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**The Woollen Industry of Gloucestershire: A Retrospect**

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THE  
WOOLLEN INDUSTRY OF GLOUCESTERSHIRE :  
A RETROSPECT.<sup>1</sup>

BY SIR WILLIAM H. MARLING, BART.

THE manufacture of woollen cloth in these Islands is of very ancient origin. The Romans taught spinning and weaving to their British subjects, and established an imperial manufactory of woollen and linen cloth for their legionaries at the "Venta Belgarum" (Winchester), whilst Saxon Chronicles and a fragment of the shroud of Edward the Confessor, said to have been preserved at Bromesberrow Place in this county, show that these arts, as well as that of dyeing, were practised in the eleventh century. The industry received a great impetus at the time of the Norman Conquest, when numbers of artisans from the Continent, particularly from Flanders, followed in the train of William's victorious army. In the reigns of Henry II and Richard, according to Sir Matthew Hale (a Gloucestershire man), "this kingdom greatly flourished in the art of manufacturing woollen cloth," but by the troublesome wars of John, Henry III and Edward I and II, the trade was wholly lost. Madox's *History of the Exchequer* mentions Gloucester as one of the towns that "paid fines to King John for license to buy and sell dyed cloth as they were accustomed to do in the time of Henry II." It is, however, to that great Plantagenet monarch, Edward III, that we are indebted for the revival of this, for centuries, our staple manufacture. Fuller, the Church historian, tells us that "the King and State began now to grow sensible of the great gain the Netherlands got by our

<sup>1</sup> Read at the opening of the Winter Session of the Stroud Textile School, October 5th, 1903.

wool, in memory whereof the Duke of Burgundy not long after instituted the 'Order of the Golden Fleece,' wherein indeed the 'Fleece' was ours, the 'Golden' their, so vast their emolument by the trade of clothing. Our king therefore resolved, if possible, to reduce the trade to his own country, who as yet were ignorant of that art, as knowing no more what to do with their wooll than the sheep which wear it, as to any artificial and curious drapery—their best cloathes then being no better than freezes, such their coarseness for want of skill in their making." By the promise of immunities and privileges he induced about seventy families of skilled Flemish workmen to settle in England, and bestowed them in various districts, including Gloucestershire. No doubt further improvements in the manufacture resulted from the influx of skilled Huguenot artisans which followed the revocation of the Edict of Nantes.

Fuller tells us that "a prime Dutch cloth maker in Gloucestershire had the surname of 'Web' given him by King Edward there." This surname is still frequent around Stroud. Other local names, such as Clutterbuck, Hague, Malpass, Marmont, Prout, Pettatt, etc., are probably traceable to foreign immigration, as well as are some technical terms used in weaving and dyeing, such as "lam" (Fr. lame), signifying the blades of a loom, and "rousing" (Fr. rouge), meaning red dyeing.

Following the lead of Edward III, the Lord Mayor and Corporation of London in the middle of the fourteenth century, for the encouragement of the woollen trade, made it a rule to present annually at Christmas six yards of the best and finest English broadcloth to each of the great officers of State, such as the Lord Chancellor, the Lord Chief Justice, the Master of the Rolls and others. This custom has been maintained uninterruptedly for 450 years, the Corporation of the City every autumn inviting the woollen manufacturers of the country to send superfine black cloths to the Guildhall for competition, and for many years past the cloth so chosen

has come from the Stroud valleys. The establishment of the Worshipful Company of Drapers in 1438 and that of the Clothworkers in 1480 testifies to the growing importance of the industry, and in quite recent times these Companies have given generous assistance to it by voting monies in aid of technical education and by awarding gold medals to the best exhibits at the South Kensington Exhibition of 1882.

In the spacious days of Queen Elizabeth the wool staplers of the Cotteswolds greatly flourished, and their bygone magnificence is still attested by noble churches such as Chipping Campden, Northleach and Fairford, by Grammar Schools such as Chipping Campden, Northleach and Burford, and by many a stately mansion. During this reign, too, the manufacture of woollens made rapid progress, although, as Mr. Hyett tells us in his *History of Gloucester*, it had begun to decline in that city before Elizabeth's death.

