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THE PROGRESS AND HINDRANCES OF WOOL INDUSTRIES.

By J. F. SMITH (LEEDS).

PROGRESS is usually dependent upon improvement, and, as a rule, the object of improvement has been an increase in production, which signifies an increase in the quantity. Where quantity is not the first object, quality claims attention, and the two words—quantity and quality—become the keywords to all progress. Nature provides us with the raw materials to work upon, and usually in bulk form, the quantity and the quality being mixed. That is the crude state, and in the separation of the two, man's intelligence and modern science find themselves requisitioned. Thus, the separation of quality from quantity becomes the first stage of manufacture. Nature herself provides the raw materials, but seldom separates them of her own accord, yet she sets us one brilliant example which is a lesson to all manufacturers and a defiance of all levellers, however rabid may be their Socialism. That lesson is the separation of the cream from the blue milk. There you have the quality rising to the top of its own accord, whilst the dregs fall to the bottom. That is the first stage in manufacture—the manufacture of butter and cheese.

That rising of the cream to the top; that ascending of quality from the bulk of inferiority, is the example we emulate in all our manufactures, and we turn them to the best advantage by the separation of the various qualities contained in the bulk. It is the reason we sort the fleeces of wool into various qualities, knowing that we can turn each to the best advantage afterwards. Some top makers may have a propensity for combing all the qualities together, and terming them low 60's in quality. But even those economisers look at you with horror when you offer them unskirted fleeces for similar treatment. The low 60's may still be pure wool, but what a goldsmith would call nine carat.

The splendid reputation of West of England cloth for high quality was not gained in that way, neither was the superiority of the fine worsted fabrics manufactured at Huddersfield. Again, the best Huddersfield finisher cannot raise the quality of a low 60's worsted coating any higher than its nine-carat standard.

And, that Huddersfield finish! What is it? It is the short wool finish! When, half a century ago, Samuel Cunliffe Lister bought up the British rights of Heilmann's wool comb, and laid idle that invention to make way for his own, he blocked the use of the short-fibred wool, which has made French dress goods pre-eminent. In one pound weight of wool fibres of one inch in length there are twice as many fibre points as there are in one pound of those two inches in length. The more fibre points, the softer the finish; and in that respect the advantage rests with the short wool. The mossy finish of a faced Beaver cloth, although so closely cut, still hides the threads from view. The fine and short wools from

Sydney and Brisbane are superior to others in yielding a Beaver finish, and even that finish is enhanced by the blending with the wool of 25 or 33 per cent of fine mungo. If ever you desire to see a miserable failure, just try that Beaver finish on a worsted cloth from long wool. Long fibres are the hindrance!

Now we come to another type of fabric in which the Heilmann comb shows to advantage. The goods to which we refer are the Franch flannel, which are extensively manufactured at Rheims. In those you find a neat and delicate cloth of superior and attractive appearance, yet full of cover, as if they had been produced from carded yarns. They are manufactured from the same material as the English flannels, but they are from the Heilmann comb, and mule spun. The threads are single, and it is from the same type of yarn that French cashmeres and bieges gain their superiority. Such yarns from short wool will stand more fulling without creasing the cloth than yarns from longer fibres, and as a matter of fact the full cover and soft handle of these French goods is largely obtained by the fulling process. The fabrics are too delicate to withstand much raising, either by teasele or card. We may try, and try in vain, to produce the same effect from combed wools of two-inch fibres. It cannot be done, because there are not sufficient fibre points to yield the cover; besides which, the texture would crease or break in the amount of fulling. That is the greatest hindrance, but we have also to remember the difficulty of capturing specialised industries. Technical skill is not easily captured.

