manufacture of "woollens" explains the organisation of the industry in Merioneth in this period. Little capital was invested in the industry and it remained for a long period in the stage of "domestic manufacture."

It will be well, at this point, to describe the processes which the wool undergoes in the various stages of its manufacture ; the majority of these processes are to-day performed by machinery in the factory :—

(i) Sorting the wool is the first step : to separate the coarse wool from the best wool. Fleeces vary in quality ; the same fleece occasionally providing wool of six different qualities. Wool-sorting to-day is regarded as a highly-skilled occupation, and commands higher wages than other factory occupations. It is a process that even the largest factory cannot do by means of machinery.

(ii) Washing and drying the wool is the next step. It is usually washed in the streams, on the banks of which many of the factories are situated.

(iii) Willying is the process of cleansing and disentangling the wool before it is ready for carding.

(iv) Carding, the next stage, is necessary to set the fibres all in the same direction, and to interlace them, so that a thick, coarse thread may be formed.

(v) Spinning is the process by which the fibres of wool are drawn out and twisted so as to form a continuous thread. This process was done by the hand spinning wheel or foot spinning wheel before the inventions of Hargreaves, Arkwright, and Crompton became common.

(vi) Weaving has been defined as the art by which threads are crossed and interlaced. A piece of cloth is made up of longitudinal threads laid parallel to each other and intersected by transverse threads. The longitudinal threads constitute the *warp* or *chain ;* the transverse threads are the *weft* or the *woof.* The process of weaving consists in inserting the threads of the weft between the alternate threads of the warp.

(vii) Fulling or dressing is the process of thickening and felting woollen fabrics. The cloth is then hung on a rack with tenterhooks, to be dried and bleached in the open air.

Manufacture was widely diffused ; spinning wheels and looms were busy in isolated farm-houses and cottages in the remotest parts, cloth-making being a normal part of the household routine rather than a specialised industry. Parish registers of the period frequently name the occupations of carder, card-maker, weaver, fuller, and dyer.

A short, but well-informed, account of the preparation of the cloth for market is given by a tourist who passed through Dolgelley and its neighbourhood in 1796. He wrote : "The following is the whole process undergone by this article before exportation. The wool is prepared by hand in the usual manner for the loom ; when woven into cloth it is sent to the fulling mill where it undergoes the operation of scouring, bleaching, and milling ; and it is then fit for the market. When purchased by the drapers, it is treated in various ways ; either it is committed to the shearmen who raise the wool on one side with cards, which is called "rowing" ; or it is sent again to the mill, where it is sometimes thickened to a surprising substance, which adds greatly to the price on account of the loss in shrinking ; or it is stretched and thus made three or four inches wider. . . . It is then put under the packing press. It is then formed into bales of different sizes, containing from five hundred to two thousand yards."[8]

A close connection existed between agriculture and the manufacture of woollen cloth. Spinning and weaving were carried on at most of the farms which were large enough to be able to afford spinning wheels and one or two looms. Farmers

hired servants, not only for their skill in the fields, but also for their skill as spinners and weavers. When ordinary farm work slackened off in winter time, the servants would be employed at the spinning wheel and the loom. The calls of the harvest left the wheels idle during that period and the looms had to stop work for lack of yarn. An observer in 1748 remarked how "the Accidents of Frost in Winter, Scarcity of Water in Summer, lack of Hands in Harvest-time" forbade an increase in the quantity of cloth that could be produced.[2] An examination of Probate Office records reveals the large number of farmers in the county who owned spinning wheels and looms. Contemporary parish registers give evidence to show that, not only were weavers resident at various farms, but also that two and sometimes three families dwelt at one farm-house ; they were permanent servants employed at the farm in weaving. Some of these weavers were resident at the same farm for a period of ten years.

Not only was a staff of permanent servants hired at a farm to spin and weave, but women and children might be hired by the day for this purpose. Spinning was an occupation which a child could perform. A contemporary newspaper account states that "the farmers and principal inhabitants who are able to get up pieces of these Webbs, hire women into their houses to spin and card—two women will card and spin 18 pounds of wool per day and this is reckon'd their day's work—or otherwise hire the spinning of their wool by the pound. For the spinning of the woof (a coarse, thick yarn) at 2d. per pound for the spinning only, the wool of which is worth from 9d. to 12d. per pound."[4]

Most households throughout the county had a spinning wheel and a pair of hand-cards. Spinning wheels could be bought cheaply. The price at which they were valued in the inventories of wills of the late eighteenth century shows that their cost varied from 1/6 to 5/–. Wool could be bought by the cottagers from the farmers or at the wool fairs at prices ranging from 2/– to 5/– a pound, according to quality and the state of the market. Small farmers obtained wool of their own growth ;

other weavers might have a few sheep on the common. The "warp" wool, i.e. the wool from which the longitudinal threads were made, was dearer than the wool spun into the woof, or the yarn that went across. The warp of the web cloth was made of the native fleece wool, while the woof contained a proportion of from one-third to one-half of lambs wool. The latter was imported in large quantities from Italy and was being sold at Dolgelley, in the year 1795, at £8 a pack of 240 pounds—a price of 8d. a pound. But after June, 1795, the capture of Leghorn by the French put an end to the Italian shipments of wool. Lambs wool was also imported into the county from Kent via the port of Barmouth.