During the Great Rebellion, when Cirencester was taken by the Royalists and many of the woollen mills were plundered, Samuel Webb, of the Ham Mill, Stroud, for services rendered to King Charles' cause, received from Prince Maurice and Prince Rupert written "Protections," said to be preserved in Sir John Dorington's library at Lypiatt Park.

Coming down to the last century, it may be mentioned that Frederick, Prince of Wales in 1750 inspected Southfield Mills, Woodchester, and that in 1788 George III visited Woodchester Mills and lay one night at the Hill House, now known as Rodborough Manor. On the latter occasion many of the machines were carried out into an adjoining meadow, where the various processes were witnessed by the King and Queen and Princesses, who walked on scarlet cloth laid down for their accommodation.

From a very early period the trade has been the subject of legislation, some of it foolish and vexatious, the use of indigo as a dye being at one time prohibited under heavy penalties, and at another time the length and width of cloth

being fixed by statute. A curious attempt was once made to benefit the industry by enacting that the dead should be buried in woollen shrouds! On the other hand, the repeal of a tax of 6d. per lb. on imported wool was not obtained until 1824. In 1757 we find the Stroud clothiers petitioning the House of Commons in regard to the commotion resulting from a rising of weavers there. The intervention of Parliament was again invoked in 1803, but this time it was asked to inquire into the effect upon the labour market caused by the setting up of newly-invented gig mills.

The establishment of the woollen industry in these valleys is undoubtedly due to the quality and abundance of the streams, which were essential for the processes of manufacture and for the supply of the only motive power known previous to the introduction of steam. Until towards the close of the seventeenth century the English clothier used only English wool, but in the following century the superior fineness of Spanish wool known as "Merino" (a corruption of "marino"—oversea) began to be recognised and to be employed with our own English wool. Later the merino strain was brought into Saxony, Prussia and Silesia, and later still into the Austrian Empire. This continental wool was of even better quality, the great landowners bestowing much care upon their flocks, some of which numbered as many as 10,000 sheep. To-day East Prussia, Silesia and Moravia produce wool of the very finest quality, in this respect (though not in "staple") superior to anything grown in Australia or New Zealand, and it is of these continental wools exclusively that the best superfine broadcloth is composed. Early in the nineteenth century the exportation of Australian and New Zealand wool began. My grandfather, who was born in 1780, saw when a young man the first consignment—some half-dozen bales from New South Wales—landed at the London Docks, the small beginning of that great influx in Colonial wool which has so largely superseded Continental wool in our factories.

Formerly cloth was not woven at the mill, but either in a

master-weaver's shop or in the weaver's cottage, the manufacturer providing the yarn, both warp and weft, and the master-weaver or the weaver (as the case might be) the loom, and of course, standing room for it. The master-weaver often employed as many as half a dozen journeymen, who worked in a shed adjoining his house; and hundreds of cottages included a room where one and sometimes two looms stood, and where the cottager and some of his family worked. About the year 1830 the master-weaver began to be displaced by the manufacturers fitting up weaving sheds near their mills, in order to secure greater regularity and better work.

By 1838 the introduction of the "power-loom" had occasioned much temporary distress and consequent discontent amongst the hand-loom weavers, and in the following year a Royal Commission was appointed to inquire into this and other matters, the Commission in its turn directing Mr. W. A. Miles to investigate and report to them. This gentleman seems to have performed his work with remarkable care and impartiality, and the Blue Book containing the evidence collected by him gives much curious and valuable information as to the condition of the clothworkers in Gloucestershire two generations ago.

Mr. Miles obtained evidence from ministers of religion, magistrates, shopkeepers, operatives, manufacturers and others, and in his report there frequently recur the names of families still resident among us, such as Apperly, Cripps, Davies, Evans, Hooper, Marling, Playne, Ricardo and Stanton, many of them still engaged in the woollen trade. It may be well to remember that at the time of his report (*i.e.* seven years after the great Reform Act of 1832) our present Poor Law system (1834) had scarcely got into full operation, and the ill-advised Beer House Act of 1830 had greatly increased the evils of intemperance, whilst the present police force had not yet supplanted the parish constable.