We may now turn our attention to long wool, and especially to the crossbred wool from our Colonies and Argentina, which the exigencies of our food supplies now force upon us. Bradford has been hard hit in the past, partly by the French competition, but more so by foreign tariffs, notably by the McKinley and Dingley tariffs in the United States. However, the tide has turned, and the dark clouds of adversity no longer hang upon the horizon. Even fashion has cast her frowns, and is demanding to see more and more of the products from the crossbred wool. What threatened to be a drug upon the market has become a useful commodity; and enterprise on the part of the designers, manufacturers, and garment knitters has produced acceptable, stylish, and useful novelties for ladies' wear. Happily, these come within the range of popular prices and the purchasing power of the middle classes.

The fibres of these crossbred wools are mostly too long for the card wire of the woollen mills, or for the Belgian woollen spinners. Thus they become material for the wool comb and the worsted spinning frames, and the yarns therefrom are applicable to hosiery, serges, and costume cloths for ladies' wear. Of the latter class, some excellent cloths for tailor-made garments are already on the market, and these drape well, besides being durable. We have had them under personal observation for more than a year, and now expect to see the development of an extensive trade in these goods, which have the character of a Scotch tweed in their appearance. That is due to the colours, the designs, and especially the tweed finish, and the lead in such styles will probably originate

with experienced Cheviot tweed manufacturers in the Border districts of Scotland. They are pastmasters in the use of wool of Cheviot quality, in which category the crossbreds stand in woven fabrics. When such wools are combed, the yarns therefrom are strong, and make good work for the loom, whilst the cloth can be reduced to the medium weight essential to ladies' wear.

The next problem in the use of these crossbred wools is that of men's wear; and we have no hesitation in predicting some similar development to that we have just described in ladies' fabrics. Since men's wear demands cloth of more substance than that for the opposite sex, a rivalry will no doubt spring up between the carded and the combed wool—*i.e.*, between the woollen and the worsted districts. As models for these future cloths for men's wear, we should select the Blarney and Galway tweeds of Ireland, although we should leave the designing to those masters of the craft in Scotland whose foreknowledge of style and taste remains unsurpassed in woollen goods. When the crisp handle of the Irish tweeds becomes softened—and crossbred wools can accomplish that object—we may then find semi-Cheviot fabrics of the type so popular half a century ago, and known as Bliss' tweeds. It is the revival of such cloths which I now predict, and those manufactured from crossbred wool. Want of enterprise is the only hindrance in this case. Gentlemen, the Bradford trade has survived many vicissitudes, but an industry with the proverbial nine lives of the cat is not easily played out. Besides, those engaged in it at the present seem to have more change wheels than their ancestors, as well as more enterprise.

Tenacity is a strong characteristic of the British race. It is a great help to progress, but it can be and sometimes is a great hindrance. We remember the tenacity of the doeskin cloth manufacturers of Yorkshire and the West of England, and how so many held on to the cloth which fashion had discarded, until they found themselves ruined. Want of enterprise was their hindrance.

Want of enterprise was also the hindrance of the Bradford manufacturers when alpaca and stiff dress fabrics went out of fashion. An excellent exhibition and the influence of Lady Bective were requisitioned in the hope of galvanising that industry into life again, but all in vain. Let us hope that times have changed, and that we are now as anxious to welcome new branches of industry as we were then loth to part with old ones.

Exhibitions were intended for progress, and to show how far we advanced in art and industry—not as museums of departed fashions and discarded fabrics. Judging by the Bradford Exhibition at the opening of the Cartwright Hall, and the display at the Brussels Exhibition—now unfortunately destroyed by the recent fire—the local industries have again come well to the front, if they have not overtaken those in France. If we have never overtaken the French in the production of works of art and artistic textiles, we should always remember the tremendous start of our competitors, and their two centuries of State aid, where we had none. We should remember the enterprise of Henry IV. of France, who

secured the dyehouse vacated by John Gobelin, of Rheims, and turned it into a State factory for the manufacture of artistic tapestries; and we should not forget the splendid development of this industry under the encouragement of Louis XIV., and his wise Minister, Colbert. Napoleon strongly supported it.