A weaving loom was a more costly undertaking, its price, as the inventories of contemporary wills again show, ranging from £1 10s. to £2. Many families who were able to buy a spinning wheel would be unable to obtain a weaving loom with its price sevenfold higher. These families would, therefore, send their spun yarn to be made up by a neighbouring farmer who was in a more substantial way. Weaving on a farm was usually done in an out-building or a lean-to shed adjoining the farm-house.

At about 1750, there were in Merioneth, particularly in the neighbourhood of Dolgelley, many weavers who had come to depend upon the profits of their loom for their livelihood. They worked their own looms, either in their homes, or in a room rented for the purpose. To them the cottagers took their yarn to be woven into cloth. In their functions these weavers resembled those "customer-weavers" who were common in Scotland and the Midlands up to a century ago.[5] Instances occur of weaving being combined with other occupations besides those of agriculture. A trade directory of 1791 describes one of the "principal inhabitants" of Bala as a "Baker and Weaver."[6] Generally speaking, the inhabitants of the various manufacturing parts were fairly well-clad, as the clothing worn by the farmers and the cottagers was home-spun. A traveller, passing through Dolgelley in 1775 remarks "I cannot help again noticing in how much better Repair the cloaths (*sic*)

of the Poor are in these parts than in England, besides, the poor here yearly at the time of sheepshearing beg wool of the farmers, with which they spin and weave themselves cloaths."[7]

Thus, it will be seen that the woollen industry in the county, up to the end of the eighteenth century, was almost self-contained, as far as manufacture was concerned. A little wool was sent out, but this was balanced by what was imported from neighbouring districts. Wool came in from Denbighshire to be manufactured in Merioneth, while, as the industry expanded, a great deal of yarn came into the county from Anglesey and Caernarvonshire; these latter districts eventually became sources of raw material for the Merioneth industry, instead of developing as manufacturing centres themselves. This was the organisation which the woollen industry retained throughout the eighteenth century; it was rural in character; it was not a townsman's craft, like the ancient clothing trade of Norwich, nor was it as fully specialised as the country industries of the West Riding of Yorkshire and the Cotswolds.

Distribution of the Industry.

Though manufacture was widely-diffused throughout the county, there were certain well-marked districts of production. The industry was sufficiently large to attract the notice of many tourists who passed through Dolgelley and its neighbourhood in the second half of the eighteenth century. One traveller in August, 1775, notes "Signs of the Woollen Manufacture carrying on, by the Pieces displayed on the Tenters" in Dolgelley, which was "no despicable little Town for these Parts."[7]

Towards the end of the eighteenth century, the industry was approaching its most prosperous period. The total annual value of the web manufacture was estimated at between £50,000 and £100,000 in 1796. Bills of exchange were being used to finance the trade; one writer boasting that at Dolgelley "a person may have a bill on London for £100 or a much greater sum, at the shortest notice"; the fact that these "bills on London" were recognised in the great world of finance is evidence of the expansion and prosperity of the trade.

The industry was almost entirely dependent upon the export market for its sales. The wars and the colonial acquisitions of the eighteenth century had brought web cloth into popularity as material for soldiers' uniforms. The webs found their way to the American Continent, where they were used to make cheap suits for American and West Indian slaves.

For a long period, extending well past 1750, Shrewsbury was the direct market to which the webs of Merioneth were sent. From this exclusive market, the web cloth was resold "either to London or Liverpool, whence it was exported to Holland, Germany, and America."[8] The Shrewsbury Drapers' Company had exercised a strong monopoly upon the purchase of Welsh cloth since the time of Queen Elizabeth and this monopoly was still intact during part of the second half of the eighteenth century. This form of economic domination was not unknown in the English clothing districts, but nowhere did it survive the "age of monopolies" in so pronounced a form. [For a full account of the exercise of this monopoly, see Professor Dodd's article in *Economica*, June, 1929, pp. 197–212.] In other regions the *local* market was the dominant one, but in North Wales only the rough cloth kept for home use was sold in the local markets and fairs. Only a small proportion of the wealth accruing from the sale of the cloth returned to the manufacturing district; it was this fact that prompted one observer to remark that "the Welsh have the labour and the strangers the profit."