On the whole Mr. Miles' recital is a sad one, and in striking contrast to the happier conditions prevailing in the Stroud

Valley to-day. Up to 1825 the woollen trade of the West of England appears on the whole to have prospered; but in that year a great financial panic occurred, many banks closed their doors, and commercial depression resulted, with its inevitable consequence—reduction in wages. Not unnaturally in many parts of the country strikes followed, and there were strikes amongst the Gloucestershire weavers in 1828 and again in 1834. We must truly sympathise with these unfortunate men, driven by want almost to desperation. Various remedies were devised, amongst them the cultivation of allotment gardens and the encouragement of migration to other districts where labour was more in demand, whilst not a few benevolent residents, such as the Rev. John Elliott (the late centenarian incumbent of Randwick), Mr. Anthony Fewster, of Nailsworth, Capt. Slade, of Uley, Mr. Peter Playne, of Dunkirk, and especially Mr. David Ricardo, of Gatcombe, exerted themselves in assisting emigration. Some parishes, such as Uley and Bisley, borrowed money for this purpose, and Mr. Miles gives a statement showing the cost of emigrating sixty-eight persons from Bisley parish, who on 31st August, 1837, were placed on board a steam vessel at Bristol to join their ship then lying at Kingroad.

This is the account:—

	£	s.	d.
Clothing 68 persons at £1 10s. 8 $\frac{3}{4}$ d. per head, including Bibles, Prayer Books, etc ..	104	9	7
Cash paid for 2 waggons and a cart, to take the 68 persons to Bristol, their victuals on leaving and on the road, and breakfast at Bristol ... ..	24	13	6
Cash for one day's victuals, the first day put on board the steam packet .. ..	2	0	0
Cash paid Dr. Rogers, the emigrant Surgeon, for 2 men and their wives that were above the age to go passage free, £15 each ..	60	0	0
	<hr/>		
	£191	3	1

All the evidence produced before Mr. Miles went to show that strikes only made the situation of the hand-loom weaver worse. At the same time many of the manufacturers were ruined. It is the old story: strikes are a species of civil war, in which, as in actual war, it is sometimes hard to say whether the victors or the vanquished suffer most. Happily, in the fifty years during which I have been connected with the trade I can recall no strike of the cloth workers in these valleys. Their wages, like those of all other operatives, have risen, and, although they may not have been raised by Trade Unions to so high a rate as in the north, yet I am inclined to think that in no part of England have textile operatives really fared better, for most house-wives will tell you that a steady weekly income of 20s. is better for a family than an intermittent one of say 25s. In 1839 the position of the hand-loom weaver was most pitiable, especially where he worked at home or in the shop of a master-weaver, his employment being irregular, and his weekly wage (even when in work) averaging only 6s. 10½d. The hand-loom weaver in a factory was better off, earning 11s. 9d. for a week of seventy hours. The wages of women and children for a week of sixty hours were proportionately low. Moreover, the Truck Act of 1831 was frequently evaded, and wages too often paid, not in coin of the realm, but in order-notes, given by the employer for goods at a "truck" shop, costing from 10 to 20 per cent. above market price. It was an iniquitous practice, and (it is only fair to say) was condemned by the better class of manufacturers.

One hundred years ago the price of bread was subject to violent fluctuations, after a good harvest being cheap, and after a bad one excessively dear. When a child I remember my grandmother telling of a neighbour who said to her in one of those famine years: "Ah, Mrs. Marling, I should bless God if we could see the quartern loaf down to a shilling!" In 1838 the price of the quartern loaf seems to have been about 7½d., tea 5s. a pound, sugar 8d.

a pound, meat, bacon, butter and cheese not greatly differing from present prices, whilst clothing we know was much dearer.

It is clear that the underpaid condition of the weaver was chiefly owing to their redundant numbers and the introduction of the power-loom.

In 1839 wages generally, though on the whole materially lower than those of to-day, were far better than those of the hand-loom weavers. For instance, masons earned 15s. to 17s. a week, blacksmiths 15s., sawyers 16s., carpenters 15s., plasterers 15s., labourers 9s. (with cottage and garden and extra at harvest).