EXHIBITIONS.

HISTORY AND INSTRUCTIVENESS.

The nineteenth century has perhaps done more to make learning diffusive than any preceding century since the world began. The eighteenth century had undoubtedly pointed the way by letting loose a succession of inventors and mechanical geniuses, who cut themselves adrift from the immutability of previous centuries, and carved out new paths for themselves, besides awakening the dormant faculties of others to the possibilities of the future. Instinct inspired emulation, and progress came in a flood, sweeping onward the British race to an industrial success, which brought wealth and power in its train,

But, without exhibition and comparison, the progress so started might have missed the fresh impulses derived from the public exhibitions which originated in France from the bazaar of the Marquis d'Avêze. He had been appointed Commissioner of the State manufactories of Sèvres, of the Savonnerie, and of the Gobelins. He found the producers of various objects of utility and luxury in poverty for want of customers, and was struck with an idea that a bazaar would help the sale of their works of art and relieve the workers, if it did not fill their purses. The bazaar—for such it was in direct purpose—proved successful beyond his expectations; and out of this very success arose the suggestion that the principle was applicable on a more extended scale, and might be productive of important results.

The French Government did not permit the success of the bazaar of the Marquis d'Avêze to subside, before they followed it up with an exhibition. In 1798, only six weeks later, an exhibition with 60 porticos was opened on the *Champs de Mars*. The bazaar had been for the sale only of works of art, but the exhibition was for instruction also! Even in the bazaar the Marquis had discerned the germ of the grand principle of comparison, which would lead on to greater excellence.

Aided by the *fêtes* then held to celebrate the victories of the first Napoleon in Italy, and by a collection of the most beautiful and most useful productions of France, the first exhibition in 1798 was a success.

THE SECOND EXHIBITION, 1801.

It has often been asserted that "Nothing succeeds like success," and it was true as applied to the Exhibition of 1798. It was proposed to hold an annual exhibition of the same order, when it was

seen how well the first one had confirmed the expectations of the originator. The Government resolved to take that responsibility, but political considerations deferred the second exhibition till 1801. However, there was a powerful support at hand in the then First Consul (Napoleon I.), who recognised the value to France of the peaceful competition of art and industry in 1798. He took upon himself the responsibility of maintaining a succession of exhibitions, but soon found hindrances to overcome. The natural jealousy of the manufacturers of eminence, lest they were giving away their industries, soon manifested itself, since those who ranked first in their respective arts had the impression that comparison could only help their inferiors to become their equals. Napoleon visited them personally, accompanied by the first men of science, and explained the true objects of the exhibition. When the second was held, in 1801, in a temporary building in the quadrangle of the Louvre, there were only about 200 exhibitors competing for 60 prizes or medals. Of these, 10 were gold medals, 20 of silver, and 30 of bronze. Jacquard, the inventor of the machine which so enormously improved the capacity of the loom, was only awarded a bronze medal. Napoleon had recognised the importance of Jacquard's invention, but it is said that the messenger he sent to bring that inventor to Paris had to arrest him in order to get him there. He had been punished by the workers in his own occupation for supplanting hand labour, and had fear that further trouble was in store for him at Paris. Happily he was mistaken, since he was rewarded with a salary and a Government appointment as instructor in the use of his machine at the State factory of the Gobelins.

THE THIRD EXHIBITION, 1802.

The First Consul proved to be more sagacious and far-seeing than the manufacturers, who, in the first case, feared the loss of their trade by exhibiting. Sixty of the 200 exhibitors in 1801 had been awarded medals, and such honours brought them an enormous increase of business. That banished the reluctance of their competitors, and when the third exhibition was opened in 1802, there were no less than 600 exhibitors. As the outcome of these increasing successes, the *Société d'Encouragement* was formed. No efforts were spared to make the object a national one, and to enlist the support of manufacturers engaged in less showy but useful productions. However, it was perceived that annual exhibitions succeeded each other too rapidly for improvements to mature, or the lessons of each to be developed; besides which, there was danger of them sinking into mere commercial speculations.