The last thirty years of the eighteenth century saw the breakdown of this monopoly, which was obviously an anachronism surviving into the Age of Competition from the Tudor period which bowed to the ideal of a "well-ordered" but exclusive trade. It was in 1772 that a depot was established within the county for the direct export of cloth by sea—at Barmouth, from which web cloth to the value of £40,000 was exported in one year, according to Thomas Pennant. The outbreak of the American War of Independence reduced exports to that country and a traveller in Dolgelley in 1775 found the inhabitants "excessively anxious about Affairs in

America to which they make large exports, but that trade now stagnates." But this stagnation proved to be only temporary, for even after the loss of the thirteen colonies America still remained one of the best markets.

The web manufacturers of Dolgelley had undertaken the opening of the Barmouth depot, but the total exports of webs that left the port during any one year did not reach a very high figure. The custom house entries at Barmouth of the export of cloth for the years 1790 and 1793 read :—

	No. of Pieces.	*No. of Yards.*	*Average Yards in each piece.*
1790	3,031	276,612	91¼
1793	810	71,232	88

The European War broke out in 1793, and in the following year, when England entered the war, not a single piece was sent by sea and the trade expired.

The European War cut off the web industry from its overseas markets. It reduced its Continental market and French privateers further endangered the sea-going trade. The trade now reverted to the land route for conveying the wares to London—transport charges being increased thereby fivefold. The war also accelerated a rise in the price of raw materials and reduced the supply of labour. But though the volume of production went down, the value of the trade remained as high, as the webs were now selling at a higher price in the market. A web now fetched a price of from £10 to £16.

Gradual Changes in the Industry.

The industry was now approaching the period when it was passing out of the stage of control by an exclusive body of capitalists outside the country, into that of a self-contained industry controlling its own markets. The opening of the Barmouth depot in 1772 was the thin end of the wedge in the gradual weakening of the monopoly of the Shrewsbury Drapers on the woollen trade of Merioneth. The practice was now becoming common of cloth merchants from Liverpool sending agents into the county in order to deal directly with manu-

facturers. These agents, or "factors" as they came to be called, were frequently mentioned by observers and others during the last ten years of the century. The terms "Web-merchant" and "Welsh Drapers" now appear in trade directories—all indicating more direct dealing between the buyers and the sellers. It is possible that the opening of the Barmouth depot was due to the growing interest of the Liverpool merchants in the web manufacture. Their agents would buy the webs on the spot at Dolgelley and arrange for their conveyance by sea from Barmouth and Chester. "The Liverpool Merchants," a tourist tells us in 1798, "have now persons on pay on the spot, to purchase of the makers; and to assist the poorer manufacturers with money to carry on their trade." The appearance of these agents was the outcome of the revolt against the monopoly of the Shrewsbury Drapers' Company. Frequently, the cloth buyers would meet the manufacturers on their way to Shrewsbury and forestall the Shrewsbury Drapers. Eventually the latter were themselves compelled to send agents to the manufacturing districts and collect as much cloth as they could obtain, by calling at the farm-houses and cottages and fulling mills. As this practice extended, we find agents remaining throughout the year in those parts; in trade directories we find "Web-merchants" among the principal traders of Dolgelley and Bala before the close of the century, and their function signified the gradual change that was taking place in the marketing methods of the web industry.

These "factors" or "Web-merchants" not only arranged for the purchase of the cloth, but they were also prepared to advance cash to the small manufacturer. This financial aid enabled the latter to buy his wool and equip himself with other of his raw materials. The "factor" assisted struggling weavers to buy these materials and in general superintended the processes of manufacture until the cloth was ready for the market. Aikin tells how these agents "get acquainted with the persons who make the cloth, assist the poorer ones probably with small sums of money to purchase wool, and, in fact, superintend the making and dressing of goods."[8]

The agents employed by the Shrewsbury and Liverpool wholesalers were paid on a commission basis, generally at the rate of twenty-five shillings per cent of the value of the goods. Often, the webs were purchased before their manufacture was complete.

With the disappearance of the Shrewsbury Drapers' monopoly, the last stage of all—that of marketing—was taking place within the manufacturing district. Dolgelley had been a market town of long standing and it was becoming the active depot for the distribution of the webs of the county by 1800.

Introduction of Machinery.

The greatest changes that occurred in the industry during the first twenty years of the nineteenth century were the result of the gradual introduction of machinery in the manufacture of woollen cloth and the establishment of factories in which were performed certain of the processes hitherto done in the households. Machinery was only very reluctantly adopted in the manufacturing of cloth in Merioneth. As late as the beginning of the nineteenth century, carding was being done by means of hand-cards. For spinning, the wheel—the hand and the foot type—was used.

The tardiness with which machinery on a large scale was introduced is well illustrated in a comparison with the developments that had already taken place in the English woollen industry. Various devices for spinning wool had been invented and were being used across the border during the last quarter of the eighteenth century. In 1765, the spinning jenny of Hargreaves was invented and was patented in 1770. Ten years after Hargreaves's death in 1778, there were no fewer than 20,000 of these machines in use.[9] In 1769, the Waterframe of Arkwright was patented for the process of spinning, and by the end of the century, Arkwright's spinning mills were being built in Nottingham, Derby, and Manchester.