In the cloth trade wool-sorters earned 30s., white wool-scourers earned 14s., wool-pickers (women) 6s., wool-feeders (children) 3s., mule spinners (men) 20s., warpers (women) 7s., millmen 20s., burlers (women) 6s., shearmen 13s., brushers 14s., drawers and markers (women) 9s., spinners (women) 6s., and the week never meant less than sixty working hours.

In such circumstances it is difficult to conceive how the poor managed to live, and the situation was aggravated by the most pernicious Beer Act of 1830, which empowered any ratepayer to open his house as a beer-shop, free from any Justice's license or control, merely on payment of two guineas to the local office of excise. These beer-houses, for which lonely spots seem frequently to have been designedly chosen, were too often the haunts of bad characters and receivers of stolen property, particularly of "slinge." Slinge (as the theft of wool, yarn, waste, etc., was locally termed) had become so common a practice that manufacturers were obliged to allow for it in their calculations of manufacturing costs. This illicit trade was fostered not only by the existence of the beer-shops, but also by the inactivity of the parish constables, and by the singular provision of the law which forbade the search of suspected persons between the hours of sunrise and sunset! As a consequence "slinge" was carried with impunity during daylight by women and

children. The value of "slinge" seems to have ranged up to as much as 7s. a pound, though the "slingers" often gained as little as rod. of this from the receivers, who appear to have acted with much cunning and precaution, and by a system of transferring the stuff from one district to another to have baffled detection. "Slinge" from this district even found its way to Yorkshire, and Mr. Miles records a sale by public auction there, when 140 bags realised £1,000! At last the manufacturers combined to establish a police system of their own for the detection and punishment of offenders, two officers (from the London force) being stationed at 'Hampton, one at Ebley and one at Stonehouse. This did something to put an end to slinging, although it was not altogether unknown even in my time, as Mr. Samuel Hill (the worthy wool-loft manager at Stanley Mills in the early sixties) could testify were he living, and I myself recollect a member of our firm on his way home one day overtaking one of our stove-men, whose old chimney-pot hat aroused suspicion. On knocking off the hat he found it full of wool—which had never grown on the wearer's head! I told my friend that he had committed an assault for which he was liable to prosecution, but in the event it was the thief who was prosecuted, and got two months' imprisonment.

Mr. Miles appears to have made an extensive inquiry into the question of educational facilities in the district, and to have found here sixty-seven day schools educating 4,743 children (of whom 602 were the children of hand-loom weavers) out of a total population of 62,775—or rather more than one in thirteen. His return of Sunday schools is not so complete; nevertheless he enumerates twenty-eight Church schools and forty-six Nonconformist, educating between them some 10,000 children and adults, *i.e.* about one in six of the total population. Amongst other interesting matter Mr. Miles records the establishment by my mother of an infant school at the Thrupp, and I cannot deny myself the pleasure of quoting in full the following letter to him from

my father. Even to eyes not filial I think it will be considered that this letter contains some admirable suggestions, and that the principles it lays down are as applicable to-day as when the letter was written—nearly seventy years ago.

“ HAM MILLS,

“ *March 20th, 1839.*

“ DEAR SIR,

“ I accede with pleasure to your request by giving you an outline of my ideas on the subject of the education of the labouring classes. Happily its importance is now admitted by all, and the present question is not whether they shall be educated, but *in what manner* and *by what means*, and I sincerely trust that will soon be determined by the introduction of some comprehensive and effectual scheme.

“ I am fully persuaded that the inquiries you have been making in this district relative to one particular class of labourers, have proved that for that class especially, and indeed for all, a sound system of education adapted to fit the rising generation for their respective stations is imperatively and immediately required.

“ The system of education adopted in our common schools should have reference to our social condition as a manufacturing, agricultural and commercial people; to our peculiar geographical situation and political relations. Our territory at home is limited and occupied, but we have possessions in the American and Australian continents which ought to be rendered an easy outlet for our rapidly-increasing population and an inexhaustible supply for their increasing wants. It is my opinion that, in not a few of our schools, as much of the element of what is commonly called learning is taught as can be necessary for the children of the labouring classes, but the formation of those habits of industry, and the communication of that knowledge of agriculture and the arts, which are calculated to make them skilful workmen and good and intelligent labourers, is sadly neglected.