THE FOURTH EXHIBITION, 1806.

Four years passed before the next great exhibition of the products of French industry. As in the case of the one in 1802, that of 1806 was held in a temporary building erected in front of the *Hôpital des Invalides*, in the neighbourhood of the *Champs de*

Mars. The increasing interest and influence of these recurring exhibitions was again apparent, when 1,400 exhibitors exposed their wares. The prizes were augmented in proportion, and the doors were open during 24 days.

FOR THE FIRST TIME THE EXHIBITS INCLUDED TEXTILE GOODS, and the list embraced silks, lace, blonde, printed cottons, and various cloths. There was steel by a novel process, and iron made by the use of coke in place of charcoal; and all these were significant indications of the interest of the nation. The instructive influence permeated both the exhibitors and the public, and refinement and taste grew apace under this State encouragement, since the choicest examples from the State factories were shown for guidance and emulation.

THE FIFTH EXHIBITION, 1819.

The culmination of the First Empire was reached, and its decline and fall witnessed before another exhibition was held, in 1819. In the interval the annals of France were but a record of war and troublesome times, during which the victories of Napoleon I. plundered neighbouring nations of many art treasures. These, acting as models for the most expert and skilled artisans, served in turn to diversify their styles and avoid monotony. In 1819 the dormant system of exhibitions was revived with renewed vigour, when the fifth of the series was opened on the *fête* of St. Louis. The sixth followed in 1823. The seventh was held in 1827, in a spacious building erected for it in the *Place de la Concorde*; and the same edifice was honoured by the eighth, ninth, and tenth exhibitions, respectively, in 1834, 1839, and 1844. All were successful, and bore witness to the progress of the French industries, as well as to the education and refined taste of those engaged in the same. As the grand discoveries of modern science were made, their application was made known through the medium of these exhibitions, and it was proposed to make the eleventh, held in 1849, international. However, the French exhibitors did not consent to that proposal, consequently the first of the international series was left to British enterprise, stimulated greatly by the Prince Consort, and that was held in London in 1851.

SINCE 1851.

The great success of the Exhibition of All Nations, in London, in 1851, was also a great lesson to all concerned. In works of art, France was an easy first: but in textile machinery, the British had no equal. These were lessons to both ourselves and the French, who at that time seemed to be our only textile rivals. During the 'fifties, there was a flood of mechanical genius, and the slubbing-billy was superseded by the woollen condenser, whilst the spinning mule of Crompton was rendered automatic. These were great

strides in the carded wool industry, but they did not displace the Heilmann comb in France. On the contrary, our self-acting mules came to its aid, and by maintaining the roving process, which we were then abolishing, the French developed their system of combing and spinning short-fibred wool. We found the Noble comb (the outcome of the combined skill of Messrs. G. E. Donisthorpe and James Noble) placed upon the market at the same period, but not superseding that of Heilmann. What with the advantages the French possessed in the Heilmann comb, combined with longer hours and cheaper labour—though expert—we have only held second place in the cashmere industry. Say what we will to the contrary, preference has been given to the French goods, even in our own markets.

Then comes the question of dyed colours, another advantage the French cashmeres are said to possess. It is said that the Bradford dyers claim to be able to dye equal shades! That is a debatable question; but, allowing that they can, what does it avail us if those colours be placed upon inferior goods? The goods will never get the preference. However, there is an easy way of settling the question of colours. Let any merchant buy 200 pieces in France, in the grey, afterwards having 100 pieces dyed in France and 100 in Bradford—10 pieces each in 10 colours. Then, let the whole be brought before a number of buyers, individually, and tabulate their selections. The majority would then decide the question.