In the Merioneth industry, on the other hand, no reference to the use of machinery appears until after 1800. Indeed, great distrust of machinery was being shown in the largest

manufacturing area of the county. A tourist passing through Dolgelley in the summer of 1805 remarked that the "usual prejudices against machinery prevailed here in all their inveteracy."[10] No inventory of the property of any farmer or weaver in Probate Office Records contains a reference to any instrument of spinning, apart from the wheel, up to 1810, while at this period the Waterframe of Arkwright was rapidly ousting Hargreaves's device in the English woollen industry. Towards the close of the eighteenth century, observers were stressing the need for more improved methods of manufacture in the industry in the county. One opinion expressed the view that "the scanty population even of the manufacturing districts and the admirable situations for mills afforded by their numerous streams, strongly indicate the advantages and necessity of substituting machinery for manual labour."[11] Another observer noted the decline in the amount of manufacture about the year 1799 and the scarcity of weavers that prevailed at that time, as other employments offered better earnings while the calls of the army, engaged in the European War, still further depleted the ranks of labour. Machinery, he declared, would restore the manufacture to its former dimensions—"the number of perennial streams and waterfalls with which this country abounds, and the want of hands complained of, manifest both the convenience and necessity of substituting machinery for manual labour . . . and although weavers and adult labourers may have lately been scarce, yet it is asserted that there are in the town [Dolgelley] and its vicinity from two hundred to three hundred poor children without employment."[12]

There are certain definite, though vague, references to the use of machinery in Merioneth at the beginning of the nineteenth century. In the year 1801, machinery was introduced at two farms in the neighbourhood of Dolgelley for the purpose of "treating wool," that is, to perform the initial process of manufacturing wool into yarn—the processes of carding and spinning. These two farms were Esgair Wen, in the parish of Llanfachreth, and Clywedog, in the parish of Dolgelley.[13] A

fulling mill already existed at Esgair Wen—an indenture dated February, 1780, mentions "a fulling mill and a messuage and lands called Eskerwen . , . in the parish of Llanfachreth, . . . in the tenure of John Roberts."[14] Manufacture of cloth was probably being carried on at this farm on a large scale ; the tenant, John Roberts, is among the list of "Web-manufacturers" of Dolgelley, entered in a trade directory of 1791. As the manufacture increased, the need for more rapid production of yarn would lead to the abandonment of hand-spinning methods, and the ultimate introduction of machinery in 1801 at this farm. A local tradition informs us that a local carpenter named John Jerman was responsible for the introduction of the machine at the farm Clywedog ; this man smuggled the plans from a mill in England. Though this description is vague, the plans may have been those of Hargreaves's spinning jenny. The latter was a simple machine, worked by hand and built at a small cost, and its one great advantage over the spinning wheel was that a single workman could work several threads at once, while the smallest machine could do the work of six or eight hand-spinners. It could easily be adopted even in the cottages where its use interfered little with the workers' habits.

A year or two later, water-driven machinery for carding and spinning appeared at a farm at Twll-y-Bwbach, in the parish of Dolgelley.[13] The situation on farm premises of machinery, propelled by water, is a common feature of the early machine age in North Wales. The new machinery would be housed in sheds on the premises and the presence of a fulling mill or a corn mill on the farm would make it possible to harness the machinery to the already existing wheel of these mills. The increased supply of yarn, now made available by the new spinning machines, would provide more regular work for the weaver throughout the year ; it was estimated that a spinning jenny could keep two cloth looms at work.

It is in the year 1806 that the first factory makes its appearance in web-manufacture of Merioneth. In January of that year four men, one of whom was a web-manufacturer, set up a

building for the purpose of performing the initial processes of manufacture—those of carding and spinning. The other three are described as a "Grocer," an "Innkeeper," and a "Gentleman," and a rental of five pounds was to be paid for a forty years' lease of the land upon which the factory stood.[1] The machinery within the factory was worked by water power, the right being granted them "to erect a Water Wheel in the outside of the said building" and to divert water from the river Aran to propel the wheel. An account published early in 1809 and describing events of the previous three years refers to the establishment of this factory, that "a woollen manufactory has lately been erected near Dolgelley."[12]

There is a vague reference by a traveller, about the year 1808, to a small carding and spinning factory employing water-driven machinery, which was situated near Harlech.[15] There is also evidence of a carding and spinning factory built in 1810 in the parish of Dinas Mawddwy, an area where the manufacture of webs was carried on extensively. This factory turned over a net profit of £20 a month.[16]

Reference has already been made above to the significance of the new spinning machinery being housed on farm premises, where the water-wheel of a fulling mill or a corn mill would be adapted to work the new machines and thus avoid the expense of a new water-wheel. In the year 1818, a fulling mill, known as Pandy'r Dre, near Dolgelley, was converted into a factory for carding and spinning wool, at a cost of £315. A lease of the land on the Nannau Estate was obtained by two men, one of whom is described as a skinner and the other as an innholder. To the indenture containing these particulars is attached a plan of the proposed factory,[1] and valuable information of the nature of these early factories is available here. The building was 33 ft. long and a reference to the "Engine's Rollers" suggests that the machinery used here for carding the wool was Arkwright's invention of a machine with revolving cylinders (see Appendix).