“ I am deeply impressed with the absolute necessity there is for all education being based on the principles of the Bible, and would countenance no system in which sound moral and religious instruction were not made the foundation of everything else ; yet I must confess my fears, that there is a tendency in many quarters to attend to this subject to the almost total exclusion of other very important and very necessary parts of education, not that too much regard is paid to the former, but far too little to the latter.

“ There exists at present amongst all ranks of society a general desire to promote the cause of education, and very much is being done by personal efforts and pecuniary assistance, but most unhappily a spirit of religious sectarianism prevails and exhibits itself in some of its worst forms on this subject, when all denominational distinctions ought to be merged in one combined effort to benefit the rising generation. Though this spirit cannot be at once eradicated, yet much may be done to mitigate its injurious effects.

“ That the people are exerting themselves is a matter of congratulation, and the Government in my opinion will best promote the good cause, not by superseding those exertions but by fostering, enlightening and aiding them.

“ It is with great diffidence that I would suggest any particular plan, but I may venture to say that a great improvement might be effected by the establishment of a ‘ Training School,’ which might serve two most important purposes, viz. to qualify masters and mistresses and to present a model of what a common school ought to be, the expenses being defrayed out of the resources of the county. A committee or council might be connected with it, before which teachers in this and other establishments might be examined, and if found duly qualified, diplomas should be granted by the said council.

“ Thus the first step would be gained, the next would be to induce the patrons, committee or managers of the existing schools throughout the country to employ only such teachers

as have passed their examination before the council, of what might be called 'The National Training School.' This I think might be done by offering to every school where a teacher is employed, an annual pecuniary grant on one other condition, viz. that certain prescribed branches of knowledge be taught. The grant need not be large, but a moderate amount would be a powerful inducement to establish schools, and would do much to ensure an efficient discipline in all schools which received the grant; for I should further recommend that visitors be appointed, and that those schools should lose their grant for the year in which the conditions were not complied with.

"In connection with these schools, I think it would be well to have for the elder boys (if not for the girls) an industrial department in which gardening and the rudiments of agriculture especially should be taught, and as much practical knowledge in other departments of industry as might be found attainable.

"For this purpose an extensive plot of land would be required, where perhaps each boy might have his own allotment; in this I cannot anticipate much difficulty, as it would not be necessary to have the land attached to the school. In London it might not be so practical, but in all country places, and even in large towns, it might be effected.

"Some such system as this, I am convinced, is wanted. It must be evident to all reflecting minds that in the present enterprising age, when changes and improvements in almost every department of our social economy are constantly taking place, the children of the labouring population should be trained to habits of adaptiveness so as to be able to apply themselves to those new circumstances in which they may be placed, thus mitigating the painful vicissitudes which are frequently occurring, especially in our manufacturing districts. Extensive changes in any long-established system, however beneficial in their ultimate results, can hardly ever be effected without considerable suffering to

those whose daily bread has been obtained under the exploded system.

“The habits and acquirements of those who generally emigrate from our distressed districts, are for the most part but ill-adapted to cope with the difficulties which they must encounter in any of the Colonies ; while the training necessary to render a man a successful emigrant, would also render him a more useful member of society at home.

“After a tolerably extensive acquaintance with the state of the manufacturing population of this district, I am convinced that those whose ingenuity is most conspicuous in the culture of their gardens and in their other domestic arrangements, are the best workmen, husbands, and fathers.

“In these schools, too, considerable attention should be paid to history, especially of England ; the advantages of our well-balanced constitutional Government should be rendered clear to the children ; and instruction should be given respecting the laws which as they advance to years of maturity the children will be expected to obey. Their reasonableness and equity should be rendered apparent, as well as the advantages resulting to all classes of society from their general observance. No one department of National education has, I think, been so much neglected as this ; surely it is but reasonable that those who are to obey the laws should be informed what those laws actually are.

“My limits will not permit me to proceed further into detail ; yet I must observe that if the Government is to give any efficient aid to education, it must have no respect to religious parties. But as in all schools a certain system of moral and religious training must be adopted, therefore it must be left to the patrons of the school to supply that which may be most generally approved ; and it is my opinion that this branch will be far better attended to by them, than if controlled in any way by the public authorities.

“Assistance should be given to the building of school rooms as at present, but on a more liberal scale.