We all know how Bradford has suffered from foreign tariffs, but that being a controversial question, I will not discuss it. I will content myself with the assertion that John Bull can get the best of any nation by simply buttoning up his pockets! There are numerous other hindrances, but upon investigation they are found to have a common origin, namely, "Want of outlets for our surplus productions!" The boom year of 1907 showed how well the wool industries and all our other industries can take care of themselves when they have sufficient markets. We can meet all competitors in neutral markets, and yet the vicissitudes of our wool industries have been terrible during the last 30 years. Who can deny the census returns of 1901, which showed the population of Huddersfield to have "decreased 10,000 in number during the decade; the textile workers of Yorkshire 18 per cent, and the tweed workers of Scotland 27 per cent." Whilst we have been closing woollen factories at home, we have been establishing competing factories abroad, and then complaining of foreign competition. No new sources of wool supplies have been created for these additional factories, and we need not be surprised to find a new crop of hindrances to our home industries.

There are also awaiting regulation the terms of trade, where credit ranges from one to twelve months; and serious study should be made of the influence of the United States upon the Bradford wool market, where steady trade is too often upset.

DISCUSSION.

The Chairman (Mr. James Hill, Bradford) said the paper was a most interesting one, but it raised a point which might be criticised. The author in some of his remarks appeared to criticise the present generation compared with the former generation, and it mostly applied to the spinners and manufacturers, and not so much to the wool section. He thought he could leave those who had been criticised to speak for themselves.

Mr. J. F. White (Bradford) said that the paper referred to the French dyeing, and he attributed the splendid colours obtained by the French partly to the condition in which the fabrics were sent to the dyers. He had some experience in that matter. Before washing the wool the French used means for extracting the potash, while English spinners generally did not use anything of that kind. He would like to ask the author if that had not something to do with the better colours which the French dyers got.

Mr. Smith said he did not think it had. His experience was that the French colours were partly the result of better climatic conditions. He had suggested a means of putting that to the test; that was to get 200 pieces and have half of them treated by English and half of them by French dyers.

Mr. White said the conditions would not be equal, because the English dyer would not know the treatment to which the piece had been subjected previous to dyeing, while the French dyer would have that information.

Mr. Smith said if that objection were raised then he would suggest to send 100 pieces over from this country to the French dyers, who would then be at sea with regard to the treatment the pieces had undergone.

The Chairman said that he had always understood that the taking out of the potash was a financial consideration pure and simple.

Colonel Foster believed there was a great deal to be said for the quality of Bradford goods if Bradford got its deserts. The question of exhibitions was being taken up by the Board of Trade and Chambers of Commerce, and he thought it could be claimed that the exhibit at the Brussels Exhibition was one of which Bradford had no need to be ashamed, and that any comparison of Bradford goods with foreign goods would lead to a very different opinion of Bradford goods to that which had been held in the past. He believed that in the Bradford Dyers' Association the city had a combination such as there was nowhere else in the world, and that if they continued the work that was now being done, Bradford need have no fear of its goods being compared with those of any other country in the world.

Mr. Smith believed that Bradford had the ability to lead the world, but had not got the climate, and there could be no doubt that France had a beautiful climate for the dyeing process.

Sir John Horsfall (Bradford) expressed the opinion that Bradford could hold its own with any city in the world.

The author gives the following addendum:—

“ Whilst we hear so much about the dyewares manufactured in Germany, and also of the undisputed ability of the German chemists, it seems somewhat strange that we should hear so little about the colours dyed in Germany. Here is a problem which we should expect those who produce the dyewares to be the most competent to solve, viz.:—

1st. From the dyewares made in Germany, the best colours are dyed in France?

2nd. From the same dyewares the second best colours are dyed in Great Britain?

3rd. From the same dyewares the third best colours are dyed in Germany?

The writer has had such reports from merchants who buy goods from the three sources, respectively. Since the Congress at Bradford, he has submitted the problem to a French expert, who at once pronounced the cause to be “the climate and the light.”