The state of the Merioneth woollen industry up to the first few years of the nineteenth century was as follows :—

	Amount of the Annual Manufacture.	*Prime Cost of Materials.*	*Wages of Labour.*
Dolgelley "webs" or strong cloth	£47,923	£30,656	£17,267
Bala stockings ..	£18,000	£4,900	£13,100
	£65,923	£35,556	£30,367

It will be seen from the above that the knitting of woollen articles was an extensive branch of the woollen manufacture and no description of the latter is complete without some account of the knitting industry.

The Knitting Industry.

The knitting of stockings and socks was a flourishing occupation amongst the inhabitants, especially in the eastern parts of the county; the most well-marked area of manufacture extending from Bala along the valley of the Dee. This area stretched well outside the county as far as Bettws-y-Coed, and it embraced Llanwrst, Ysbyty Ifan, Penmachno, Ffestiniog, Llanuwchllyn, Bwlch-y-groes, as far as Dinas Mawddwy; and thence along the northern side of the Berwyn hills, down to Corwen. It was a mountainous district of about eighteen miles long and twelve miles broad. Bala was the recognised centre and market to which knitted stockings, together with other knit articles, were brought for sale. Hardly a traveller passed through the town and its neighbourhood without remarking upon the presence of this industry. "Bala," wrote one in 1798, "owes much of its consequence to its large fairs and markets, which owing to its central situation are numerously attended from distant parts of the country. . . . The staple articles are woollen stockings, gloves, wigs, socks, and other small knit articles."[17] Woollen gloves and woollen caps were offered for sale; the latter came to be known by the name "Welsh wigs." [No doubt Solomon Gill's "Welsh wig" in *Dombey and Son* was of Bala origin.]

The market at Bala was held every Saturday morning. Stockings to the value of £200 were sold at this weekly market in 1748, at a price ranging from 10d. a pair to 2/6 a pair. Pennant, writing in 1780, described the extensive manufacture that proceeded at Bala ; he found women and children, and sometimes men, busily knitting on the roadside, while families assembled in each other's houses and carried on their knitting by the fireside. He gave a figure of £500 as the weekly value of the sales.

The occupation, being mechanical and being performed during leisure hours, was of great value to a locality in that it was possible to sell the knitted articles at a price that would be uneconomic under less simple conditions of production. Pennant stated that stockings to the value of £10,000 were exported in one year from Barmouth. By 1799, their price had increased and ranged from 6/– to 6 guineas per dozen pair. Some pairs actually reached a price as high as half-a-guinea, while 8/– was frequently paid for a pair. Wool to be used in the manufacture was bought in large quantities at the great fairs to be held at Llanrwst in Denbighshire, and this was the source of by far the largest amount of the raw material. At Penmachno and Ysbyty Ifan, situated just across the Merionethshire border from Ffestiniog, the stockings knitted were brought to Ffestiniog fair ; here large buyers from Bala would meet the manufacturers and purchase their wares. At the beginning of the nineteenth century at Ffestiniog a local farmer collected the stockings knitted in the locality and conveyed them to be sold at Bala. The women of Trawsfynydd frequently congregated on the route of the stage coach, offering their stockings for sale to the travellers.

As in the clothing branch of the woollen manufacture, before the end of the eighteenth century the "factor" or agent had appeared in the stocking branch. The principal buyers at the weekly fair came from England, and they represented merchants from Shrewsbury ; the stockings were then sold in London and other English towns. These "Welsh hosiers" as one contemporary writer called these representatives of

English firms, travelled "through the adjoining English counties and [supplied] shops and warehouses; from the latter they are dispersed throughout the island." Information given "by the principal hosiers themselves" to an observer put the annual value of the sales at Bala about the year 1800 at a figure between £17,000 and £19,000.[12] Nearly 200,000 pairs were disposed of in one year, made up in the following manner :—

12,000 pairs at the average price of 5/– each ..	£3,000
60,000 pairs at the average price of 3/– each ..	£9,000
60,000 pairs at the average price of 1/4 each ..	£4,000
60,000 pairs of children's hose and socks, at the average price of 8d. each	£2,000
192,000 pairs.	£18,000