“ I conceive that any system of parochial or district taxation for the purposes of education would work badly in this country, on account of the peculiar position of religious parties ; it would tend to perpetual irritations and disputes. If the resources of the county will not allow of any large appropriation of money for aiding in the support of schools, some specific tax for this especial object might be introduced, and I believe there is none to which the people would not willingly submit.

“ The plan I have now shadowed out possesses, I think, not a few advantages ; it proposes that the Government should do just enough to draw forth the voluntary efforts and energies of the people, without which the vitality necessary to the success of any scheme will be wanting, while at the same time it gives the Government the power to introduce and maintain at a very moderate cost the most efficient and best digested scheme of education in all the schools which would receive the public grant, and as all schools, I conceive, would be desirous of the grant, consequently all would adopt the improved system.

“ Your own request must be my apology for troubling you at such length. The subject is one of immense consequence, and something should be done immediately ; delay will only present us with new difficulties.

“ I am, etc.,

“ (Signed) SAMUEL S. MARLING.

“ W. A. Miles, Esq.,  
Etc., Etc., Etc.”

In concluding his report Mr. Miles observes that the opinions of witnesses on many points was contradictory, and “ candidly confessed his inability to point out or to recommend any legislative enactment likely to benefit in a sound and permanent manner the interests of the weavers, and respectfully left the matter to the superior judgment ” of the Royal Commission !

Although the inquiry does not appear to have resulted at once in remedial legislation, nevertheless forces were at work to improve the lot of the hand-loom weaver. Amongst these forces were the concentrating in one mill of all processes of manufacture, and the continuous development of machinery, which together effected a great saving in the time and cost of manufacture, and thereby tended to widen the margin of profit. Thus here, as elsewhere, it happened that the very means (namely the introduction of machinery and especially of the power loom) which at the time the workers regarded as the cause of their undoing proved eventually the means of their betterment. Still, the change was necessarily gradual, and when I went into business fifty years ago doeskins, venetians and kerseymeres were still handwoven in scores of cottages, and the click of the loom was a familiar sound as I rode down the village to the mills. I always felt very sorry for the hand-loom weaver as he brought his piece into the wool-loft, for his earnings, even in the fifties (allowing for playtime) I fancy did not average much above 10s. a week. A middle-aged, or elderly man, rather sad-faced (at least looking as though he had never been young) and often quaintly dressed—sometimes in a blue frock-coat with copper buttons, once gilt, or in a swallow-tail one, once black but grown green with age (presumably some gentleman's left-off garment)—his pathetic figure now lives only in the memory of a few old clothiers like me.

[By the way, the good old word "clothier" meant for centuries the cloth maker, or as he is now called the "woollen manufacturer." But nowadays "clothier" has come to mean the man who makes the cloth into clothes. I wish the tailors, wholesale and retail, had not appropriated our name !]

It may now be well to give a brief description of the principal processes employed to convert the fleece of wool into cloth. Down to the end of the seventeenth century every

operation except that of "fulling" or "milling" was performed by hand; but in the present day hand-processes have been superseded in almost every case by machinery. After sorting and blending, the wool by a series of machines is scoured (to remove animal grease), squeezed, dried, willyed and picked; and (in the case of "burry" or faulty wool) is dipped in dilute sulphuric acid and afterwards dried at a high temperature. This "pickling" process carbonises and pulverises vegetable matter without injury to the wool. A similar carbonising process is sometimes used on wool-dyed cloths by means of aluminium chloride instead of sulphuric acid. Up to forty years ago wool scouring was done by hand, the wool being steeped in a furnace containing a mixture of stale urine and soda, and then stirred in a wire basket through which ran brook water in order to remove the saponified grease. To prepare it for "carding" the wool is next moistened with oil. The "carding" process follows, in which the fibres are combed (or rather brushed) lengthwise by being passed through a series of cylinders covered with steel wire, called "scribblers," and is combed from the final cylinder or "condenser" in a number of "slivers" wound upon a roll. These rolls are transferred to the spinning machine or "mule," which draws out the "sliver" and at the same time twists it into yarn and winds it upon bobbins. In former days a species of "jenny" (locally known as a "billy") prepared the carded wool for the mule, but far less perfectly than the condenser does.