It was the coarser wool that was most commonly being knitted in the poorest homes and little profit accrued from this wool. The profit lay in the manufacture of the finer stockings, for which a relatively high price was obtainable. From the above table, it will be observed that the coarsest sort were sold at an average price of 1/4 a pair. The total profits of the industry, estimated on the basis of the above sales, amounted to over £13,000 a year. The "average value of the raw material" is reckoned thus :—

72,000 pairs at 8d. (value of wool)	£2,400
60,000 pairs at 7d. (value of wool)	£1,750
60,000 pairs at 3d. (value of wool)	£750
192,000 pairs.	£4,900

As the total annual value of the sales was £18,000, the remaining £13,100 was "the wages of industry, except for a small deduction for indigo." This annual return of £13,100, is considered by the observer, whose estimates are quoted above, to be a low one, especially when "a pennyworth of wool is converted into a shilling" in the case of fine stockings. The small profit accruing was due to the slight gain derived from knitting coarse stockings; not more than a shilling would be

paid for making such a pair. It is interesting to observe how similar were the conditions that prevailed in this stocking manufacturing district over thirty years later. A Reverend John Lloyd, Bala, in his evidence before a Royal Commission in October, 1833, states that "there are many people here who are really very poor; they sell a great quantity of knit stockings; they are all knit of worsted yarn; they do not make much by them. They get One Shilling a pair for knitting them; the shops, perhaps, do not pay quite so much; that is what I pay, but I favour them a little, perhaps; *I* find the wool; it may be worth sixpence, not more; they cost me therefore One and Sixpence a pair."[18]

These hand-knit stockings of Bala had earned a great reputation, as they were recommended by medical men throughout England, on account of the softness of the wool. The industry continued to flourish during the first twenty years of the nineteenth century. Though agents from England purchased a large quantity of the manufacture at the weekly sales, not all the profits of the industry left the native district. One of the most prosperous of the "shopkeepers and traders" residing at Bala about the year 1815 was Gabriel Davies, who is described in a trade directory of the period as a "Grocer, Draper and Welch (*sic*) woollen yarn, hosiery and flannel warehouse." Davies is clearly the "great stocking merchant at Bala," who is mentioned by a traveller who "sees Llandderfel the other side of the River, near which there is a new house building by a Mr. Davies, son of the great stocking merchant at Bala, who married one of the young women representatives of the old paupers . . . [who] died worth half-a-million."[19] Thus, both father and son were regarded as men of wealth in Bala in the early years of the new century. The son was the treasurer of a savings bank opened at Bala in 1820.

Another hosier who was sufficiently prosperous to hold shares in two ships was a Maurice Edwards, of Bala; a Thomas Jones, of Llandderfel was another hosier who held shares in a ship. Both these names appear in the Custom House Register of Beaumaris for the year 1813.

Another shareholder in various vessels named in the same year was Thomas Roberts, Llainwen, Trawsfynydd, who is described as a dealer in stockings. When the will of this hosier was proved in 1820, the total value of his effects was £645 15s. 7d. Three items in the inventory read :—

	£	s.	d.
"Stocking[s] in the house sold for ..	80	0	0
Share in two vessels	70	0	0
Cash in the house	281	8	3"

It is frequently stated that the stocking industry declined considerably in the ensuing ten years. Closer examination, however, reveals that this was not the case ; in fact, the sale of stockings increased rapidly during this period until in the year 1830, the total number of pairs sold reached a figure twice as high as that quoted by an observer in 1799. The evidence given by Richard Watkin Price, of Rhiwlas, a magistrate in the county, before a Royal Commission, stated : "It is said that in the year 1830, 32,000 dozen pairs of knit worsted stockings were sold in Bala, 10,000 dozen pairs of socks, and 5,500 dozen pairs of woollen gloves."[20]

Our informant of the year 1800, whose figures and estimates have been quoted above, had declared that, in order to maintain the prosperity of the industry, "a stocking manufactory upon a large scale should be established in the neighbourhood of Bala, for the sake of expedition and other improvements." Otherwise, the trade would decline "owing to the superior advantages of machinery adopted in other districts." This prophecy was not immediately fulfilled, for knitting in the county remained a purely handicraft industry, and it continued to prosper for well beyond the period here under review.

The Industry, 1815–1820.

The woollen industry suffered from the general depression of trade that followed the close of the European War in 1815. The war itself had handicapped the industry at a vital period in its development ; its sea-going trade was destroyed and it caused an increase in the price of its raw material. Wool, during the year 1818, instead of being used in the native

industry, was actually sold to the Yorkshire clothiers at very high prices, with the result that "the manufacture of those [woollen] articles has been considerably diminished at home."[21]

Factories, as we have seen, were being slowly erected in Dolgelley and its neighbourhood—the part of the county which had become the chief manufacturing centre for web-cloth. The primary purpose of these early factories was to house new machinery for carding and spinning. Machinery continued to appear on farm premises, as at the beginning of the century. Less wool was now being treated in the households. But it was only the bigger farmers who could afford to send their wool to the factory, to be carded and spun into yarn. The *weaving* of the yarn into cloth continued to be done in the weaver's shed at the farm or at the weaver's house. A will, dated 1812, illustrates well this state of affairs. Among the effects of "Richard Prees, Cefnrowen, Dolgelley, were the following :—

In the weaver's room	£2	0	0
Webs and wool	£100	0	0
In the factory	£18	0	0"

With the coming of machinery for carding and spinning the demand for the labour of the hand-spinner declined. Direct evidence of this displacement is to be found near Bala. The immediate result of establishing two carding factories in the district was that many people became unemployed and a rise occurred in the poor rate. The evidence of a county magistrate[18] stated that "there are two carding factories here . . . they have thrown many old people out of employment and the thread is not so good ; they have no other way of living and accordingly the poor-rate has more than doubled in the last thirty years."

The decline in the web manufacture during the Napoleonic War was regarded by observers of the time as merely a temporary depression. Carding and spinning factories were being erected in the neighbouring counties of Caernarvon and Anglesey to meet the demand for yarn in the Merioneth web industry. In addition, during the first ten years of the cen-

tury, manufacturers from Yorkshire made periodical visits to North Wales for the purpose of supplying carding machinery to cloth-producing districts. Notices from them appear in the local press.[22] A close observer of the industry declared that "notwithstanding temporary stagnations in trade . . . Yorkshire manufacturers of carding machinery go about regularly every three months to canvass fresh orders." Occasionally, evidence is found of a farmer holding shares in a woollen factory ; money was thus being invested in their construction.

The importance of Dolgelley is reflected in the increase in its population ; from a figure of 2,949 inhabitants in 1801, it increased to nearly 4,000 by the year 1821. About the year 1818, one web merchant alone was reputed to be paying to the manufacturers a sum of over £1,000 a week.[23] The output was, however, on the decline in the years following 1820. In 1799, it was calculated that eighteen fulling mills at work in the county could deal with four webs a week, the two pieces of the web being each 96 yards in length ; this gave a total number of yards produced in a year as 718,848. In 1831, the number of yards produced in the county for export was 352,000. This latter figure was given when the towns of Dolgelley, Bala, Barmouth, Towyn, and Corwen were petitioning for inclusion among the contributory boroughs of Merioneth in the new Reform Bill, and was stated as one proof of the prosperity of these districts.[24] This figure of 352,000 yards is much less than the yardage given thirty years previously, even after an adjustment has been made for the fact that the then total included the produce of Machynlleth and the Vale of Dovey.

The Merioneth woollen industry, like the slate industry, remained distinctly Welsh in character ; it did not lose its native hall-mark. The manufacturers at Dolgelley were, with one exception, all local men. The gradual decline of the web cloth industry began with the disappearance of the market at Shrewsbury. Even though friendly critics prophesied that the collapse of the monopoly exercised by the Shrewsbury Drapers' Company was essential before the woollen cloth trade could prosper, in point of fact the collapse proved disastrous to the

trade. "When peace shall have restored the olive-branch to Britain, our woollen trade will become more brisk than ever. Besides the London market by sea, the manufacturers may find others in the interior of England." So wrote a friendly critic in 1809. He added that "Competition in the market is what this trade has long wanted : monopoly, with its deadly fangs, had checked the efforts of industry." Ever since the Shrewsbury Drapers' monopoly had been broken, "the seeds of opulence seem to have taken root in the land, and the baneful effects of imposition and disappointment begin to disappear." This writer could not then realise that as soon as its sheltered and secure market at Shrewsbury was lost and the relatively small industry of Merioneth entered the open market, it would be overwhelmed and submerged by the vastly more intense manufacture of Yorkshire and Lancashire. The native industry possessed advantages of situation such as superior wool, cheap labour, and abundance of water supply (the latter both for bleaching and for power). But its chances of survival depended not only upon this factor of situation, but also upon its ability to attract the flow of new capital from outside. Its advantages of situation proved of no avail when the advent of steam power revolutionised production in the English industry. Thus, it failed to induce this economic penetration by rich capitalists from outside the county, and the decline of the industry became inevitable.

APPENDIX A.

Particulars of the indenture relating to the construction of a woollen factory in Dolgelley, in the year 1818.

"Lease of Messuage or a Dwelling house and waste Ground for Building a Factory in the Parish of Dolgelley in the County of Merioneth. Sir Robert Williames Vaughan, Bart. to Mr. Lewis Humphreys and another.