Yarn intended for warp is sized, wound upon a beam and placed in the loom. The weft is less firmly twisted, and does not require sizing. When woven the cloth is scoured and dried, and knots and imperfections are removed by hand. Next comes "fulling" or "milling" or "felting" with soap dissolved in warm water. This was anciently performed by "fulling-stocks," which were used at Temple Guiting in this county as early as the twelfth century. The stocks were a pair of huge wooden hammers raised and lowered alternately

by cogs turned by a water wheel. The operation is now generally performed by the "fuller," a machine in which the cloth, being drawn and squeezed between two cylinders, is felted more quickly and safely. The felting property peculiar to wool is due to the serrated structure of the fibres, which (under proper conditions of pressure, moisture and heat) interlock and shrink together, giving the fabric a firm, leathery texture. A piece of broadcloth measuring sixty yards in length and one hundred inches in width before "milling" is reduced by that process to about forty-eight yards long by sixty inches wide. After cleansing with fuller's earth, the nap of the felted cloth is raised by teazles placed in a revolving cylinder or "gig mill," over which the cloth passes, a process termed "roughing" or "dressing," and the nap so raised is next shorn to an even surface by passing the cloth between a steel blade and revolving cylinder with spiral blades, or "cutter" on the same principle as that of a lawn mower. Up to the early days of the nineteenth century cloth was shorn by a clumsy pair of hand shears; but about 1825 Mr. Lewis, of Brimscombe, invented his "cross cutter," which effected an important improvement in the process, and has even now not been entirely displaced. Permanent lustre is given to the cloth by "potting," *i.e.* rolling it tightly round an iron roll and immersing in water heated to 160 deg. or 180 deg. F. After tentering, drying and brushing, it is hot pressed and finally cold pressed, and is then ready for the warehouse. In olden days the cloth in favourable weather was dried in the open air on long upright frames called "racks," and old pictures of the locality show how the landscape was enlivened by bands of red, white, blue, and other coloured cloths on the "rack-hills" of the various mills.

The above-described operations are those necessary for the production of broadcloths, which may be either wool-dyed or piece-dyed—in the former case the wool being dyed after scouring, and in the latter the cloth being dyed after

“ potting.” Most of the processes subsequent to “ milling ” are repeated many times, so that the whole period required for the manufacture is usually not less than seven or eight weeks. A fine and well-finished superfine cloth should resemble fine chamois leather in texture, and the pile rival that of velvet in closeness and softness. A generation ago it was the regulation garb of clergymen, doctors and lawyers, and of all gentlemen for evening dress. No other material feels and looks and wears so well, and it is perhaps regrettable that by the caprice of fashion other fabrics have so largely superseded the classic broadcloths of England. Besides these, however, the looms of Gloucestershire produce doeskin, and a great variety of more recent fabrics, such as beavers, devons, hunters, meltons, venetians, serges, tweeds, chevviots, vicunas and worsted coatings and trouserings, ladies’ dress stuffs, etc.

The weaving of broadcloth, as we all know, is the simplest and most primitive, two harnesses only being used, that of kerseymeres, serges, doeskins and venetians requiring from three to seven harnesses, whilst that of fancies is often complicated, and has to be done by the Jacquard loom. On the other hand, the finishing processes in the case of undressed and fancy cloths are fewer, and consequently goods can be turned out in shorter time.

We who are still woollen manufacturers may regret that the number of woollen mills in the West of England has for years so diminished, and that consequently our trade does not possess the commanding position which it formerly occupied ; but it is consolatory to feel that many other industries have grown up, and that employment for the working classes is better secured by the industrial eggs not being all in the woollen basket ! I have always been glad to think that few trades in the world are so healthful for the workers as the woolen trade, certainly none more so, and that the looks of our workpeople testify to this. I believe also that between employers and employed a sentiment of mutual

goodwill and confidence has been steadily increasing, and will not easily be shaken. Let us hope that the present-day application of chemistry to such processes as wool-scouring, dyeing, etc., and the general recognition of the fact that in these days all manufactures must be conducted on scientific rather than on simply empirical methods, will contribute to restore ere long the prosperity which the industry enjoyed thirty years ago.