This Indenture made the first day of January 1818 between Sir Robert Williames Vaughan of Nannau in the County of Merioneth of the one part and Lewis Humphreys of Dolgelley in the said County, Skinner, and Ellis Rees of the same place, Innholder, of the other part, Witnesseth that for and in consideration of the sum of One Hundred Pounds to the said Sir Robert Williames Vaughan in hand well and truly paid by the said Lewis Humphreys and Ellis Rees at or before the sealing and delivery of these

presents . . . and in consideration of the costs and charges the said Lewis Humphreys and Ellis Rees will be at in erecting and building a good strong and substantial Factory for Carding and Spinning of wool and other necessary convenience thereto belonging on the Tenement Land or Ground hereinafter mentioned and of the yearly Rent, Covenants conditions provisoes and Agreements hereinafter mentioned reserved and contained . . . he the said Sir Robert Williames Vaughan hath demised leased set and to farm let . . . unto the said Lewis Humphreys and Ellis Rees . . . All that Messuage or Dwelling House heretofore used as a Fulling Mill commonly called or known by the name of Pandy'r Dre with the waste Ground adjoining thereto situate lying and being near the town of Dolgelley in the parish of Dolgelley now in the possession of Jannet Williams Spinster . . . Together with and singular ways paths passages waters watercourses and particularly the Watercourse from Felin Ucha in the Parish of Dolgelley . . . To have and to hold the said Messuage or Dwelling house unto the said Lewis Humphreys and Ellis Rees . . . from the first day of January for and during and unto the full end of the term of Thirty one years thence next ensuing and fully to be completed and ended Yielding and paying therefore yearly and every year during the said term unto the said Sir Robert Williames Vaughan . . . the Rent or Sum of One Pound . . . on the Twenty Ninth day of September in one entire Payment charge of all deductions and Taxes whatsoever Parliamentary or otherwise . . . And also that they the said Lewis Humphreys and Ellis Rees their executors . . . shall not nor will at any time or times during the said term use or permit or suffer the said Factory to be used as and for a Mill for grinding Corn Grain or Malt or for any other purpose whatsoever than as a Factory for Carding and Spinning Wool . . . And also shall and will from time to time . . . at their own proper expense . . . sufficiently repair uphold and maintain . . . the said Factory and all other Buildings and Erections . . . and all the roads fences cuts and streams of water Dams Floodgates and water-wheels thereto belonging . . . and shall and will peacably and quietly surrender and yield up unto the said Sir Robert Williames Vaughan his heirs or Assigns (other than and except the Engines Rollers and Machines in the said Factory) . . . And further that they the said Lewis Humphreys shall not nor will not at any time . . . dam or divert the River Aran or permit or suffer the same to be dammed up or diverted by any person or persons whomsoever to the injury or Damage of the said Factory . . . but shall and will at their own costs and charges remove such Dams and other Erections which shall or may be so made on the said River Aran . . ."

A plan of the factory is attached to the above indenture ; it shows the building in four sections. The top section, about six feet deep and twenty-eight feet wide, is the part where the water-wheel was to be fixed. The next section is about ten feet deep, where, probably, the carding machinery was to be placed. The next two sections are narrower ; the first of these would probably house the spinning machinery and is nine feet deep and nineteen feet wide. The last section, which is ten feet deep, with a fireplace three feet six inches wide in it, may have been intended as a packing room.

APPENDIX B.

Rates of Payment in the Merioneth Web Cloth Industry.

1. *Carding and Spinning.*

(*a*) Time rate. All the evidence points to the payment of about 2d. a day, up to the beginning of the nineteenth century. Cf. the entries in an old note book covering the years 1784–1816.[25]

Pd: Elisabeth Morgan for spinning	2s. 6d.
Pd: Elisabeth Williams 3 weekes 2 days at 1/– per week	3s. 4d.
Pd: Elisabeth Humphrey 2 weekes 3 days	2s. 6d.

(*b*) Piece rate.

For spinning the woof (the yarn that goes across)	2d. a pound.
For spinning the warp	4½d. a pound.[26]

2. *Weaving.*

(*a*) In 1601, 2s. 6d. was paid for weaving a piece of 90 yards in length.

(*b*) At the end of the eighteenth century, a rate of 7s. 6d. to 9s. per piece was paid. This rate increased during the following years to a figure as high as a guinea.

(*c*) A weaver was paid at the rate of 14d. per day "on his own victuals."[26]

(*d*) In 1809, a rate of 10s. per piece was paid—a payment of between 1d. and 1¼d. per yard.[4] Cf. "Weaving 19 yd. at 1½d.—2s. 4½d."[25]

(*e*) Cf. the rate paid at the time

in South Wales	3d. per yard.
in the West of England	1¼d. per yard.[27]

3. *Fulling or "Scouring and Milling."*

(*a*) From 3s. 6d. to 5s. per piece.[26]

(*b*) A rate of 2s. 6d. per piece.[4]

4. *Manufacturing a pack of wool into web-cloth* cost £3 16s.

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